

Walter S. Foster
1878-1961
Richard B. Foster
1908-1996
Theodore W. Swift
1928-2000
John L. Collins
1926-2001

Webb A. Smith
Allan J. Claypool
Gary J. McRay
Robert J. McCullen
Stephen I. Jurnu
William K. Fahey
Stephen O. Schultz
William R. Schulz
David H. Aldrich

Scott A. Storey
Charles A. Janssen
Charles E. Barbieri
James B. Jensen, Jr.
Scott L. Mandel
Michael D. Sanders
Sherry A. Stein
Brent A. Titus
Brian A. Kaser
Robert E. McFarland
Stephen J. Lowney
Patricia A. Calore
Jean G. Shtokal
Glen A. Schmiede
Brian G. Goodenough
Matt G. Hrebec
Eric E. Doster
Stephen J. Rhodes

Melissa J. Jackson
Steven H. Lasher
Nancy L. Kahn
Deanna Swisher
Mark J. Burzych
Alan G. Gilchrist
Thomas R. Meagher
Douglas A. Mielock
Scott A. Chernich
Donald E. Martin
Paul J. Millenbach
Dirk H. Beckwith
Brian J. Renaud
Bruce A. Vande Vusse
Lynwood P. VandenBosch
Lawrence Korolewicz
James B. Doezeema
Alan T. Rogalski

Francis G. Seyferth
Anne M. Seurnynck
Richard L. Hillman
Andrea J. Hool
Steven L. Owen
Jennifer Kildea Dewane
John P. Nicolucci
Francis C. Flood
Michael D. Homier
Keith A. Castora
Rebecca S. Davies
Barbara J. Oyer
Claire V. Groen
Kirsten M. McNelly
Emily L. Matthews
Benjamin J. Price
Ronald D. Richards, Jr.
Joseph E. Kozely

Pamela C. Dausman
Terrence G. Quinn
Jacqueline E. Bayley
Dana M. Bennett
Radhika P. Drake
Todd W. Hoppe
Sarah J. Gabis
Larry R. Jensen, Jr.
Alison R. Lievens
Eleanore M. Schroeder
Philip E. Hamilton
John W. Inhulsen
Andrew C. Vredenburg
Randall L. Harbour

Of Counsel
Lawrence B. Lindemer
David VanderHaagen
Michael G. Harrison
Allan O. Maki
Frederick B. Bellamy
Gilbert M. Frimet
Deborah J. Williamson
Peter R. Tolley
Robert C. Greene
Scott H. Hogan
James B. Frakie
Mark J. Colon
Craig R. Petersen

Writer's Direct Phone: (517) 371-8149

Fax: (517) 367-7149

Reply To: Lansing

June 30, 2006

Electronic Filing

Ms. Mary Jo Kunkle
Executive Secretary
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, MI 48909

Dear Ms. Kunkle:

Re: In the matter on the Commission's Own Motion to examine the total service long run incremental costs of the Michigan Exchange Carriers Association Companies, including Ace Telephone Company, Barry County Telephone Company, Deerfield Farmers' Telephone Company, Kaleva Telephone Company, Lennon Telephone Company, Ogden Telephone Company, Pigeon Telephone Company, the Upper Peninsula Telephone Company, and Waldron Telephone Company
MPSC Case No. U-14781

Attached for filing, please find the Application of Michigan Exchange Carriers Association, Inc., the Affidavit of David S. McCartney, the Affidavit of Richard J. Waltke, and the Affidavit of Robert E. Fisher with an Exhibit. Also attached is the Certificate of Mailing with and the Service List. These documents have been filed in paperless form with the Commission's Electronic Case Filing System.

Very truly yours,

FOSTER, SWIFT, COLLINS & SMITH, P.C.

Mark
Burzych
Mark J. Burzych

Digitally signed by Mark Burzych
DN: cn=Mark Burzych, c=US,
o=Foster Swift
Date: 2006.06.30 16:03:41
+04'00'

MJB:jkc

cc: Parties of Record

S:\149\MECA\TELRIC 2006\Clerk-1.doc

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * * *

In the matter, on the Commission's own motion,)
to examine the total service long run incremental)
costs of the **MICHIGAN EXCHANGE CARRIERS**)
ASSOCIATION COMPANIES, including **ACE**)
TELEPHONE COMPANY, BARRY COUNTY)
TELEPHONE COMPANY, DEERFIELD)
FARMERS' TELEPHONE COMPANY, KALEVA)
TELEPHONE COMPANY, LENNON TELEPHONE)
COMPANY, OGDEN TELEPHONE COMPANY,)
PIGEON TELEPHONE COMPANY, the UPPER)
PENINSULA TELEPHONE COMPANY,)
and **WALDRON TELEPHONE COMPANY.**)
_____)

Case No. U-14781

APPLICATION

The Michigan Exchange Carriers Association, Inc. ("MECA"), by its attorneys, Foster, Swift, Collins & Smith, P.C., files this application on behalf of eight of its members for approval of a joint total service long run incremental cost ("TSLRIC")/total element long run incremental cost ("TELRIC") study. MECA files this application pursuant to section 203, MCL 484.2203, of the Michigan Telecommunications Act ("MTA"), MCL 484.2101 *et seq.*, and this Commission's February 21, 2006, order in this case. MECA files this application on behalf of eight of the petitioners in Case No. U-14678 that were ordered by the Commission to file by June 30, 2006. Those eight companies are Ace Telephone Company of Michigan, Inc., Barry County Telephone Company, The Deerfield Farmers Telephone Company, Kaleva Telephone Company, Lennon Telephone Company, Ogden Telephone Company, Pigeon Telephone Company, and Waldron Telephone Company. MECA is not filing on behalf of Upper Peninsula Telephone Company, which MECA understands will be filing separately. In support of its application, MECA states:

1. MECA is an association whose membership is comprised of 33 small incumbent local exchange carriers in Michigan who generally serve rural areas of the state (the “Rural ILECs”).¹ The Rural ILECs provide basic local exchange service, toll access service, local transport and termination service, and Commercial Mobile Radio Service (“CMRS”) termination service. MECA has been involved since its inception in 1987 in representing the Rural ILECs before the Michigan Public Service Commission (“MPSC” or “Commission”), in administering the access and other tariffs that are filed on behalf of the Rural ILECs, and in providing information, representation, and general assistance to the Rural ILECs in inter-company relations, legislative matters, and general business matters relating to telecommunications issues of interest to them. MECA has been involved in many proceedings at the Commission on behalf of its members, including Case No. U-11448 and Case No. U-12261, MECA’s first and second TSLRIC/TELRIC cost study cases. MECA’s address is 124 W. Allegan, Suite 1400, Lansing, Michigan 48933.

2. The eight companies on whose behalf MECA is filing agreed to participate in a joint cost study and to seek Commission approval of the study as ordered by this Commission in Case No. U-14678.

¹ MECA’s members are Ace Telephone Company of Michigan, Inc., Allendale Telephone Company, Baraga Telephone Company, Barry County Telephone Company, Blanchard Telephone Association, Inc., Bloomingdale Telephone Company, Inc., Carr Telephone Company, CenturyTel of Michigan, Inc., CenturyTel Midwest-Michigan, Inc., CenturyTel of Northern Michigan, Inc., CenturyTel of Upper Michigan, Inc., Farmers Mutual Telephone Company d/b/a Chapin Telephone Company, Chatham Telephone Company, Chippewa County Telephone Company, Communication Corporation of Michigan, The Deerfield Farmers Telephone Company, Drenthe Telephone Company, Hiawatha Telephone Company, Island Telephone Company, Kaleva Telephone Company, Lennon Telephone Company, Midway Telephone Company, Ogden Telephone Company, Ontonagon County Telephone Company, Pigeon Telephone Company, Sand Creek Telephone Company, Shiawassee Telephone Company, Springport Telephone Company, Upper Peninsula Telephone Company, Waldron Telephone Company, Westphalia Telephone Company, The Winn Telephone Company, and Wolverine Telephone Company.

3. The Commission has jurisdiction over this application pursuant to section 203 of the MTA, MCL 484.2203, which generally provides that the Commission may conduct an investigation, hold hearings, and issue its findings and order upon receipt of an application. The Commission also has general jurisdiction pursuant to other provisions of the MTA, MCL 484.2101 *et seq.*, the Commission's Rules of Practice and Procedure, as amended, 1992 AACR, R 460.17101 *et seq.*, and this Commission's prior orders regarding cost studies.

4. The participating Rural ILECs seek approval of a joint TSLRIC/TELRIC study to comply with the Commission's cost study filing requirement and for potential future use in setting rates. Approval of the joint cost study will streamline the process for setting and adjusting rates for regulated services that will ensure effective rate review and reduce the cost and length of hearings traditionally associated with rate cases. See MCL 484.2101(2)(f).

5. This Commission has approved the use of joint cost studies by the Rural ILECs. In Case No. U-10620, the Commission conducted a proceeding on its own motion to refine the definition of, and develop a methodology to determine long run incremental costs for application under the MTA. In this Commission's September 8, 1994, Order in Case No. U-10620, it found that the small LECs should be allowed to jointly perform cost studies. (Order, pp 8 and 10). On January 28, 1998, the Commission approved a joint study that was filed on behalf of 24 of MECA's members in Case No. U-11448. On March 14, 2000, the Commission also approved a joint cost study that was filed on behalf of 14 of MECA's members in Case No. U-12261. Recently, on February 21, 2006, in Case No. U-14678, the Commission reaffirmed that the Rural ILECs can file joint cost studies.

6. MECA's joint TSLRIC/TELRIC study is designed to conform to the MTA and the Commission's TSLRIC principles and requirements. Pursuant to the MTA, "total service

long run incremental cost” means, given current service demand, including associated costs of every component necessary to provide the service, 1 of the following:

- (i) The total forward-looking cost of a telecommunication service, relevant group of services, or basic network component, using current least cost technology that would be required if the provider had never offered the service.
- (ii) The total cost that the provider would incur if the provider were to initially offer the service, group of services, or basic network component. MCL 484.2102(ii).

The study conforms to the statutory standard and the Commission’s cost study principles.

7. The study also conforms to the federal TELRIC standard. The Federal Communications Commission and this Commission have acknowledged that the Michigan TSLRIC standard and principles are fully consistent with the TELRIC principles. See *In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region InterLATA Services In Michigan*, CC Docket No. 97-137; FCC 97-29 (August 19, 1997), pp 147-148, ¶290, and *In the matter, on the Commission’s own motion, to consider SBC’s, f/k/a AMERITECH MICHIGAN, compliance with the competitive checklist in Section 271 of the Federal Telecommunications Act of 1996*, Case No. U-12320 (January 13, 2003 Report of the Michigan Public Service Commission, p 49).

8. The methodologies used for the MECA study are described and supported by the testimony set forth in the affidavits of Mr. Robert E. Fisher, Mr. David S. McCartney (public version), and Mr. Richard J. Waltke, accompanying this Application. MECA also supports the methodology used for the MECA study with the confidential version of Mr. McCartney’s testimony, which is filed under seal as it contains confidential and proprietary information.

