

Joint Legislative Committee on Advanced Communications and Information Technology

12/7/2015

Steven Fulkerson, Executive Director

ARKANSAS RESEARCH AND EDUCATION OPTICAL NETWORK

Agenda

- Tech Talk
- ARE-ON Overview
- Policy Recommendation

Before we begin....

Committee is looking at a “last mile” problem

- How to improve the internet speeds to homes and businesses

... and we are going to stay at a high level.

Tech Talk

Tech Talk – Internet Service

Fiber and Copper

- **Important**
 - Bandwidth is Capacity
 - Capacity is measured in Kilo**bits**, Mega**bits**, Giga**bits**
- **Not Important**
 - Speed of electrons flowing across copper
 - Speed of photons flowing across fiber
- A 100 Megabit service delivered on Coax Cable has the same capacity as a 100 Megabit service delivered on Fiber Optic Cable
- Wireless is Different
- Fiber is the Best Long-Term Solution



How fast is a Gbps
Internet connection?

Tech Talk – Dark Fiber

Long Haul – Between Large Cities (Interstate)

Middle Mile – Between Medium Size Cities and Towns (Highway)

Last Mile – The last section to the Home or Business (County Road, City Street)

Tech Talk - Dark Fiber

What is fiber optic cable?

- A fiber optic cable consists of a bundle of glass threads
- Glass threads are referred to as **fiber optic strands**
- Typically used in pairs
- Number of strands in a cable ranges from 6 to 288+



Tech Talk - Dark Fiber

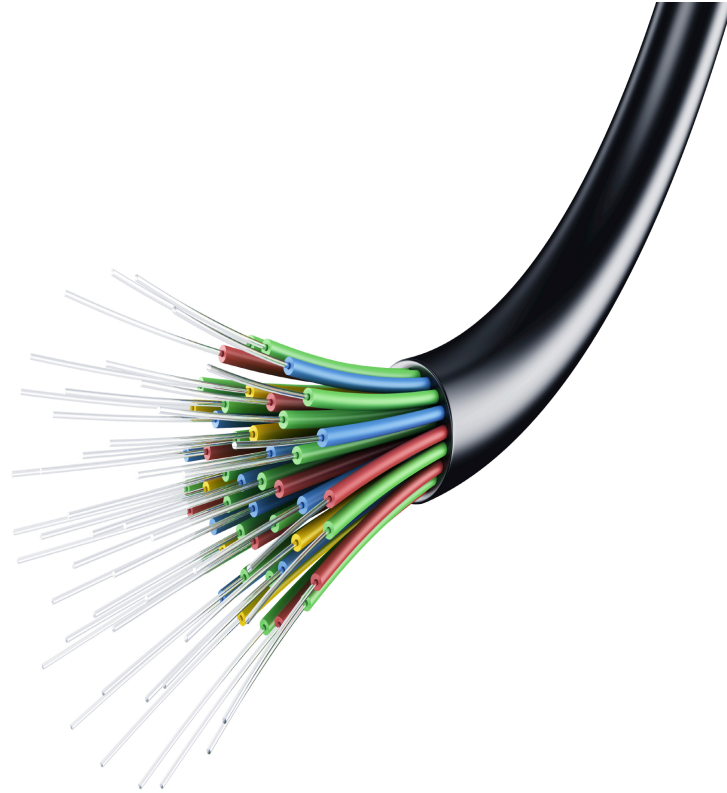
What is “dark fiber”?

- Fiber optic strands that are not being used

How is dark fiber used?

