



Dark Fiber Program Review & Strategic Plan Development

October 30, 2015





Overview

- TVA's Fiber History
- TVA's Network
- What's Next



The Year Was 1988

1988 The Hubble Space Telescope Goes into operation to explore deep space and is still in full use today mapping our universe. A bomb is exploded on Pan Am Flight 103 over Lockerbie in Scotland on December 21st . Also Prozac is sold for the first time as an anti-depressant some of the great movies that year included Rain Man, Die Hard and A Fish Called Wanda

Cost Of Living 1988

How Much things cost in 1988

Yearly Inflation Rate **USA** 4.08%
Year End Close Dow Jones Industrial Average 2168
Interest Rates Year End Federal Reserve 10.50%
Average Cost of new house \$91,600
Median Price Of and Existing Home \$90,600
Average Income per year \$24,450.00
Average Monthly Rent \$420.00
Average Price for new car \$10,400.00
1 gallon of gas 91 cents

Below are some Prices for UK guides in Pounds Sterling

FTSE 100 Average 1750
Average House Price 61,020
Gallon of Petrol 1.67
Yearly Inflation Rate **UK** 4.9%
Interest Rates Year End Bank of England 12.88%

More Example Prices

Movie Ticket \$3.50
US Postage Stamp 24 cents
Dozen Eggs 65 cents
Gallon 2% Milk \$1.89
Pork Chops Lb 40 cents
Lotus 123 Spreadsheet S/W \$299.00
Star NSX Dot Matrix Printer \$189.00
Logitech Mouse \$89.99
Amiga Computer With Color Monitor \$849.00

IBM PC with 30Mb Hard Disk, Mono Monitor
and 512K Memory \$1249.00

Ford Taurus \$9,996
Volkswagen Rabbit \$7,104



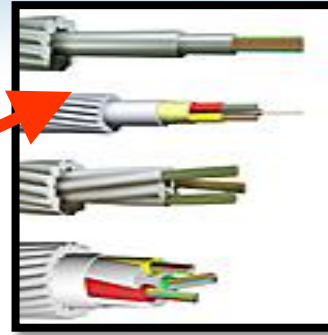
How Did TVA Get In This Business?

TVA placed an AD in the local paper stating:

“TVA would consider proposals from responsible communications carriers for joint construction of a fiber optic system . . . to support TVA’s internal telecommunications needs.”



What is Optical Ground Wire (OPGW)?



OPGW is a dual functioning cable:

1. Serves as the traditional ground wire for lightning protection
2. Contains optical fibers which can be used for telecommunications purposes



TVA's Fiber History

- Since 1988, TVA has installed over 3,400 miles of OPGW across the Valley
 - Partnerships
 - TVA capital projects
- TVA uses the fiber for internal operations:
 - Operation and control of the power system
 - Corporate communications
- Leverage surplus fiber to expand fiber foot print

Main driver: power system operations



TVA's Fiber Network: Current State

Map removed due to sensitive information.

Contact Dawna Qualls, djqualls@tva.gov,
for more information.

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3 Agreement Options

1. New Construction
 - Builds with mutual benefits
2. Fiber Lease
 - Surplus fibers
3. Swap
 - Leverage opportunities to expand fiber footprint



Swap Leverage

- Fiber Swaps: “traded” fibers on an existing TVA route for fibers/waves on an external party network to connect TVA facilities
 - Ring protection, connecting remote facilities to TVA backbone
 - Avoided capital expenditures and O&M
 - 1,954 miles of “swap” fiber added to TVA’s overall network
- Fiber Builds: leveraged existing TVA fiber routes with surplus fiber to build other strategic routes

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What's Next For The Program?

- Network Focus:
 - Installing fiber on new transmission lines
 - Replacement plans for aging infrastructure
 - Installing higher fiber count cables (144 fiber count)
 - Work with fiber partners for fiber and/or Ethernet solutions
- Balancing operation needs with other TVA missions:
 - Customer Delivery (LPCs)
 - Economic Development
- Exploring role in a Valley wide interconnecting network, rural broadband, and options to leverage constrained system



THOUGHTS?



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