These affidavits explain the study performed for the participating companies and present that study.

9. A computer disc copy of the cost study accompanies this Application and is being filed under seal as it contains confidential and proprietary information.

10. MECA's joint TSLRIC/TELRIC study, inputs and supporting data are confidential and are being submitted on disk to the Commission's Executive Secretary under seal pursuant to § 210 of the MTA. MCL 484.2210.

WHEREFORE, MECA respectfully requests that the Commission:

- (1) afford Staff and interveners the opportunity to comment in a notice and comment proceeding similar to other cost study review proceedings,
- (2) approve the joint study as proposed,
- (3) find that the resulting costs are the total element long run incremental costs and total service long run incremental costs of each of the participating companies, which will be used to derive the total service long run incremental cost rate minimum as prescribed by §§ 308 and 321 of the MTA. MCL 484.2308, 484.2321, and
- (4) grant such other relief as is reasonable and appropriate.

Respectfully submitted,

FOSTER, SWIFT, COLLINS & SMITH, P.C.
Attorneys for the Michigan Exchange Carriers
Association, Inc.

Dated: June 30, 2006

By: **Mark Burzych**

Digitally signed by Mark Burzych
DN: cn=Mark Burzych, c=US, o=Foster Swift
Date: 2006.06.30 16:05:12 -04'00'

Mark J. Burzych (P43793)
Glen A. Schmiede (P37112)
Ronald D. Richards, Jr. (P61007)
313 S. Washington Square
Lansing, MI 48933
(517) 371-8100

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * * *

In the matter, on the Commission's own motion,)
to examine the total service long run incremental)
costs of the **MICHIGAN EXCHANGE CARRIERS**)
ASSOCIATION COMPANIES, including **ACE**)
TELEPHONE COMPANY, BARRY COUNTY)
TELEPHONE COMPANY, DEERFIELD)
FARMERS' TELEPHONE COMPANY, KALEVA)
TELEPHONE COMPANY, LENNON TELEPHONE)
COMPANY, OGDEN TELEPHONE COMPANY,)
PIGEON TELEPHONE COMPANY, the UPPER)
PENINSULA TELEPHONE COMPANY,)
and **WALDRON TELEPHONE COMPANY.**)
_____)

Case No. U-14781

CERTIFICATE OF MAILING

Mark J. Burzych hereby certifies that on the 30th day of June, 2006, he arranged for service of (1) the Application of Michigan Exchange Carriers Association, Inc., (2) the Affidavit of David S. McCartney, (3) the Affidavit of Richard J. Waltke, (4) the Affidavit of Robert E. Fisher with an Exhibit and (5) this Certificate of Mailing/Service List upon those parties shown on said Service List, via first class mail from Lansing, Michigan.

The above statements are true to the best of my knowledge, information, and belief.

Mark Burzych Digitally signed by Mark Burzych
DN: cn=Mark Burzych, c=US, o=Foster
Swift
Date: 2006.06.30 16:05:52 -04'00'

Mark J. Burzych

SERVICE LIST
MPSC Case No. U-14781

James Rigas
Administrative Law Judge
Michigan Public Service Commission
6545 Mercantile Way, Suite 14
P.O. Box 30221
Lansing, MI 48911

Orjiakor Isiogu
Director, Communications Division
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, MI 48909

David Voges
Assistant Attorney General
Public Service Division
6545 Mercantile Way, Suite 15
Lansing, MI 48911

John A. MacNeal, Resident Agent for
Ace Telephone Co. of Michigan, Inc.
310 W. Front Street, #300
Traverse City, MI 49684

Robert E. Fisher, Resident Agent for
Barry County Telephone Company
P.O. Box 128
Delton, MI 49046

David Larocca and
Arlan Kapnick, Resident Agent for
The Deerfield Farmers Telephone Co.
4200 Teal Road
Petersburg, MI 49270

Harry L. Cribbs, Jr., Resident Agent for
Kaleva Telephone Company
9462 Osmo Street
Kaleva, MI 49645

Paul Bowman and
Jacqueline Bowden, Resident Agent for
Lennon Telephone Company
3095 S. Sheridan Avenue
P.O. Box 329
Lennon, MI 48449

Linda Corie, Resident Agent for
Ogden Telephone Company
4726 E. Weston Road
Blissfield, MI 49228

Edwin H. Eichler, Resident Agent for
Pigeon Telephone Company
7585 Pigeon Road
Pigeon, MI 48755

Mr. Calvin E. Matthews, Resident Agent
for Upper Peninsula Telephone Co.
397 US-41 N
P.O. Box 86
Carney, MI 49812-0086

Kathryn J. Fox, Resident Agent for
Waldron Telephone Company
P.O. Box 197
Waldron, MI 49288

THIS SERVICE LIST BY:

Mark J. Burzych
Glen A. Schmiede
Ronald D. Richards, Jr.
Foster, Swift, Collins & Smith, P.C.
Attorneys for Michigan Exchange
Carriers Association, Inc.
313 S. Washington Square
Lansing, MI 48933

and

Stephen Gatto
Michigan Exchange Carriers Association
P.O. Box 20025
Lansing, MI 48901-0025

MPSC Subscription List:

Don Eitniear
DIT – Telecommunications Division
Hanna Building, 1st Floor
Lansing, MI 48933

John Pestle
Varnum, Riddering, Schmidt & Howlett
Bridgewater Place
P.O. Box 352
Grand Rapids, MI 49501-0352

Michael Byrne
Senate Democratic Staff
Romney Building
Lansing, MI 48933

AFFIDAVIT OF ROBERT E. FISHER

I, Robert E. Fisher, being duly sworn, state:

1. I have personal knowledge of the facts set forth below, and I am competent to testify to them as a witness.
2. I am employed by Barry County Telephone Company, and my business address is 123 W. Orchard, Box 128, Delton, MI 49046-0128.
3. I received a Bachelor of Science degree in Electrical Engineering from Texas A&M University in 1971. I also have an MBA from Southern Methodist University, which I received in 1975.
4. I am a Registered Professional Engineer in Texas and have been one there from 1975 to the present. I also am a Registered Professional Engineer in Michigan, where I have been registered since 1992.
5. With regard to telecommunications, I was employed by AT&T—Southwestern Bell Telephone from 1971 to 1983. My last position with AT&T was District Manager. Before that, I held various positions of increasing responsibility in sales, personnel, separations and engineering. From 1984 to 1985, I was employed as Senior Manager for MCI International in New York. In that position, I was responsible for the design and implementation of an on-line, real time data switching system for worldwide message delivery. From 1986 to 1989, I was Chief Operating Officer of Long Distance America. In that position, I was responsible for a turnaround to profitability of their long distance resale operation and growth from \$6 million to \$21 million in revenue. After that, from 1989 to 1991, I was Manager at Citizens Utilities Company, Stamford, CT. In that position, I was responsible for staff review and guidance for a 130,000 line telephone operation in three states and oversight of cellular limited partnerships valued at \$550 million. From 1991 to the present, I have served as Vice President and General Manager of Barry County Telephone Company. I am also on the Board of Directors of the Michigan Exchange Carriers Association, Inc. (“MECA”).
6. I have testified previously before the Michigan Public Service Commission (“MPSC” or “Commission”) in 1995 in Case No. U-10725, which involved a complaint against Barry County Telephone Company regarding late payment fees and other matters.
7. The purpose of my affidavit is to address engineering, network design, and other related aspects of the joint Total Element Long Run Incremental Cost (“TELRIC”) study that is being submitted by MECA on behalf of several of MECA’s members. As General Manager of Barry County Telephone Company and a member of the Board of Directors of MECA, I am familiar with these types of cost studies. I worked on MECA’s previous two cost studies, which were approved by the MPSC in 1998 in Case No. U-11448 and in 2000 in Case No. U-12261. I am familiar with the Commission’s costing principles as

laid out in Case No. U-10620 and Case No. U-11103 and applied them when participating in preparation of the MECA study.

8. The MECA study employs a forward-looking, least-cost network design that meets the Commission's Total Service Long Run Incremental Cost ("TSLRIC") definitions and principles. In accordance with Principle No. 6, the technology used is the least-cost, most efficient, known and proven technology that is currently available for purchase to provide the total set of telecommunication services.
9. As with MECA's previous studies, this study uses the "green field" approach. In that approach, existing routes and facilities are not relevant; whereas the location of the existing central offices (wire centers) and other companies' tandem locations remain the same. These were held constant to comply with the Commission's Cost Principle No. 6.
10. The network design parameters used in the study were developed with input from the participating companies based on numerous discussions and conference calls, with suggestions and modifications that resulted in the most efficient, least-cost, forward-looking network in the rural areas served by these companies.
11. The distribution network in the study is a Passive Optical Network, or "PON," that employs fiber to the customer premises, commonly referred to as "fiber to the premises" or "FTTP." Copper wire is not used in this network. On occasion, where it is economical in higher density remote areas or where needed to ensure quality of service, electronics may be placed in those areas to supplement the Passive Optical Network that is generally used throughout the study.
12. An optical network is the least-cost, most efficient, forward-looking network design for the MECA companies. The combined cost of fiber and electronics is cheaper than the cost of copper and its related electronics. In addition, a fiber optic network is a better and more forward-looking technology than a copper-based network.
13. Prior to conducting the TELRIC study, an analysis was done to determine whether FTTP was more cost-efficient and forward-looking than a hybrid fiber/copper network. The FTTP network proved more cost-effective and forward-looking for the participating rural companies. There are many reasons why a fiber network is appropriate. Some of these reasons are stated clearly and accurately in an article entitled "Why Fiber In Premises Networks" by Merrion Edwards, David Allen, and Phillip Bell from Volume 10 of the 2005 *guidelines* publication, which accompanies this affidavit. In addition, since fiber cable was developed in the early '70s, the demand for and use of fiber has grown dramatically to where fiber is common today and fiber optic applications are widespread. Fiber cable is not affected by electromagnetic fields and there are far fewer adverse effects from lightning than there are with copper cable. It has superior signal integrity as compared to copper. Fiber also provides more customer security than copper because it is not easily susceptible to eavesdropping. Fiber is more affordable and reliable than

copper and can be used to deliver the telecommunications services that are and will be in demand in the near future.