- Lighting it with lasers that pulse light over long distances

Tech Talk – Fiber Leases

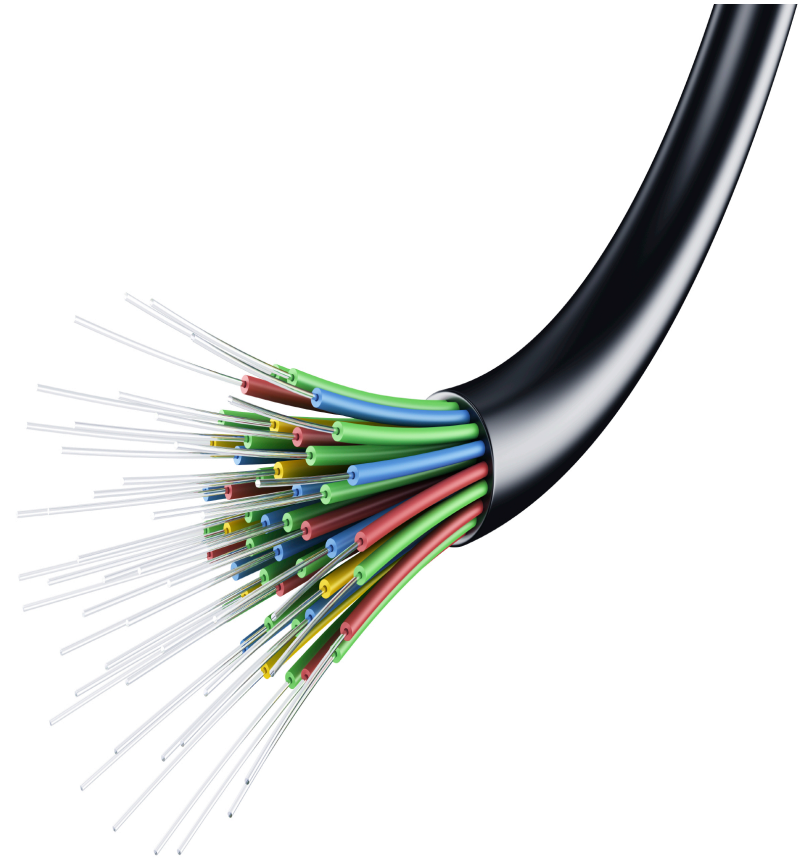


Tech Talk – Fiber Leases

- Two Options:
 - Indefeasible Right to Use (IRU)
 - Fiber Capacity Use

Typically a 10 or 20 year pre-paid contract

Tech Talk – Fiber Leases



Tech Talk – Fiber Leases



Tech Talk – Colocation Centers

Colocation Centers – A secure physical site or building where data communication converge and are interconnected.



ARE-ON Fayetteville Hut



Infomart Dallas Site
“Carrier Hotel”

ARE-ON Overview

ARE-ON OVERVIEW

ARE-ON Mission Statement: To promote, develop, and apply advanced application and communication technologies to support and enhance education, research, public service, and economic development.

ARE-ON OVERVIEW

Board of Directors:

- Presidents and Chancellors of the 4-year public institutions
- Two representatives from the 2-year colleges

Executive Committee:

Dr. Don Bobbitt – President of UofA System

Dr. Glen Jones – President of Henderson State University

Dr. Dan Rahn – Chancellor of UAMS

Dr. Chuck Welch – President of ASU System

ARE-ON Overview

- Phase 1 - \$8 million from Gov. Huckabee
- Phase 2- \$40 million from the Federal Broadband Technology Opportunities Program

ARE-ON OVERVIEW

Some of what we do:

- Operate a 2,300 mile fiber optic based network that connects 33 Higher Education Institutions