14. A fiber network is consistent with Michigan Governor Jennifer Granholm's vision of broadband to every home and is optimal to meet the state's policy goals. Governor Granholm has committed Michigan to deploying broadband throughout the state. In her State of the State address on January 27, 2004, the Governor declared that "Broadband—high speed Internet access to information and customers—is no luxury. It's a necessity to compete in our high tech new world." Governor Granholm's goal is to have broadband connections in "every corner of the state by 2007," and as Michigan progresses, to "have broadband access to every business and every home."
15. The TELRIC study uses a "Passive" Optical Network, as opposed to an "Active" Optical Network. The network is "passive" in that it employs fiber from the central office to the customer premises—without the need for electronics in between. Passive Optical Network architecture uses a single fiber from the Optical Line Terminal ("OLT") in the central office to a passive (non-electronic) splitter, where it is split to serve up to 32 homes and businesses. This is a Point-to-Multi-point layout where there are no electronics in the field and the fiber is shared. The network uses "GPON" or "Gigabit Passive Optical Network" equipment, which is the current standard and which allows for the most bandwidth today. When using GPON equipment, there are 2.4Gb of bandwidth available from the OLT to share with the 32 premises. The bandwidth at each premise can be configured from 64kb up to 1Gb. A PON is most cost-effective for FTTP because it uses the least amount of electronics and reduced fiber sizes. A PON can generally reach customers within 20 kilometers or 12.4 miles of the central office, which fits well with most of the participating MECA companies' geographic serving areas.
16. On the other hand, an "active" optical network would employ electronics or "optronics" between the central office and the customer premises. Active Network architecture uses a single fiber from the Broadband Aggregation Server ("BAS") to the premises. This is a Point-to-Point layout where BASs are placed out in the neighborhood and may feed up to 400 or 500 homes or businesses. Bandwidth can be configured for up to 100Mb to each home or business out of a 48 port BAS. The throughput is dependent on the bandwidth allocated to that BAS. Because this is a Point-to-Point layout, the network is more fiber-rich than in a PON design. With an active system, bandwidth to the premises is only limited to the electronics used at the ends because it is point to point, but it is more expensive because of the need for and cost of electronics between the central office and the customer premises.
17. Fiber optic rings with OLTs are part of the network design in areas where there are remote pockets of higher density. Use of these rings is sometimes necessary for reliability to ensure that the Commission's standards for quality of service are met, and these rings are the most-efficient, least-cost, forward-looking technology to use under the circumstances.

18. The network also has a fiber optic ring design to link the central offices of multi-exchange companies with nearby or adjacent exchanges.
19. The study uses a Centralized Splitter Design in a Star configuration. It is centralized in each splitter location and has one or more splitters in a cabinet. The Star configuration is a configuration that follows rights-of-way when reasonable and branches out along the way. This configuration contributes to reduced costs.
20. The network employs dual routing to the tandem for reliability and to meet quality of service standards.
21. Generally, the network uses one OLT per exchange except if the total loop length from the central office to the furthest customer exceeds 20 km or 12.4 miles or if there is a need for redundancy. For economic reasons, the study uses an 18,000 route feet serving area design from a splitter to the premises. If the premises are within 18,000 route feet of the central office, the splitter is located in the central office.
22. This study continues the use of universal technology widely deployed and in use today.
23. At the customer premises, the study uses an Optical Network Terminal ("ONT"). The ONT is an optical Network Interface Device ("NID") and its main function is to convert optical signals to electrical signals. An ONT provides the necessary electronics at the customer premises. It provides ports for the customer to plug in devices, such as analog phones, Ethernet equipment, or T1 equipment. The ONTs in the TELRIC study are the appropriate ONTs to meet the GPON standard.
24. For residential and small business customers, the ONT is capable of simultaneously handling two high definition video channels, one other NTSC (National Television Systems Committee) video channel, three megabytes of data, and four voice conversations. For some larger businesses and multi-dwelling units, because of the types and quantity of services going to the premises, the configuration of the ONT is changed by adding a card to add capacity. The particular ONTs in the study were chosen to represent the reasonable projected demand per premise. The same ONTs would be used if a customer desired only one voice communication path, and there would be no cost difference in the forward-looking network.
25. The fiber strand size is dependent upon the number of customers on a particular route for this PON. In this study, 24-strand fiber is the minimum size used in the field for main lines. This size fiber is readily available and therefore the least expensive size of fiber for main lines. It is commonly available as an off-the-shelf item. Smaller sizes generally require special orders, causing increased costs and delay in delivery. The type of sheath used for the drop differs from the sheath for main lines, primarily in terms of its protective covering. The fiber size for the drop is two strands, which is the minimum needed to provide service and reliability.

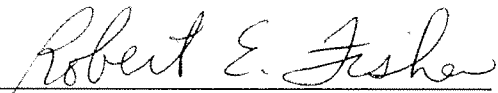
26. Fiber size is determined by the number of transport systems that must traverse each route. All transport systems need at least two strands of fiber—one for transmit and one for receive. If the systems are in a ring configuration with diverse routing for security and protection, only two strands are used. No redundant strands are required because of diverse routing. However, in a point-to-point configuration with no diverse routing, four strands are used. The two additional strands form a redundant path in case the primary optics of the transmission equipment fail.
27. With regard to the mix of aerial and buried cable, there is no fixed ratio of aerial, buried and underground cable. Each company has a different design for its forward-looking network that depends on the terrain and other factors specific to each service area. Each company either designed its own forward-looking network or relied on an engineering consultant to design the network. In the real world, companies do not approach a network design with fixed ratios of plant in mind. The companies were instructed to use whatever plant type is necessary as long as it was most efficient, least cost, and forward-looking. The result is a reasonable mix based on the specific circumstances facing each company in its serving area.
28. The forward-looking network has only one switch per company except for multi-exchange companies where central office locations are more than 20 route miles apart. The switches are digital soft switches and represent the least-cost, most-efficient technology. OLTs are used in place of stand-alone or remote switches with multi-exchange companies.
29. Regarding the central office switching equipment, MECA determined the investment necessary to provide switching for the anticipated access lines and inter-switch trunking as follows:
 - a. Switch manufacturers, engineering firms and small telephone companies provided input regarding what was the least-cost, most efficient known and proven technology that is currently available to provide the switching that is expected to be demanded on the network. The switching architecture that best meets the Commission's costing principles is a known generically as a "soft switch."
 - b. The cost of the soft switches for the size companies involved in this study is approximately the same across manufacturers. A prevalent and respected switch manufacturer (the "Vendor") worked with MECA on costing out a generic switch for this study.
 - c. The Vendor provided: the cost of a Base Configuration (a Class 4/5 SIP-2000 Softswitch, which includes initial capacity of 2000 SIP lines/trunks and a 250 simultaneous call Session Border Controller); the cost to install initial capacity of 2000 SIP lines/trunks; the cost of additional Session Border Controllers; and the cost of TDM cards for the provision of non-Internet-protocol inter-switch trunking. SIP refers to the newer Session Inflation Protocol and TDM refers to older Time Division Multiplex standards for telecommunications.

- d. The size of needed switching equipment is based on each company's access lines and required inter-switch trunking circuits and the Vendor's standard of 3.9 CCS per line, which it uses when initially sizing switches.
 - e. To come up with the least-cost most economical design, the first step was to determine the line/trunk capacity that needed to be installed on the soft switch. To do this, access lines and required interexchange switch trunks were added together and then divided by the switch fill factor of 90%. This result was then divided by 2000, (the smallest increment of line/trunk capacity that can be added to this switch). The cost of additional line/trunk capacity was calculated by rounding down this calculation to a whole number and multiplying it by the cost of the incremental line/trunk investment.
 - f. This installed line/trunk capacity provides connection for each access line and switched inter-switch trunk; however, it does not provide capability to switch all the traffic between these lines and trunks. To determine that switching capacity, the access line count was divided by the switch fill factor of 90%. The result of that equation was multiplied by the Vendor's switch sizing factor of 3.9 CCS, to arrive at the number of CCS that switch is expected to experience at the busiest hour. This number of CCS was then looked up in the Erlang .005 trunk sizing tables, which sets forth the minimum factor that can be used to reasonably assure that each company meets the MPSC's current quality of service standards regarding blocked calls. The result from the trunk sizing was then divided by 250 (the smallest increment that a company can add in switching capacity). The cost of the additional switching capacity investment was calculated based on this result.
 - g. Because the interexchange network to which this switch will connect is not IP-based, a TDM port for each inter-switch trunk was added at the cost of \$50 per TDM port.
 - h. The foregoing capital costs were totaled to determine the switch cost for each company.
 - i. This amount was then multiplied by the switch engineering factor of 12% and an amount was included for Michigan Use Tax based on the current law (which exempts 90% of switching investment from Michigan Use Tax) to arrive at the total switch cost that was included in the study.
 - j. The SIP Capacity Cards are equivalent to the current switching architecture investment in port cards. This portion of the total switch cost was allocated to the port, with the remaining cost of switching allocated to switching.
30. Fill factors are estimates of network utilization, stated as a percentage, that spread the cost of an entire facility over the anticipated revenue-producing units. To perform this adjustment, the cost per unit of usage is divided by the fill factor.
31. The study uses fill factors of 80% for distribution and transport plant and 90% for central office equipment, which are the same factors used in the prior MECA study. These are applied to quantities at the beginning of the study period—not the anticipated quantities.

These fill factors are appropriate objective, long-run factors for the participating MECA companies.

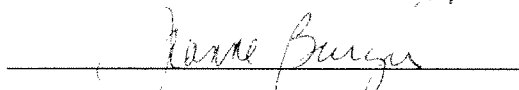
32. MECA did not apply a phase-in approach or design the fill factors to meet demand at a specified time in the future, such as five years. The particular fill factors used in the MECA study represent the percentage of capacity use that is optimal from an efficiency standpoint, so that it would be more cost effective to add the next increment of capacity instead of increasing the use of the existing facility. Thus, these objective fill factors remove excess reserve capacity, but include capacity for administrative, testing, and maintenance purposes as well as an appropriate amount for needed reserve capacity. In accordance with prior Commission decisions, these fill factors are not a target not to be exceeded for any piece of the network but, rather, are an average for the network as a whole.
33. The costs of the network components are unit costs based on current prices that are representative of costs expected to be incurred by companies participating in the study.
34. The loading factors are standard loading factors. Installation costs are based on actual costs incurred by companies participating in the study.

Further, affiant sayeth not.


Robert E. Fisher

Subscribed and sworn to before me, this 29th day of June, 2006

Notary Public, State of Michigan, County of Barry
My Commission Expires Apr 9, 2006



JEANNE BURGER
NOTARY PUBLIC BARRY CO., MI
MY COMMISSION EXPIRES Sep 9, 2006



WHY FIBER IN PREMISES NETWORKS?

MERRION EDWARDS, DAVID ALLEN, PHILLIP BELL

Over recent years, optical telecommunication technology has matured, while the performance requirements for premises networks have increased dramatically. The ever-increasing bandwidth requirements have driven significant increases in the cost of copper network systems, while technological maturity has led to relative declines in the cost of optical systems. In the light of these changes, the historical economic arguments against using fiber in the premises should be reexamined.

These days we demand increasingly higher performance from the premises network, but at the same time we expect “plug and play” installation, declining installation costs, and an increasing network lifecycle. Today the performance and cost advantages of optical fiber relative to copper technology in relation to modern premises networks applications are evident.

Modern Networks Must Support Higher Data Rates

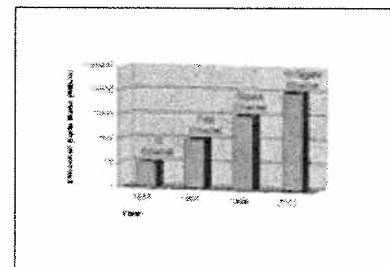
The Ethernet example: higher data rates

In the 11 years from 1994 to 2005, the Ethernet revolution drove the progressive development of higher bandwidth Ethernet standards from 10 Mb/s to 10 Gb/s, as shown in *Figure 1*. The associated consumer demand for increasingly higher bandwidth premises networks forced concurrent development of copper and fiber cabling bandwidth capability.

Modern Networks Must Have Higher Bandwidths

Higher bandwidth: multimode optical fiber has outlived four generations of copper cable

Despite numerous upgrades to UTP copper cable, fiber bandwidth and reach capability have always remained significantly ahead of copper. In order to compare the relative capabilities of copper and fiber as transmission media, we must consider the bandwidth-distance product, given in MHz.km. *Figure 2* shows that in 1985, 50 μ m multimode optical fiber could support up to 500 MHz.km, which was equivalent to 500 Mb/s over a distance of 1000 m. UTP copper cabling of that era (Cat 3) could support less than 10 Mb/s over a maximum distance of 100 m, or 1 MHz.km. This comparison continues through 2005 with the proposed fourth upgrade of UTP



(See Appendix A)

Figure 1: During the years from 1994 to 2005, the Ethernet revolution drove bandwidth requirements for premises networks from 10 Mb/s to 10 Gb/s

(Cat 7). Very significantly, *Figure 2* shows (on a logarithmic scale) that one generation of multimode fiber has outlived four generations of UTP copper cabling.

We Still Expect Simple Installation of the Network

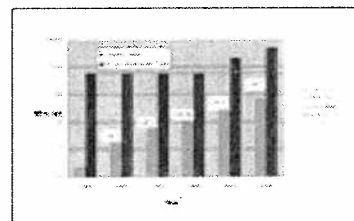
Certification testing of fiber is short and simple

Optical fiber networks have, since their introduction in the 1980s, only been required to conform to one simple installation test procedure; link attenuation. Even in 1990, Cat 3 copper cables required four different test procedures before certification. As the bandwidth requirements have increased, certification testing of copper cabled networks has become more involved and more time-consuming. As shown in *Figure 3*, the new higher bandwidth Cat 5, Cat 5e and Cat 6 cables require 15 separate test procedures in order to achieve system certification. By contrast, optical fiber networks continue to need only to conform to one simple installation test procedure. Clearly this leads to far shorter testing times, and installation costs will be reduced accordingly.

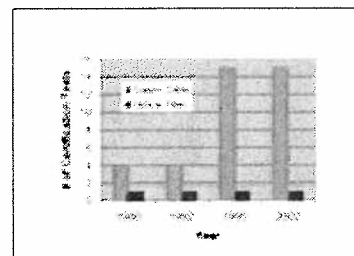
Optical fiber installation is becoming a simple "plug and play" procedure

The new high bandwidth categories of UTP cable are becoming increasingly more difficult to terminate. In order to pass certification testing and to suppress noise from electrical cross-talk, Cat 5e and Cat 6 cabling now require the twists to be maintained to within 13 mm of the termination point. Considerable attention must also be paid to the compatibility of cable sections, connectors and termination components in order to avoid impedance mismatches.

As optical technology has matured and installation experience has increased, the termination of premises optical networks is becoming a simple "plug and play" procedure. New optical terminators like the Duplex LC, which terminates two fibers in a connector that snaps in like an RJ-45 phone jack, are replacing the traditional SC-type connectors. The Duplex LC is more user friendly, and being half the size of a SC connector while providing simple termination for two fibers, has doubled the port density of optical fiber systems. There are also higher density MPO connectors that provide connectivity for an array of 1 x 12 fibers.



(See Appendix B)
Fig 2: Comparison of evolution of relative bandwidth-reach (MHz.km) performance of copper cabling versus 50 µm multimode optical fiber over time.¹



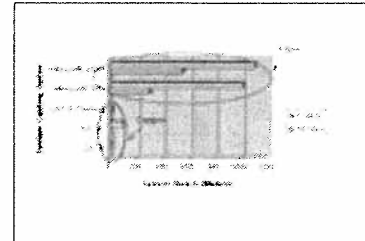
(See Appendix C)
Fig 3: Copper networks require a far greater number of post-installation tests than optical networks. High data rate copper networks now require 15 separate tests to achieve system certification.

1. After Cat 3, copper cabling underwent four upgrades (Cat 5, Cat 5e, Cat 6 and Cat 6e) from 1994 to 2005, and a fourth upgrade (Cat 7) is now under consideration. During the same time, optical fiber underwent only one upgrade, when in the year 2002, MMF upgraded from LED-optimized to laser-optimized fiber, which now offers a bandwidth of 10 Gb/s over up to 550 m or up to 4.7 Gb/s over 1 km (4700 MHz.km). Cat 6e, the nearest competitor to laser-optimized MMF, can only offer 10 Gb/s over 100 m or ~500 MHz.km.

Modern Premises Networks Must be Flexible and Future-proof

Superior reach and flexibility

The premises network of today must have the flexibility to provide for current network needs while having the capability to facilitate the upgrades and extensions that may be required in the future, without re-cabling. Figure 4 illustrates that for 1 Gb/s and 10 Gb/s systems, copper cabling can severely restrict the distance capabilities of a premises network. The greater-bandwidth reach capability of optical fiber translates into a greater distance capability for any given data rate. Laser-optimized fibers will provide premises network connectivity at 1 Gb/s and 10 Gb/s out to 1100 m and 550 m, respectively. The Cat 5 standards for UTP copper-based premises cable systems (TIA/EIA-568-A) provide for a maximum of 100 m reach at 1 Gb/s and Cat 6 provides for only 5 m reach at 10 Gb/s. In addition, the cable for the 10 Gb/s copper solution cannot be easily field terminated.



(See Appendix D)

Fig 4: Premises network reach limitation as a function of cable selection and data rate

When installed in non-environmentally controlled areas, the distance capability of copper cables can be further reduced, as elevated temperatures ($>20^{\circ}\text{C}$) distort electrical properties such as insertion loss (attenuation due to increased electrical resistance). By contrast, laser optimized optical fiber systems are relatively temperature insensitive and hence have the flexibility to be installed in such adverse environments.

For many office blocks, the distance from the main equipment room to individual work stations will exceed a copper network's upper distance limit of 100 m. Consequently, copper cabling systems will need extra office space and power to locate and drive the electronics in the additional TR rooms required to increase the system reach. This further reduces the flexibility of high data rate copper network architectures.

Modern Networks Must Have High Reliability and High Security

Network reliability and security is of utmost importance in modern telecommunication systems. System downtime must be avoided as network maintenance increases the operating costs (OPEX). Network security must be guaranteed, as increasing levels of sensitive information are transferred over intranets and the Internet.

Dielectric properties and EMI immunity provide high reliability

It is estimated that 60 percent of all copper-based network outages are caused by faults in cabling and cabling-related products. Copper facilities, unlike fiber, are not dielectric and so can conduct stray electrical currents and lightning strikes that can damage sensitive electronic transmission equipment. Susceptibility to electro-magnetic interference (EMI), cross-talk and impedance mismatching are other major factors that cause noise and errors in copper systems. EMI radiating from power, radio and microwave sources can couple into copper cables, creating network errors that

result in downtime. Cross-talk originates from EMI. The signal-carrying copper cables themselves radiate electromagnetic energy, which, when picked by adjacent copper cable, results in cross-talk (also known as alien cross-talk). Copper connectors can also introduce cross-talk — near-end cross talk (NEXT) or far-end cross talk (FEXT). This interference is especially pronounced when full duplex traffic is being carried, as is the case in practically all GBE over copper applications. Impedance mismatching occurs mainly at patch panels and telecommunications outlets and results in a significant portion of the signal being reflected back to the receiver and resulting in severe signal attenuation. EMI, cross-talk and impedance mismatching are factors that are often exacerbated by poor installation, but their effects can also be augmented by changing environmental conditions or cable disturbance. For copper cables carrying 10 GBE signals, the high power levels in the cables mean that alien crosstalk becomes a significant issue. Optical fiber carries light rather than electricity and so it is not affected by EMI, cross-talk or impedance mismatching. Optical fiber cable therefore offers much greater reliability and, in addition, has the capability to operate without concern at 10 Gb/s and also in adverse environments where there are high levels of electrical noise, such as factory floors, close to power lines or fluorescent lights. While copper cable will be designed to offset these factors, users will lose design flexibility and “real estate” in the more dense areas of the network.

EMI immunity provides high network security

The electromagnetic properties of copper cabling can also have an adverse impact on the security of UTP copper networks. In this increasingly data-driven world, the security of information is of prime concern for the private individual as well as for large corporations. The electromagnetic energy inherently radiated by copper cables can be picked up in a metal-based conductor without any interference to the transmitted signal. Hence, with the appropriate technology, unprotected UTP cables can be tapped and therefore present a security risk. By contrast optical fibers cannot be tapped without interrupting the transmitted signal and therefore offer much greater levels of security.

For Optical Fiber Networks This All Leads to Network Cost Savings

Over the lifetime of a premises network the inherent costs that need to be considered include both the installation costs and the lifetime running costs of the network as detailed below:

- Capital expenditure (Capex)
 - Cabling and components, such as wall outlets, patch panels, patch cords & connectors
 - Electronic equipment, including switches, routers and network interface cards
 - Office space for equipment location
 - Labor costs for installation and testing the system
- Operating expenditure (Opex)
 - Power supply and environmental control
 - Downtime, including costs to repair and cost of impact on productivity
 - Network management, including costs of network changes
 - Recabling associated with network upgrades to enable higher bandwidth

Installation costs of high-data-rate optical and copper networks are reaching parity

In the early days of optical premises networks, the cost of optical-to-electronic (O-E-O) conversion was prohibitively high, often making copper networks a more attractive solution. Advances in fiber technology and the economies of scale associated with higher fiber and photonic component production volumes have pushed the cost of fiber and its associated system components down to new competitive pricing levels. In the interim, optical fiber systems have been demonstrated to require less office space and have lower power requirements. Concurrently, premises network data rate requirements have increased from 10 Mb/s to 10 Gb/s in the years since 1995. In the 1980s, when commercial optical fiber-based premises network systems first became available, copper systems could readily deliver the necessary bandwidth and distance capabilities. By contrast, the new higher bandwidth demands of today's gigabit Ethernet (GbE) and 10 gigabit Ethernet (10 GbE) premises networks place a great strain on the performance capabilities of unshielded twisted pair (UTP) copper cabling, resulting in higher UTP cable manufacturing costs and lengthy installation test procedures. As a result, UTP cable and installation costs have risen significantly, such that the cost of installation of modern high bandwidth copper-based premises networks are now at parity with the cost of installing an equivalent optical fiber network.

Optical fiber networks enable much lower operational costs than copper networks

Optical fiber systems need less environmental control in the duct space and — due to their superior reach — need less equipment located in the telecommunications room. As a consequence, optical systems enable significantly reduced power consumption. In addition, the higher reliability of optical networks gained through their dielectric properties and associated EMI immunity yields further significant operational savings.

Optical fiber networks facilitate lower cost network management

Flexibility is the key to the design of modern data centers, and enhanced flexibility enables savings in network management time. Data centers need to rapidly adapt to changing network requirements, facilitating higher data rates, enabling new connections, and bringing servers online or off-line with the minimum of delay. The cables carrying optical fiber are so slim that during initial installation many surplus fibers can be provisioned in order to facilitate rapid future network changes.