ARE-ON OVERVIEW

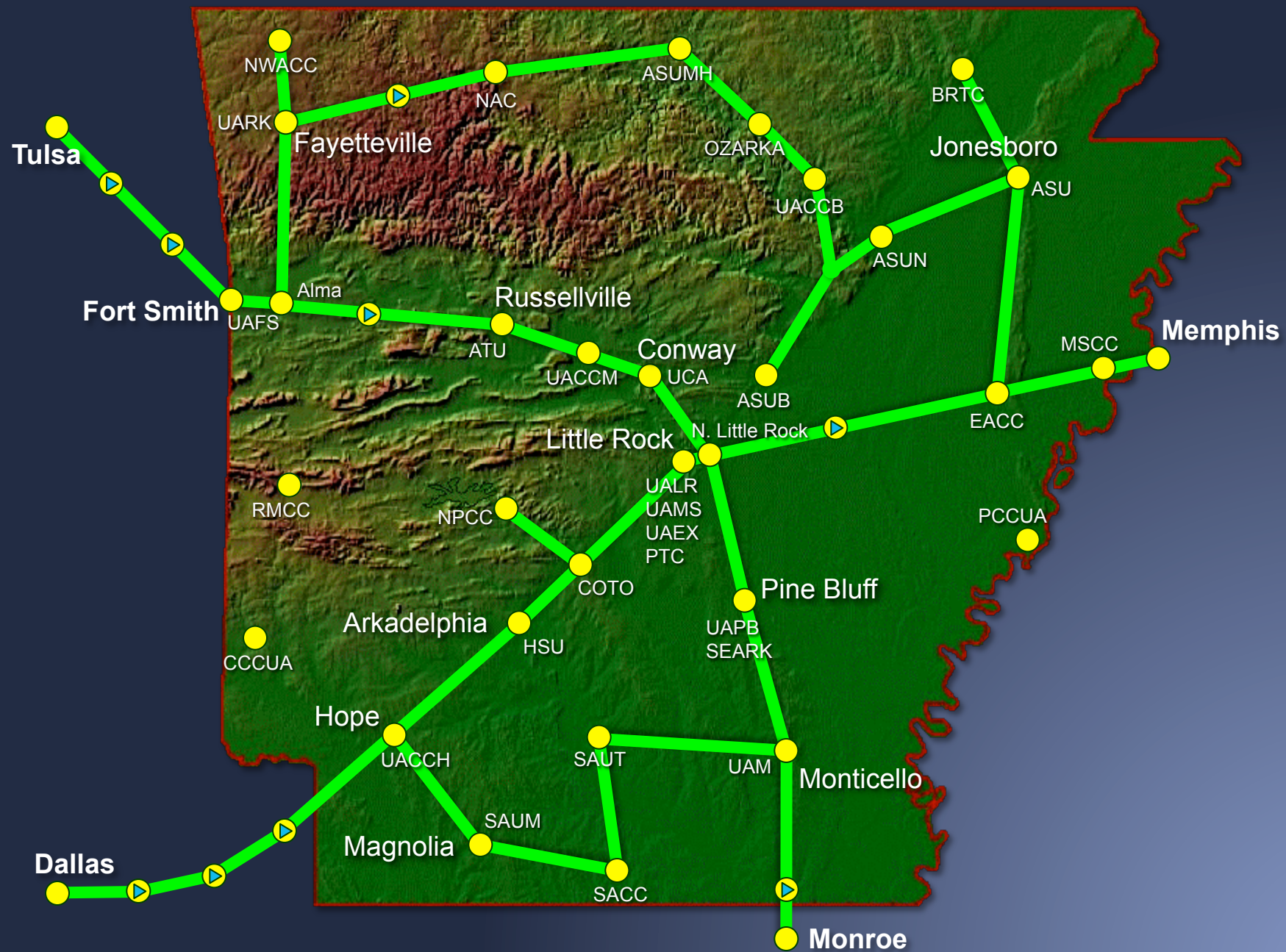
- Majority of fiber is leased (~2,200 miles) from commercial providers