Network upgrades are the most significant operating cost. As illustrated in *Figure 2*, the lifecycle of optical fiber is far greater than that of copper networks. Over the years this feature has yielded great cost savings for premises optical fiber network managers as fiber performance has kept pace with the bandwidth requirements of the Ethernet revolution, while copper networks have required numerous stages of recabling in order to enable increasing data rates.

If we consider operating costs as well as the capital expenditure associated with initial network installation, the total installed lifetime cost of fiber will be much less than that of copper. Further, more detailed, information on the relative costs of fiber and copper networks is given in the cost model prepared by the Fiber Optics LAN Section (FOLS) of the Telecommunications Industry Association (TIA) (www.fols.org/resources).

Conclusion

It is widely accepted that optical fiber premises networks offer much greater bandwidth and reach capabilities over UTP copper alternatives. There are several examples that illustrate the enhanced performance capabilities of optical fiber lead to network cost savings in terms of reduced installation and operating costs. As the relentlessly rising bandwidth demands of the Ethernet revolution continue, the installation and maintenance costs of UTP cabling have increased significantly, such that it has become more cost-effective to deploy optical rather than copper networks in high data rate premises systems.

Appendix A

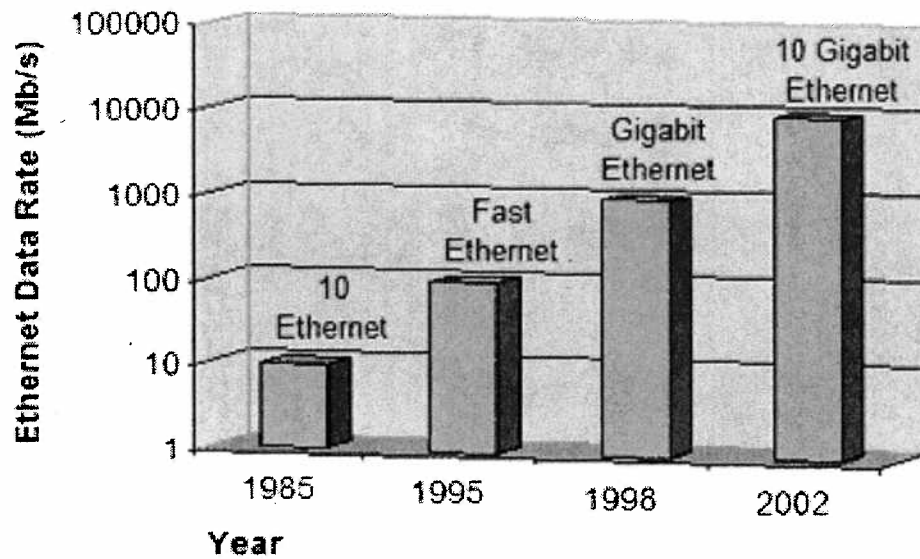


Figure 1: During the years from 1994 to 2005, the Ethernet revolution drove bandwidth requirements for premises networks from 10 Mb/s to 10 Gb/s

Appendix B

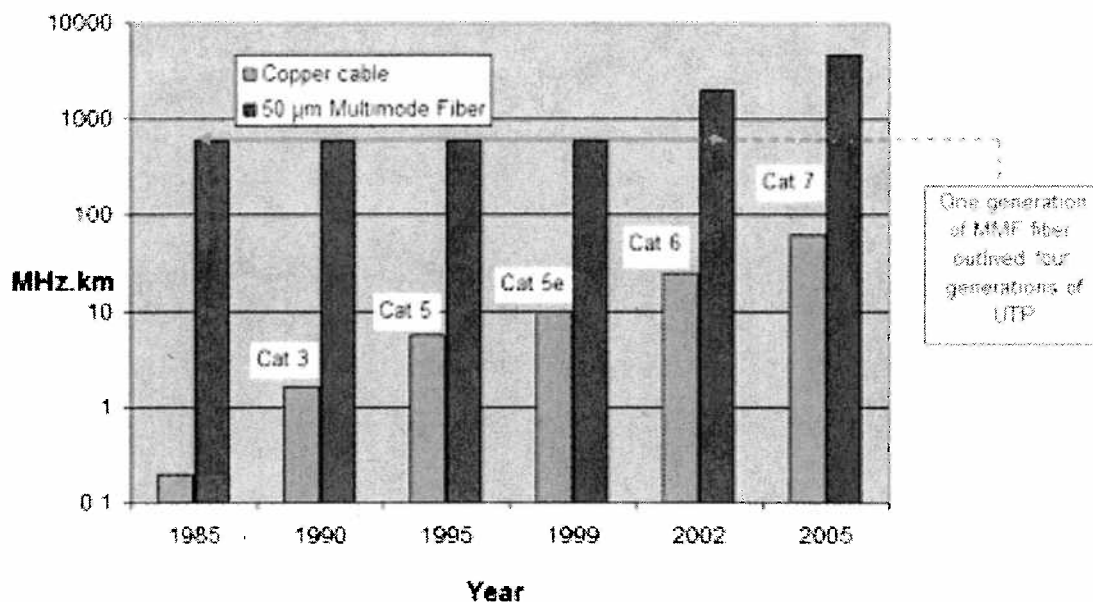


Fig 2: Comparison of evolution of relative bandwidth-reach (MHz.km) performance of copper cabling versus 50 µm multimode optical fiber over time.

Appendix C

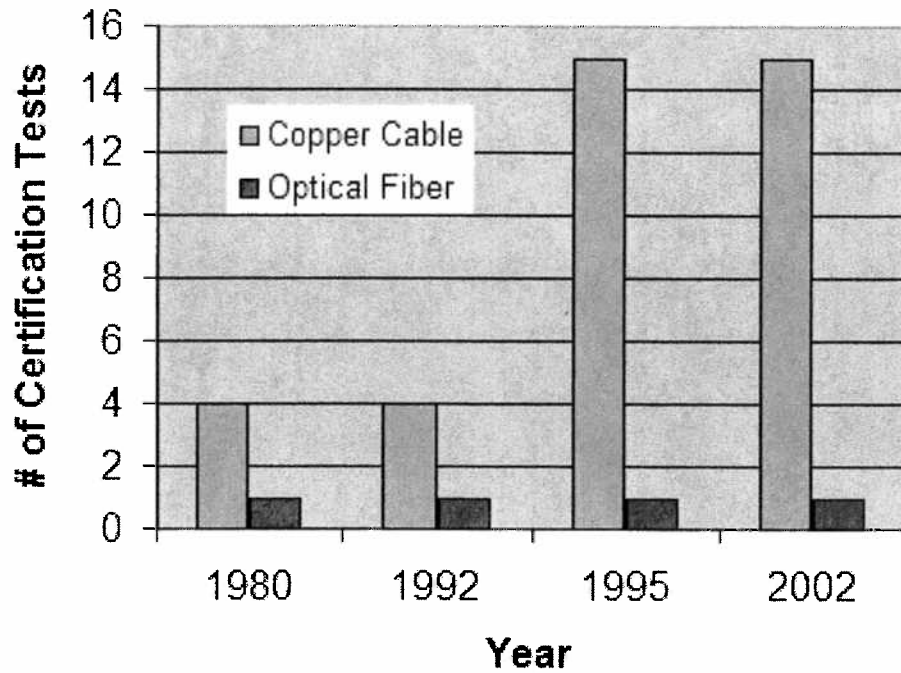


Fig 3: Copper networks require a far greater number of post-installation tests than optical networks. High data rate copper networks now require 15 separate tests to achieve system certification.

Appendix D

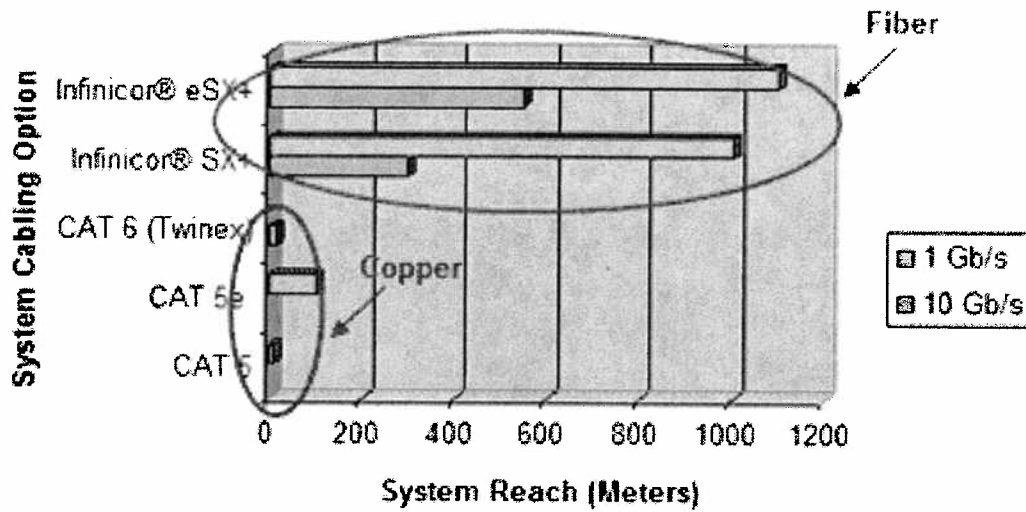


Fig 4: Premises network reach limitation as a function of cable selection and data rate.