ARE-ON OVERVIEW



South Arkansas Telephone Company
Your Link to the Telecommunications World

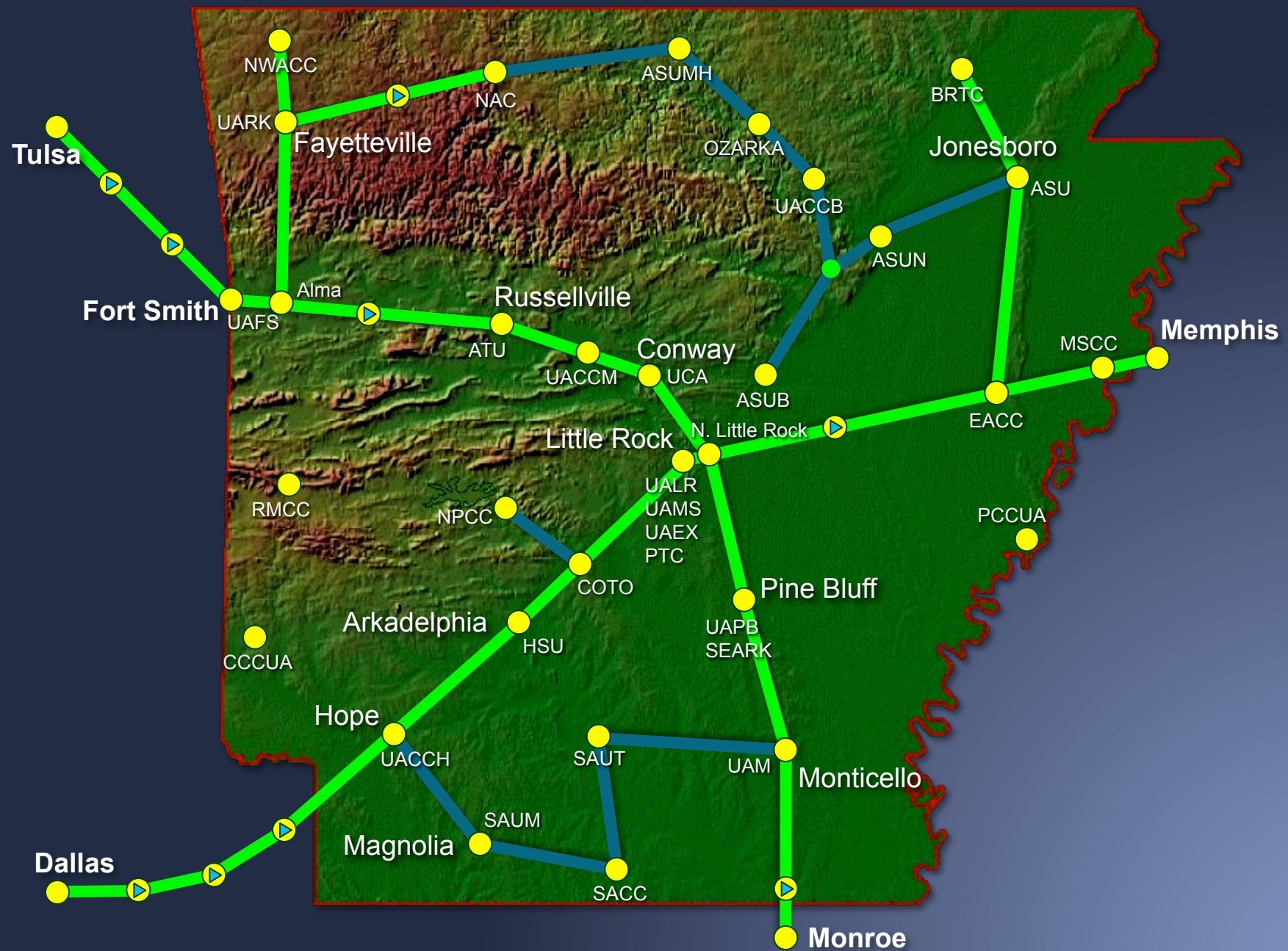






ARE-ON OVERVIEW

- Federal Broadband Technology Opportunities Program (BTOP) Project
 - **Public-Private Partnership Model**
 - Ritter
 - Satco
 - Yelcot / Mountain View Telephone





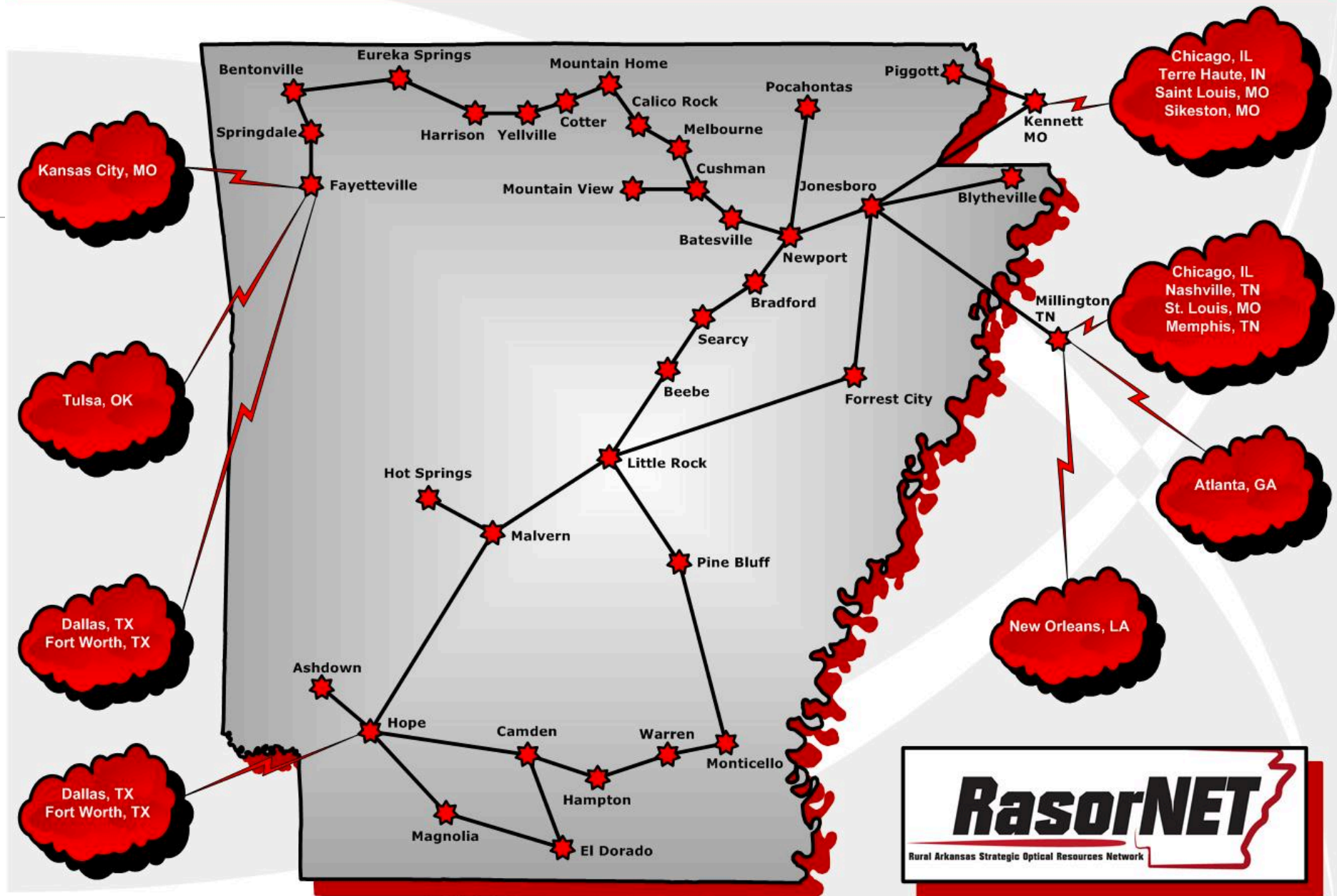
- Created by companies to help market **rural fiber networks in and around Arkansas.**
 - The **genesis was the AREON project** and it expanded with **the Arkansas eLink** initiative.
 - Current members include: **New Wave Communications, Ritter Communications, South Arkansas Telephone, and Yelcot Communications.**
 - Offer connectivity from 100Mbps to 10Gbps to **150+ communities in Arkansas (mostly rural)**
 - In Arkansas, **we mainly reach the areas not covered by ATT, CenturyLink and Windstream**
-
- Have the ability to direct connect to 350+ communities in IL, IN, LA, MO, TN, and TX
 - Connected to carrier hotels or peering points in Dallas and Chicago

Helpful Links:

www.rasornet.com

<http://www.rasornet.com/img/projects/rasornet.jpg>

<http://www.indatel.com/content/maps-members-network>



870-336-1668

info@rasornet.com

www.rasornet.com

ARE-ON OVERVIEW - Internet

Some of what we do:

- Operate a 2,300 mile fiber optic network that connects 31 Higher Education Institutions
- **Provide Unlimited Internet Bandwidth to our members**
 - Innovation, Research Activity, Cloud Computing, Disaster Recovery

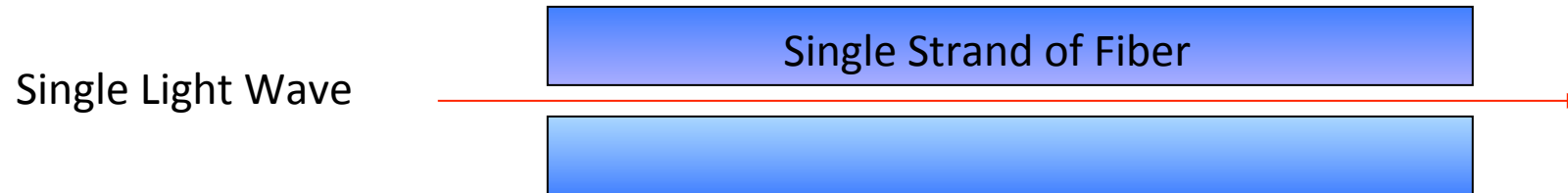
ARE-ON OVERVIEW— DWDM

Dense Wavelength Division Multiplexing (DWDM)

- DWDM turns a single strand of fiber into 80+ virtual strands of fiber by using different color lasers.