AFFIDAVIT OF DAVID S. McCARTNEY

I, David S. McCartney, being duly sworn, state:

1. I have personal knowledge of the facts set forth below, and I am competent to testify to them as a witness.
2. The firm of McCartney & Company, P.C., Certified Public Accountants, employs me. I am Vice President of the firm and Manager of our Marquette office. In addition, I am responsible for supervising special studies, rate-setting and regulatory issues related to the telecommunications industry.
3. I am a Certified Public Accountant and registered in the State of Michigan.
4. I graduated from Michigan Technological University in 1976 with a B.S. in Mathematics. In 1979, I received my M.B.A., with an emphasis in Finance, from the University of Notre Dame.
5. With regard to telecommunications, since 1971, the firm of McCartney & Company, P.C. or its predecessors have employed me at various times to help on various engagements for many telephone companies in the state of Michigan. With McCartney & Company, P.C., and its predecessors, I have supervised many audits of telephone companies and have had responsibility for preparing the mathematical analyses of various telephone plant account lives to arrive at proposed lives and salvage values. I have developed general ledger systems to properly account for access. Also, I have worked on projects for the independent telephone industry, including the Telecommunications Association of Michigan ("TAM") and the Michigan Exchange Carriers Association ("MECA"), regarding access charges, average schedule access settlements, pooling operations, and deferred tax accounting. I served MECA for several years as assistant pool administrator. Within our firm, I am the subject matter expert on items related to toll and local access and the respective cost studies and issues. Additionally, I have been involved in many engagements of a general nature regarding accounting and taxes.
6. I have testified before the Michigan Public Service Commission ("MPSC" or "Commission") for Kingsley Telephone Company in Case No. U-6690 regarding a study that I had prepared projecting operating results for ten years. I also testified for Michigan Bell Telephone Company in Case No. U-9214 regarding the validity of Michigan Bell's assertion that the transfer price of net book for the mobile service and assets of Michigan Bell, taken as a whole, is greater than the fair market value. I have also testified in Case No. U-9007 regarding the revenue requirements and

demand data for the MECA intrastate intraLATA access pool. I have testified for MECA in its intrastate access rate case, Case No. U-9590, regarding (a) how the data from MECA's member companies were compiled; (b) how the projected demand quantities were determined; (c) how projected revenue requirements were determined; (d) how the revenues that MECA's members would generate based on the demand quantities and MECA's intrastate tariff; and (e) the mechanism that MECA proposed for recovery of the difference between MECA's revenue requirement and MECA's projected revenues from mirrored rates. I have testified for Baraga Telephone Company in Case Nos. U-10533 and U-10930 on the rates to be charged for various basic local exchange services. I have testified for Allendale Telephone Company in Case No. U-10779 regarding rate changes for certain basic local exchange services, discontinuing certain services, and filing revised tariff sheets. I testified on MECA's behalf in Case No. U-11298 involving a dispute between MECA and Ameritech regarding Feature Group C terminating switched access service. I also testified in Case No. U-11446 for Ace Telephone Company *et al.* regarding the justness and reasonableness of these companies' filed local call termination rates. Further, in Case No. U-11898 I testified and prepared exhibits in support of Kaleva Telephone Company's request to (i) restructure the rates of certain basic exchange services, and (ii) file revised tariff sheets. In Case No. U-11899, I testified on behalf of TAM in relation to the establishment of a Michigan Universal Service Fund. In Case No. U-12146, I testified on behalf of Lennon Telephone Company in relation to Lennon's request for authority to restructure the rates of certain basic local exchange services. In Case No. U-12168, I testified on behalf of Baraga Telephone Company in relation to Baraga's request for authority to restructure the rates of certain basic local exchange services. I prepared testimony and exhibits on behalf of Allendale Telephone Company in Case No. U-13436, on behalf of Deerfield Farmers' Telephone Company in Case No. U-13449, on behalf of Ace Telephone Company of Michigan in Case No. U-13489, on behalf of Westphalia Telephone Company in Case No. U-13605, on behalf of Waldron Telephone Company in Case No. U-13533, on behalf of Ogden Telephone Company in Case No. U-13606, on behalf of Carr Telephone Company in Case No. U-13760, on behalf of Sand Creek Telephone Company in Case No. U-13625, on behalf of Pigeon Telephone Company in Case No. U-14195, on behalf of Chapin Telephone Company in Case No. U-14438, and on behalf of Hiawatha Communications Inc. (for its four operating companies Chippewa Telephone Company, Hiawatha Telephone Company, Midway Telephone Company and Ontonagon County Telephone Company) in Case U-14456 to provide support for their proposals to expand their local calling areas and to adjust their rates for basic local exchange service. I also submitted testimony in the form of an affidavit on behalf of several rural LECs in Case No. U-14678, involving an interconnection arbitration with Verizon Wireless,

and in Case No. U-14731 to support various primary basic local exchange service tariff filings.

7. The purpose of my affidavit is to address various issues relating to the MECA Total Element Long Run Incremental Cost ("TELRIC")/Total Service Long Run Incremental Cost ("TSLRIC") study being submitted in this case, including the nature of a joint cost study, comparison of this study to the previous MECA study, the annual capacity carrying charge factor, demand quantities, expense levels, growth rates for demand quantities and expenses, cost of capital and capital structure, depreciation, shared and common cost markups, and the Commission's costing principles. I worked on MECA's previous two cost studies, which were approved by the MPSC in 1998 in Case No. U-11448 and in 2000 in Case No. U-12261. I am familiar with the Commission's costing principles as laid out in Case No. U-10620 and Case No. U-11103 and applied them when participating in preparation of the MECA study.
8. The MECA TELRIC study is a joint cost study prepared on behalf of eight individual telephone companies who are members of MECA. The study is joint in that it uses a single model and the same input parameters. Since the participating companies are similarly situated and each company submitted company-specific data as input to the 2006 MECA TELRIC study. Algorithms that utilize growth, economic, and other operating influences relative to company-specific data develop forward-looking costs for these companies. The end results constitute each company's TELRICs. It is not a proxy model or proxy study.
9. This study is not a mere update to the MECA TELRIC study approved in Case No. U-11448 or U-12261. There are cost differences between the two studies. There are several explanations for the cost differences. First, this study is being performed on behalf of eight MECA member companies. The previous MECA TELRIC studies were performed on behalf of 24 and 14 member companies, respectively. Second, this MECA study uses current input prices which have changed since the last two studies. This model selects the fiber size based upon all transport systems, not samples. Third, the distribution plant in this study is based exclusively on fiber while the distribution plant in the previous MECA studies was based on a mixture of fiber and copper. Fourth, the switching architecture in this study is based on Internet protocol ("IP") while in the previous study it was based on time division multiplexing ("TDM").
10. The study results are the forward-looking economic costs of providing the network elements that make up the telecommunication services the companies involved in this study provide today. The results represent a minimum revenue requirement to cover the direct and shared costs of providing these network components. These

network element costs (TELRICs) can be combined to satisfy the minimum pricing level as required by the Michigan Telecommunications Act's prohibition on charging a rate for a service that is less than the provider's TSLRIC of providing the service.

11. With regard to mapping of costs to rates, because the actual cash flow is generally not received in the same month as the service is provided, the results need to be modified to include the cost of capital between the end of the month when the service is provided and the date of receipt of payment for those services. In addition, the model does not address the cost of uncollectible revenues. Any mapping of TELRIC to a service would need to include an adjustment for this cost. Discussions with management indicate an expected uncollectible percentage of **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]** for local service, **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]** for toll access service, **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]** for CMRS termination service, **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]** for local transport and termination, also known as Extended Area Service ("EAS") termination service or local call termination service, and **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]** for all other telecommunication services. The local percentage would be applicable to basic local exchange service, vertical feature charges, service connection charges, and interstate and intrastate end-user line charges.
12. This TELRIC study collects data on every transport route. A complete census is taken of all fiber optic terminal equipment and cable. By doing this, investment dollars are more closely matched to demand quantities.
13. This study accounts for support asset investment through the shared and common cost markup factors.
14. This study counts the minutes of use ("MOU") of the switch matrix, the part of the soft switch not related to ports. Specifically, this study counts one minute of use as the time that the switch matrix spends completing a local call. The MECA TELRIC study in case U-11448 used dial equipment minutes ("DEM") as the basis for usage. The methodology used in this current study is the same as used in Case U-12261. It more accurately measures the time the switch is used. This has the effect of counting an originating and terminating minute of use on a single call as the same minute of use.

15. This study uses the same cost of capital and related capital structure that were ordered by the Commission in Case No. U-11448 and U-12261. The study uses this same cost of capital even though a higher cost of capital may now be justified. The rural telecommunication market today and in the near future is rife with uncertainty. The added uncertainty is a result of many factors and trends, including: loss of customer lines; reductions of toll access minutes and associated revenues; uncertainty regarding the FCC's treatment of access charges; pending revisions of telecommunications laws, rules and regulatory schemes; uncertainty over the future of universal service funding; increased demand for funds; declines in historical funding sources; skyrocketing fuel prices and their effect on inflation; the continuing trend by the Federal Reserve to increase interest rates; large telecommunications providers pushing for elimination of access charges in favor of bill and keep; failure of CMRS providers to pay bills for traffic termination; nonpayment of bills, substitution of usage, litigation and other aggressive tactics used by large providers to artificially reduce their obligations to pay for the usage they send to the rural companies; and competition from wireless providers, cable and satellite companies, and Internet-based telephony. Despite this added uncertainty and increased risk, the MECA study accepts the more conservative cost of capital use in the prior studies.
16. This study relies on the economic lives implied in the Michigan Department of Treasury tables that were used to determine true economic cash value for telecommunications assets for all telecommunication providers for property tax assessment for the period ending December 31, 2005. Salvage values are taken into account in how the economic lives were determined from those tables.
17. The network is sized and equipped to serve the demand that will be expected at the beginning of the TELRIC study period. The TELRIC Model designs a telecommunications network to meet demand expected at the beginning of the first year and assumes that additional plant will be added at the beginning of each n year to meet any increase in demand. In the MECA study n was set at five years, which represents a reasonable planning horizon. The composite growth rate of g for access lines was set at **[CONFIDENTIAL INFORMATION BEGINS HERE]**
[CONFIDENTIAL INFORMATION ENDS HERE], which is a reasonable forward-looking growth rate given the last five years of experience. Furthermore, with newer technology, such as Gigabit Passive Optical Network ("GPON") technology, being currently deployed, demand for second lines will continue to decrease because GPON technology offers the capability to provide high-speed data, video and voice service over the same line.
18. Equipment sizes are determined by dividing the projected demand quantities by the fill factor and then selecting the next largest equipment size that meets that

demand. Unit costs are found by dividing average network costs by the projected average demand over the study period.

19. The average demand over the study period was used because it represents an average between two extremes. In a negative growth period, if the study were to use the demand expected at the end of the study period as the basis for determining cost per unit, there would be significant under-recovery of network cost over the study period. Likewise, in a negative growth period, if the study were to use the demand expected at the beginning of the study period, there would be a significant over-recovery of network cost. In a positive growth environment, the reverse of these two statements are true. In the case of positive or negative growth, using the average demand over the study period reconciles both extreme points in time. Therefore, there is neither over-recovery nor under-recovery of costs over the study period. This is the same basis for demand that was used in the studies approved in Case No. U-11448 and Case No. U-12261.
20. The MECA TELRIC study utilizes the same methodology for annual capital carrying charge factors that was accepted by the Commission in Case No. U-11448 and U-12261. There were two key facets of this methodology. The first was simply calculating the annual capital carrying charge factor for each asset class based upon the cost of capital, the capital structure, economic lives, salvage values, and a composite tax rate. The second key facet was that since the TELRIC study only calculated costs for the actual network and network components and did not calculate costs for buildings to house the central office equipment, remote switches, or company offices, the model included a markup to the annual capital carrying charge factor to account for these facilities. Further, this calculation assumes payment at the end of the month in which the services are provided and includes no component for working capital.
21. With regard to expense levels, this study differs from the previous study in which MECA proposed to use expense data from a single year, which was rejected by the Commission in favor of the MPSC Staff's proposal to average data for three years or employ and arbitrary reduction to expense levels. The current study uses expense levels that are based on average data for five years that are projected forward to account for new technologies and efficiencies. Direct cost relationships are determined by taking the past 5 years of direct expenses related to a specific type of network component and dividing it by related gross assets.
22. Shared and common expenses are treated as expense levels that need to be recovered. With the exception of adjustments to account for salary and other compensation increases and as long as the forward-looking network is reasonably close in size to the existing network (which it is), shared and common costs should

not be expected to change much over the study period. Because small companies have small staffs and cannot expect efficiencies through manpower reductions, most of the accounts where salaries get booked should be adjusted to account for inflation. If productivity increases are expected, then the productivity increases should be applied against the inflation rate. In this study, inflation and productivity increases offset each other.