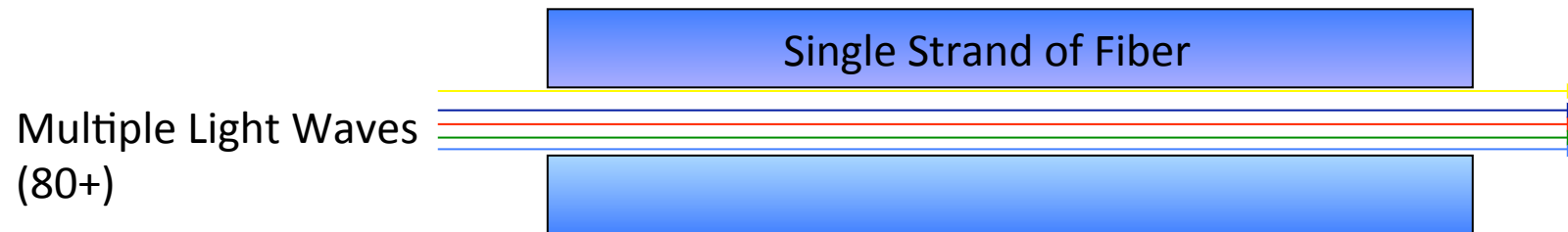
ARE-ON OVERVIEW— DWDM

Traditional Method

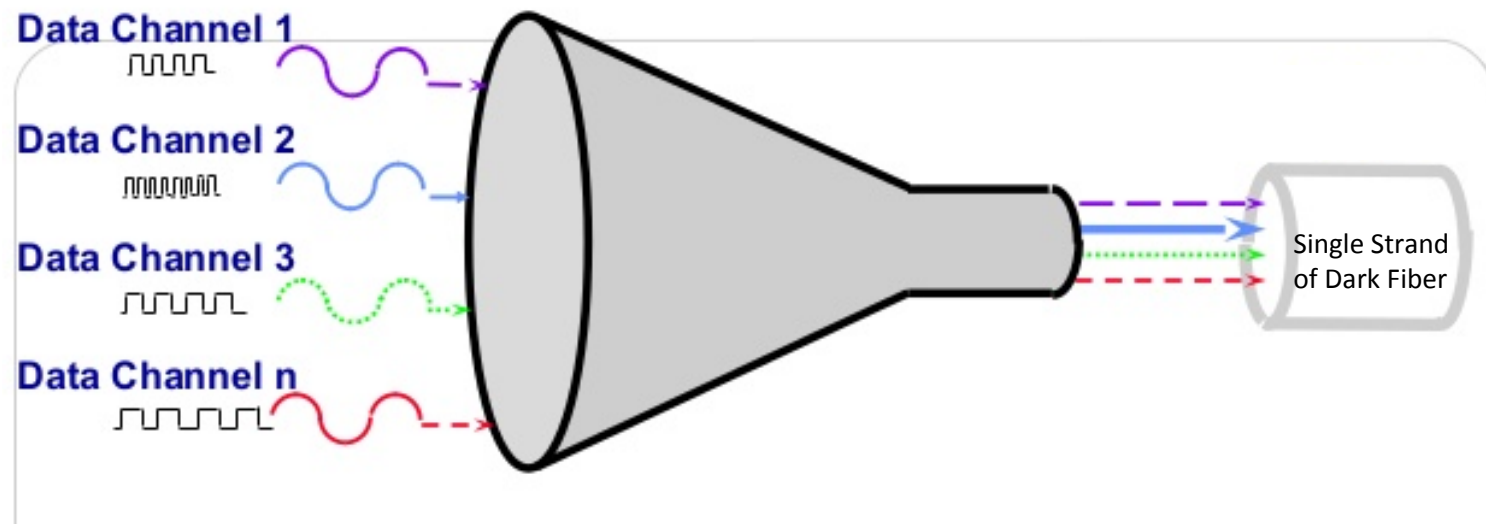


ARE-ON OVERVIEW— DWDM

DWDM Method



ARE-ON OVERVIEW– DWDM





ARE-ON OVERVIEW

DWDM + Dark Fiber = Unlimited Bandwidth

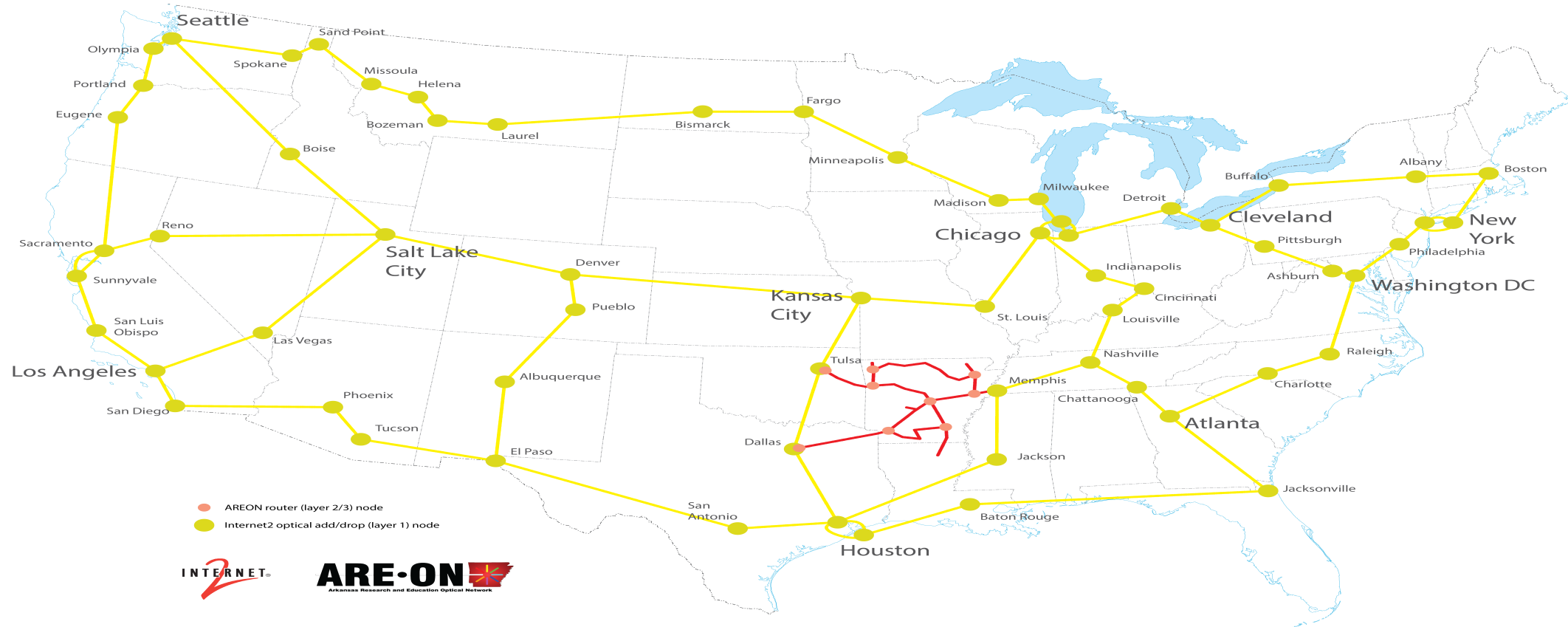
Carrier Hotels + Direct Peering + Purchasing in Bulk = Cheap Bandwidth

ARE-ON OVERVIEW

Some of what we do:

- Operate a 2,300 mile fiber optic network that connects 31 Higher Education Institutions
- Provide **Unlimited Internet Bandwidth** to our members
- **Serve as the Internet2 Research Connector for Arkansas**

National Research Network



ARE-ON OVERVIEW

Some of what we do:

- Operate a 2,300 mile fiber optic network that connects 31 Higher Education Institutions
- Provide **Unlimited Internet Bandwidth** to our members
- Serve as the Internet2 Research Connector for Arkansas
- **Facilitate technology and research initiatives**
 - Research Cloud

ARE-ON OVERVIEW

Some of what we do:

- Operate a 2,300 mile fiber optic network that connects 31 Higher Education Institutions
- Provide **Unlimited Internet Bandwidth** to our members
- Serve as the Internet2 Research Connector for Arkansas
- Facilitate technology and research initiatives
- **Provide a secure telehealth backbone network for UAMS E-Link Program**
 - Currently over 500 sites connected

ARE-ON OVERVIEW

Doctors use Telemedicine to save Batesville man's hand

BY ALEXIS ROGERS | THURSDAY, SEPTEMBER 10TH 2015



ARE-ON OVERVIEW

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Recommendation

Google fiber



Recommendation

CNET › Internet › Google Fiber heads to Austin

Google Fiber heads to Austin

The tech giant is wiring the Texas capital city with its Gigabit service.

Recommendation

AT&T Announces Intent to Build 1 Gigabit Fiber Network in Austin

...anticipate it will be granted the same terms and conditions as Google on issues such as geographic scope offering, rights of way, permitting, state licenses and any investments incentives.

Recommendation

1 State of Arkansas

As Engrossed: H3/13/15

2 90th General Assembly

A Bill

3 Regular Session, 2015

HOUSE BILL 1798

4

5 By: Representatives Wright, Eubanks, Bragg

6 By: Senators B. Sample, B. Pierce

7

8

For An Act To Be Entitled

9

AN ACT TO REQUIRE THAT THE RATES OF A PUBLIC UTILITY

10

FOR POLE ATTACHMENTS BE REASONABLE AND UNIFORM; TO

11

PROMOTE FURTHER BROADBAND DEPLOYMENT EFFORTS IN THE

12

STATE; TO DECLARE AN EMERGENCY; AND FOR OTHER

13

PURPOSES.