23. Many of the shared expenses in the 66XX, customer operations expense accounts are directly related to the number of customer lines that are served. Billing costs, for example, are a function of the number of bills that must be generated and mailed. Costs in accounts that MECA has determined are a function of the number of access lines, are held constant at a per line level. The adjusted account levels reflect the average costs that would reasonably be expected over the study period.
24. Many of the 67XX, corporate operations expense account levels are for employee salaries and benefits. Since small companies cannot maintain the same level of quality service with manpower reductions, the accounts where salaries are booked have been adjusted to account for customary wage increases.
25. Our adjustments to the shared and common account levels began with an analysis of historical patterns in salary levels, by job title. The National Telephone Cooperative Association ("NTCA") publishes average salary levels, by job title, each year for its members. The companies participating in this joint MECA TELRIC study are very similar to most of the NTCA members. We examined the change in salaries from 2000 to 2005 and estimated future salary levels based upon current economic conditions relative to the conditions that existed between 2000 and 2005.
26. The forecast of the rate of change for salaries in the previous study corresponded very closely to MECA's predictions. In this study, we have maintained or lowered those growth rates. Nevertheless, we expect the technology job market to experience higher than normal growth rates over the next five years. The demand for qualified employees in technical fields is greater than other fields. As a result, we expect the salaries for technical jobs to increase at even a faster rate. The following table (Table 1) shows the results of the NTCA salary survey, the resulting annualized rate of change, and our forecast of the rate of change for the next five years.

Table 1

[CONFIDENTIAL INFORMATION BEGINS HERE IN LAST COLUMN]

[CONFIDENTIAL INFORMATION ENDS HERE]

27. Shared and common costs are calculated by marking up the annual direct costs calculated by the TELRIC model. The markup factor is calculated by dividing the shared and common costs by the total annual direct cost of the network.
28. All 65XX Plant Nonspecific Operations and 66XX Customer Operations accounts are treated as shared costs. In addition, with the exception of the motor vehicles account, all 611X Network Support expenses are also treated as shared costs. Motor vehicle expenses were treated as common. The 6121 land and buildings expense is allocated to both shared and common expenses. The allocation to shared expenses is based upon the historical ratio of direct plant assets to total assets.
29. The following table (Table 2) shows the account 66XX expenses that were not included in the shared cost category.

Table 2

Acct #	Expense Description
6622	Directory Assistance Expense
6622	Local Operator Handled Charges Expense
6622	Intercept Charges Expense
6622	Busy Line Verification Expense
6622	Yellow Pages Expense
6623	Billing and Collection - Toll Expense
6623	Miscellaneous Service Order Expense
6623	Initial Service Order Expense
6623	Subsequent Service Order Expense
6623	Restoral of Service Expense
6628	Dual Party Relay Service Expense

30. Directory Assistance, Local Operator Handled Charges, Intercept Charges, Busy Line Verification, and Dual Party Relay Service TELRICs are calculated by taking the AT&T Michigan, Verizon, or other providers' charges for these services and passing them on with no markup. Consistent with the previous study, no markup is used. In the previous study case, the Commission accepted Staff's position by indicating that the markup proposed by MECA could not be used in the absence of a specific study identifying the related increased costs, such as negotiation and billing. For purposes of the current study and in light of the limited time allowed by the Commission for preparing and submitting the current cost study, MECA accepts the MPSC Staff position that no markup be used. Access to operator services is being provided as part of basic local exchange service. However, the costs of the services provided by the operator are not part of that service. In addition, dual party relay service costs should also be included in the costs of basic local service.
31. All 67XX Corporate Operations expense accounts are treated as common costs. In addition, all 612X expenses are treated as common expenses. However, land and building expenses get allocated to common expenses based on the ratio of support assets to total assets. Common and shared expenses have been reduced to eliminate costs associated with non-regulated activities. MECA used revenue sources to allocate common expenses.
32. The model separates the "support assets" into two categories: shared and common. Shared includes assets such as land, buildings, motor vehicles, test equipment, and other work equipment. Shared assets are required for the provision of more than one telecommunication service but not all telecommunication services. Common includes assets such as land, buildings, motor vehicles, office equipment, furniture, and general purpose computers that are used in providing all telecommunication services. Land and buildings are assigned to shared and common based upon the ratio of direct plant assets to total assets. Motor vehicles are assigned based upon actual dollar value of vehicles used for each purpose.
33. With the exception of account 6531, power, the driver of the remaining 6500 plant non-specific expenses and most of the 6700 corporate operations expenses is simply salary growth rates. No increase is projected for non-salary items. For the 6500 accounts, MECA used the salary survey published by the National Telephone Cooperative Association to calculate salary growth rates for 37 different staff positions in telephone companies (see Table 1). The following list shows the positions that MECA associated with each expense account:

- Account 6532, Network Administration Expense — Central Office Supervisor.
- Account 6533, Testing Expense — Field/Staff Engineer.
- Account 6534, Plant Operations Administration Expense — Plant Supervisor.
- Account 6535, Engineering Expense — Field/Staff Engineer.
- Account 6711, Executive Expense — General Manager.
- Account 6721, Accounting and Finance Expense — Accountant.
- Account 6723, Human Resource Expense — Human Resource Manager.

34. There were several accounts where no clear driver could be identified. Account 6512, provisioning expense, for example could not be linked to access lines or salary growth rates. In cases where no clear driver could be identified, we assumed inflationary growth of 1.5% per year. The following list shows accounts for which we could not identify a clear cost driver:

- Account 6512, Provisioning Expense.
- Account 6722, External Relations Expense.
- Account 6724, Software Expense.
- Account 6725, Legal Expense.
- Account 6726, Procurement Expense.

35. The MECA study designs a network to meet the demand that is expected at the beginning of year one. Unit costs related to MOU were found by dividing the average network costs for those units by the average demand over the study period. MOU per access line and access line growth were determined by examining the past five years and the impact of the forward-looking network design. For example, because this network is designed to handle broadband service universally, dial-up traffic on this network is expected to approach zero or a negative one hundred percent (-100%) growth rate. MOU for each year were projected by using a formula that takes into account current access lines, growth in access lines **[CONFIDENTIAL INFORMATION BEGINS HERE]**, **[CONFIDENTIAL INFORMATION ENDS HERE]** growth in MOU per access line **[CONFIDENTIAL INFORMATION BEGINS HERE]** **[CONFIDENTIAL INFORMATION ENDS HERE]**, and the number of years in the study (5 years). The average number of MOU per year over the study period was used for determining MOU unit costs.

36. A large portion of the Central Office Switch ("COS") investment that is not directly related to trunk and line ports is allocated on a MOU basis in accordance with the MPSC's TSLRIC costing principles. A COS is part of TELRIC network design in order to switch traffic; that is, to make a routing choice for traffic on the Public Switched Telephone Network ("PSTN"). This includes local originating traffic, access traffic, local traffic terminating from another LEC (including Voice Over

- Table 3**
[CONFIDENTIAL INFORMATION BEGINS HERE]

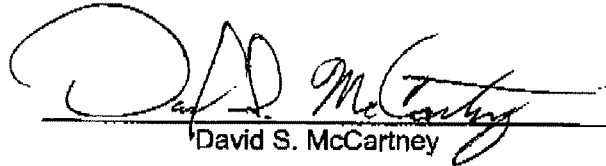
[illegible]

[CONFIDENTIAL INFORMATION ENDS HERE]

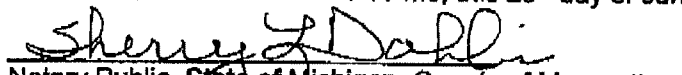
39. It is not appropriate to allocate the costs of non-traffic sensitive elements, i.e., loop and port, to services. Appendix A of the order in Case No. U-11103 requires companies to complete the costs for various network elements, not services. The elements can be combined to provide a telecommunications service.
40. Some costs are not related to the physical assets owned or leased by the companies but nevertheless are incurred in providing service and are part of the TSLRIC for a service. These costs are calculated based on the direct costs incurred.
41. Miscellaneous Service Order, Initial Service Order, Subsequent Service Order, and Restoral of Service total service long run incremental costs are calculated based upon the direct costs incurred in providing these services. Direct costs include loaded labor and material costs. These costs were multiplied by the expected average number of occurrences during the TELRIC study period.
42. In addition, end office local call termination charges have been identified and removed from the shared costs category. MECA has included the direct costs, by carrier, for end office local call termination, tandem switching, and tandem transport and have included these costs as separate network element costs that should be included in the cost of providing basic local exchange service. Consistent with the Commission's order in Case No. U-12261, no shared or common costs have been allocated to these elements. One of the costs of providing basic local service is the cost of terminating local traffic upon another carrier's network. The results in the study include a table summarizing the rates that AT&T Michigan and other carriers charge for terminating traffic. This is not exhaustive because new carriers might enter the market, existing carriers might change their tariff rates, or an individual company might negotiate a new interconnection arrangement with rates different from those stated here. These rates would apply on a per-minute-of-use basis for each minute of traffic that terminates upon another carrier's network and, in some cases, on a per-minute-of-use-per-mile basis. These costs are added to the switching and transport costs for all outbound inter-company EAS traffic when that traffic terminates on another company. When inter-company EAS traffic terminates to a participant in this study and when the EAS traffic is intra-company traffic, the TELRIC for the elements used to terminate local calls is the applicable cost result from this study.
43. As was done in the last study, MECA estimated that the total cost per message to process and bill for local usage is \$0.012. This includes \$0.006 for processing each message record and an additional \$0.006 to list the message on the bill. MECA has converted the per message costs to a usage-sensitive, per minute of

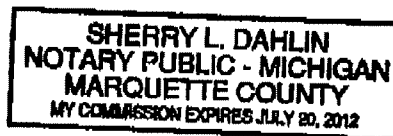
use cost. Assuming that the average duration of a phone call is approximately four minutes, MECA has included the cost of \$0.003 per MOU in the TELRIC cost summary.

Further, affiant sayeth not.