14



ACT NOW TO KEEP YOUR ELECTRIC RATES LOW



Ozarks Electric Cooperative
A Teachzone Energy Cooperative 

Dear Valued Member,

We need your help.

Out-of-state cable and phone companies are attempting to pass \$6 million of their annual costs to Arkansas electric cooperative members. If Arkansas House Bill 1798 is passed, your electric rates will go up, service and reliability will go down and your safety could be at risk. This is an unacceptable deal for our members and we think you will agree.

Tomorrow, **March 18**, the House Committee on Insurance and Commerce will vote on the bill. We can still stop this bill from passing, but we need you to act quickly.

What You Can Do

- Contact members of the committee and voice your concerns.
- Contact your state representative today and tell them to vote NO on this bill.
- You can view a PDF of the proposed bill and everything it includes [here](#).

You can also learn more about the bill on our [website](#). I appreciate your time and hope you will help us fight to keep your electricity affordable, reliable and safe.

Sincerely,

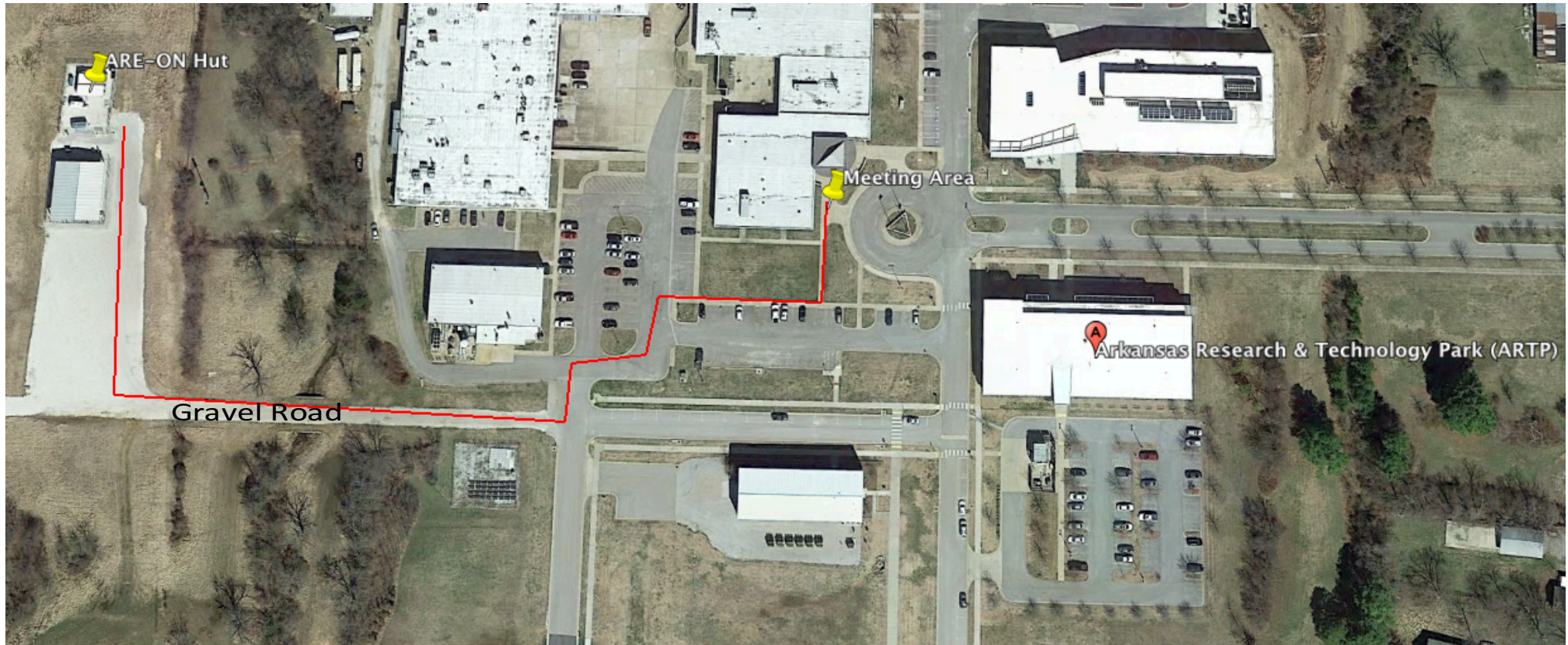


Recommendation

- Commission a Group to Look at Arkansas Broadband Investment Related Laws & Administrative Procedures

Directions to the ARE-ON Hut

Directions to the ARE-ON Hut



Thank You

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