David S. McCartney

Subscribed and sworn to before me, this 29th day of June, 2006


Notary Public, State of Michigan, County of Marquette
My Commission Expires July 20, 2012



AFFIDAVIT OF RICHARD J. WALTKE

I, Richard J. Waltke, being duly sworn, state:

1. I have personal knowledge of the facts set forth below, and I am competent to testify to them as a witness.
2. I am employed by Market Perception, Incorporated where my title is President. My business address is 14213 NE 31st Ct., Vancouver, WA 98686-2255.
3. I have a Master of Business Administration Degree with a primary course of study in Telecommunications Management from the University of Dallas of The Graduate School of Management of The Braniff Graduate School. I also hold a Bachelor of Arts Degree in Business Administration from California Lutheran University and Associates of Arts Degree from Azuza Pacific University.
4. I founded Market Perception, Incorporated ("MPi") in November 2004. MPi is a Vancouver, WA, based business management services company established to provide research with definitive market analysis and a comprehensive decision strategic support ("DSS") component to develop, compliment and influence client business cases and general market perception. A discipline provided within DSS is complex cost and price modeling. Prior to MPi, I founded a sole proprietorship in June 2001, known as Abaxial Telecommunications Consulting. Before beginning my own companies, I worked for three years as National Marketing Director for CHR Solutions, Inc (CHR), a telecommunications consulting firm located in Dallas, Texas. Prior to CHR, I was employed for thirty years by GTE, Inc: finalizing my career at GTE World Headquarters in Irving, TX, as Strategic Planning Manager developing corporate level business cases to integrate contemporary technology solutions to advance efficiency and increased productivity within regulated operations. The primary focus of my GTE career was dedicated to the regulatory disciplines. I assisted to determine GTE operating company revenue requirements through settlement arrangements including Separations and Access Costs development and directly participated in original concept, development and filing of state and federal rates and tariffs for GTE. From January 1984 to September 1987, I worked on contract assignment as Staff Manager conducting cost study reviews of settlement pool member telephone companies in nine states on behalf of the National Exchange Carrier Association ("NECA").
5. I was asked by the Michigan Exchange Carriers Association, Inc. ("MECA") to review and familiarize myself with the Excel spreadsheets organized in workbooks that were the foundation of MECA's second joint Total Service Long Run Incremental Cost ("TELRIC") study.

6. The purpose of my affidavit is to support the TELRIC/TSLRIC (Total Element Long Run Incremental Cost/Total Service Long Run Incremental Cost) filing that is being made by MECA on behalf of its eight member companies in this case. I address the cost model, and inputs to the model. Excel spreadsheets organized in workbook format were used to develop the costs of a forward-looking, least-cost network. This is essentially the same model that was developed by Kiesling Consulting, LLC and used by MECA in its last joint TELRIC/TSLRIC filing.
7. I am familiar with the costing principles established by the Michigan Public Service Commission ("MPSC" or "Commission") in Case No. U-10620 and Case No. U-11103, and I applied them when participating in preparation of the MECA study.
8. As with the second MECA cost study model, this model utilized data for every transport route. A complete census was taken of all fiber optic terminal equipment and cables. By doing this, investment dollars are more closely matched to demand quantities.
9. The current TELRIC/TSLRIC study costs out each configuration for DLCs and fiber transmission equipment as needed for the forward-looking network. For example, if a carrier needs to transport 10 DS-1 circuits out to the meet point with the neighboring carrier, then the terminal equipment is sized and priced for 10 DS-1 circuits, not in increments of 28 DS-1s as in the first MECA TELRIC study.
10. The TELRIC/TSLRIC model selects all cable sizes and terminal equipment based upon projected demand quantities. Demand quantities have been gathered from Data Input Vehicle (DIV) Excel Worksheets provided to each of the participating companies. The worksheets were completed based upon the forward-looking network design as determined by each company. Future demand has been estimated by applying growth assumptions to the existing demand quantities. This future demand was then divided by a fill factor to determine the minimum network equipment size needed to meet that demand.
11. Each of the eight MECA member participating companies completed a series of DIV Worksheets corresponding to operating elements of a forward-looking all-fiber-optic network. Inputs by MECA participating companies were needed to satisfy algorithm requirements of three 2006 TELRIC Excel Workbooks, which together comprise the Kiesling Consulting, LLC base model used by MECA in its last joint TELRIC/TSLRIC filing. The DIV input data addressed Annual Carrying Charge development (ACF Module), current network operating specifics (Data Entry Module), and network usage and cost components (TSLRIC Module).

12. The DIV-ACF Module contains three worksheets which primarily detail (1) supporting financial requirements for the study including the percent of motor vehicle expense that is plant-related; (2) asset and expenses by Part 32 account for each of the past five years (2001 through 2005); and (3) revenues by account for each of the years (2001 through 2005).
13. The DIV-Data Entry (DE) Module contains six worksheets which primarily detail the number of access lines served and specific facilities providing services in the all-fiber-optic network. The specific worksheets were:
 - a. (1) DE-CoSpecInput, which provides the number of DS0 and DS-1 special circuit counts by Fiber Serving Area (FSA);
 - b. (2) The DE-Fiber Loop worksheet, which is used to record the length of each segment and to list the transport systems that are carried on each segment of fiber in the forward-looking network. A transport system is comprised of the transmission equipment that is utilizing the fiber. A transport system may be a simple point to point circuit or it may be a ring with multiple nodes. Each transport system requires at least two strands of fiber, one for transmit and one for receive. Normally, fiber optic systems will utilize diverse routing for protection. With diverse routing, a total of four strands are used: two each on two different routes towards the destination. Diverse routing allows the network to function in the event of a fiber cut. If a fiber is cut, the traffic has an alternate path to reach its destination. In a point to point configuration, four strands are still used, but they are all within the same sheath. The number of transport systems is used to determine the size of the fiber optic cable. The list of systems on the fiber provides demand information that is used to determine unit costs. Participants record the number of circuits that would be provisioned as if the network actually existed. Ultimately, the TELRIC/TSLRIC Kiesling Model projects the number of future circuits and divides the result by the fill factor to select the minimum size transport equipment necessary to meet that demand.
 - c. (3) The DE-DLC Input Sheet which inventories working lines by FSA and corresponding DLC.
 - d. (4) The DE-Term Equipment worksheet, which inventories the switched and special circuits traversing transport systems by route. This worksheet was used to input information regarding the total number of circuits on an entire transport system. These data are used to allocate the costs of the fiber optic cables and the common equipment of the transport equipment.
 - e. (5) The DE-PopControls worksheet, which provides total working lines per DLC and corresponding FSA.

- f. (6) The DE-MasterList worksheet, which provides sample subscriber network facilities by FSA. The number of working lines inventoried by DLC and corresponding FSA on worksheet (5), the PopControl worksheet is divided by the number of statistically determined sample subscriber network facilities by FSA per worksheet (6), the DE-MasterList to develop a weighting factor. The weighting factor by FSA is used to extrapolate the cost of the sample subscriber network facilities by segment to reflect the total cost of the subscriber network for each participating company on the same basis as the second MECA TELRIC/TSLRIC study. All loops were sampled as if the facilities between the central office and the customer were constructed from scratch. Statistics on each loop element (ONT, drop, aerial fiber, buried fiber, and underground fiber) were recorded until the loop terminated at the forward-looking DLC, remote switch, or central office.
14. The DIV-TSLRIC Module contains three worksheets designed to provide specific participating company data for:
 - a. (1) The number of working lines and associated residence percent of working lines.
 - b. (2) The circuits by type currently working through the company switch.
 - c. (3) The calculation of business versus residential ratios.
15. A MECA DIV was also completed to detail study input to be used equally for all eight companies on a "macro" view basis. The same set of MECA costs will apply to all the participating companies because of the geographic similarity of their serving areas, the similarity of their size, and the similarity of their purchasing power. These similarities justify the use of a single set of input costs.
16. The MECA DIV has a twelve worksheet requirement addressed to the three workbook segments Annual Carrying Charges (ACF), Data Entry [DE], and TSLRIC (TSL) of the Kiesling consulting, LLC TELRIC/TSLRIC Model. The MECA input provided factors and data that applied to the eight participating companies in recognition of the similar aggregate operating profiles. The twelve MECA worksheets were:
 - a. (1) The Pre-calculation worksheet which required input for the effective tax rates, avoided cost analysis—reciprocal compensation, and effective Minutes of Use tables for each of the last five years (2001 through 2005) for each participating company.

- b. (2) The ACF-Parameters worksheet which detailed the annual cost factor inputs (e.g. Weighted Average Cost of Capital or "WACC"), asset economic life, inflation rate, and avoided cost percentages for reciprocal compensation.
- c. (3). The ACF-DPRS Expense Worksheet that details depreciation expense by account for each of the last five years (2001 through 2005).
- d. (4). The ACF-11-24-DR that details customer service costs such as directory assistance expense, busy line verification, local operator handling, various service order expenses, line connection and number of restored service charges, and yellow pages expense.
- e. (5). The DE- Dollars per Service Order worksheet that details the cost of generating service orders by type (e.g. initial service order, subsequent service order, etc.) by participating company.
- f. (6). The DE-FiberCosts worksheet which details current unit costs for the ONT, and selected fiber cable sizes as used in the 2006 TELRIC/TSLRIC Study.
- g. (7). The TSL-Parameters worksheet which provide the uniform factors for application across all participating MECA Company data such as fill rates for fiber, switch, and circuit equipment; engineering loads and mark-up percents, growth rates, and applicable tax percentages, among other generally applied items.
- h. (8). The TSL-Cost Data worksheet which furnishes the fiber cable costs, common switch costs such as the base cost of the switch, main-frame, DLC related costs, annual software upgrade costs, Multiplexer (MUX) costs and any miscellaneous costs as required. These costs were input to the TELRIC/TSLRIC Model worksheets and applied to the applicable network units to ultimately derive forward-looking operating cost.
- i. (9) The TSL-DSL Costs worksheet was not used in this all-fiber-optic study as DSL service utilizes copper to derive broadband access which was an inappropriate application for this all-fiber-optic least cost forward-looking network design
- j. (10) The TSL-DS1NACC Worksheet provides costs for the DS-1 NACC for use in the TELRIC/TSLRIC Study
- k. (11). The TSL-TotNetwork AC worksheet provided opportunity to record the End Office Local Call Termination rate.

- I. (12). The MOUData worksheet was used to record the MOU by MECA participating company by jurisdiction. A determination of residential MOU versus business MOU was also provided.
17. The aggregate of the participating companies and overall MECA inputs were addressed to the corresponding cost development worksheets within the Kiesling TSLRIC model in the same way, and for all major components, as the prior study. Process formulations were essentially kept the same, except where necessary to accommodate unique elements that comprise the forward-looking least cost all-fiber-network. For example, the study calculates an annual carrying charge for a soft switch, rather than for a digital switch, since the digital switch has no function in an all-fiber network. All cable has reflected fiber only, with no copper included.
18. The DLC Input worksheet was used to input line data for each DLC and related FSA. The line counts recorded on these forms flow through to the DLC Costing Module and the Fiber Costing Module. This study calculates the cost of every DLC that is required in the forward-looking network. Costs are separated into switched and special service categories based on equipment devoted to providing each service and the bandwidth utilized by each service. Unit costs are calculated by dividing the total separated costs by forward-looking demand. This is a method that the Commission found acceptable in Case No. U-11815.
19. The TELRIC/TSLRIC Model determines the fiber size in the least cost forward-looking network by calculating the quantity of fiber strands necessary to carry the number of transport systems. The calculated number of strands is then used to determine the optimal fiber cable size. As a result, the network should be modeled as it would be built. Because of the relatively small size of the companies participating in the MECA study, the complete network can be modeled for everything but the loop element. Consequently, it was not necessary to assume a fixed fiber size and apply capacity costing principles.

Further, affiant sayeth not.


Richard J. Waltke

Subscribed and sworn to before me, this 29th day of June, 2006

Notary Public, State of WA, County of Clark
My Commission Expires June 28, 2006
Elizabeth E Anderson

