

# Telecommunications Regulation and Broadband

**Presentation to Kansas Corporation Commission**

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# Overview

- Telecommunications History in a Nutshell
- Recent FCC Proposals and Actions
- Likely Effects on Kansas

# Common Law and the Origins of COLR

- In Merry Old England the courts applied “tort” duties to “public callings.”
  - Labor rates were regulated as early as 1349, after the plague reduced the work force.
- Early English and US courts assigned “common carriage” duties to coach drivers and related transportation enterprises.
  - Reasonable care for persons
  - Strict liability to deliver packages
  - No unreasonable discrimination
- Early “franchises” granted exclusive rights to private parties in return for making investments.
  - Often required “build-out” to serve an entire area.

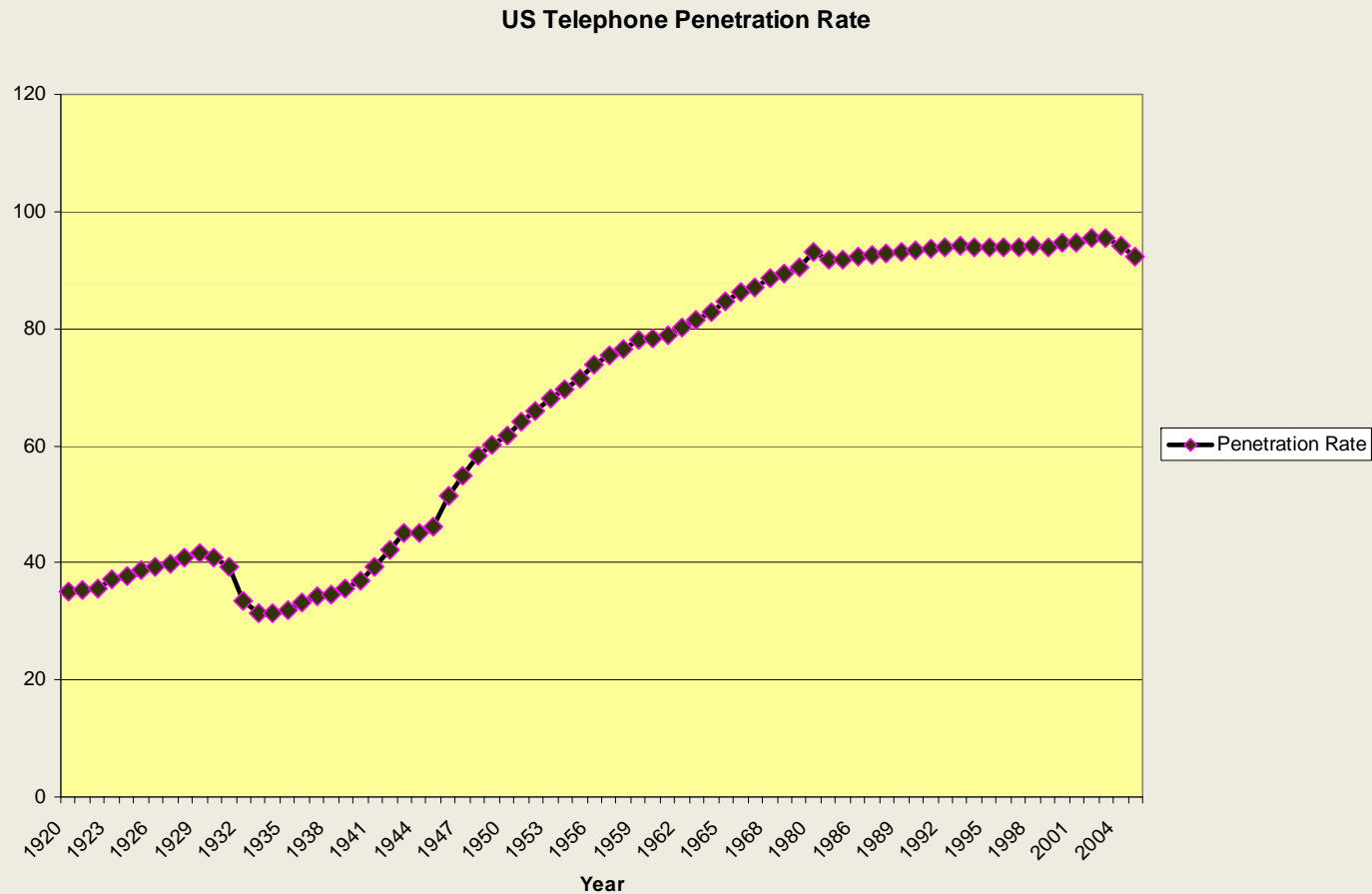
# The Twentieth Century

- States created utility commissions – 1890-1915.
- Congress Created FCC in 1934
- Basic concepts:
  - All communications have known points of origination and termination.
    - Exclusive state jurisdiction over intrastate communications
    - Exclusive federal jurisdiction over interstate communications
  - Local and toll communications
    - Local calls were unmetered.
    - Toll calls were sold by the minute.

# The Modern Era – Four Epochs

1. 1947- 1982: Make available to all the people of the United States rapid efficient communication service with adequate facilities at reasonable charges.
2. 1982- 1996: Reduce toll rates and encourage competition in toll markets
3. 1996-2010: Promote competition and reduce regulation in order to secure lower prices and higher quality services and encourage the rapid deployment of new telecommunications technologies
4. 2010 - present: Ensure that all people of the United States have access to broadband capability

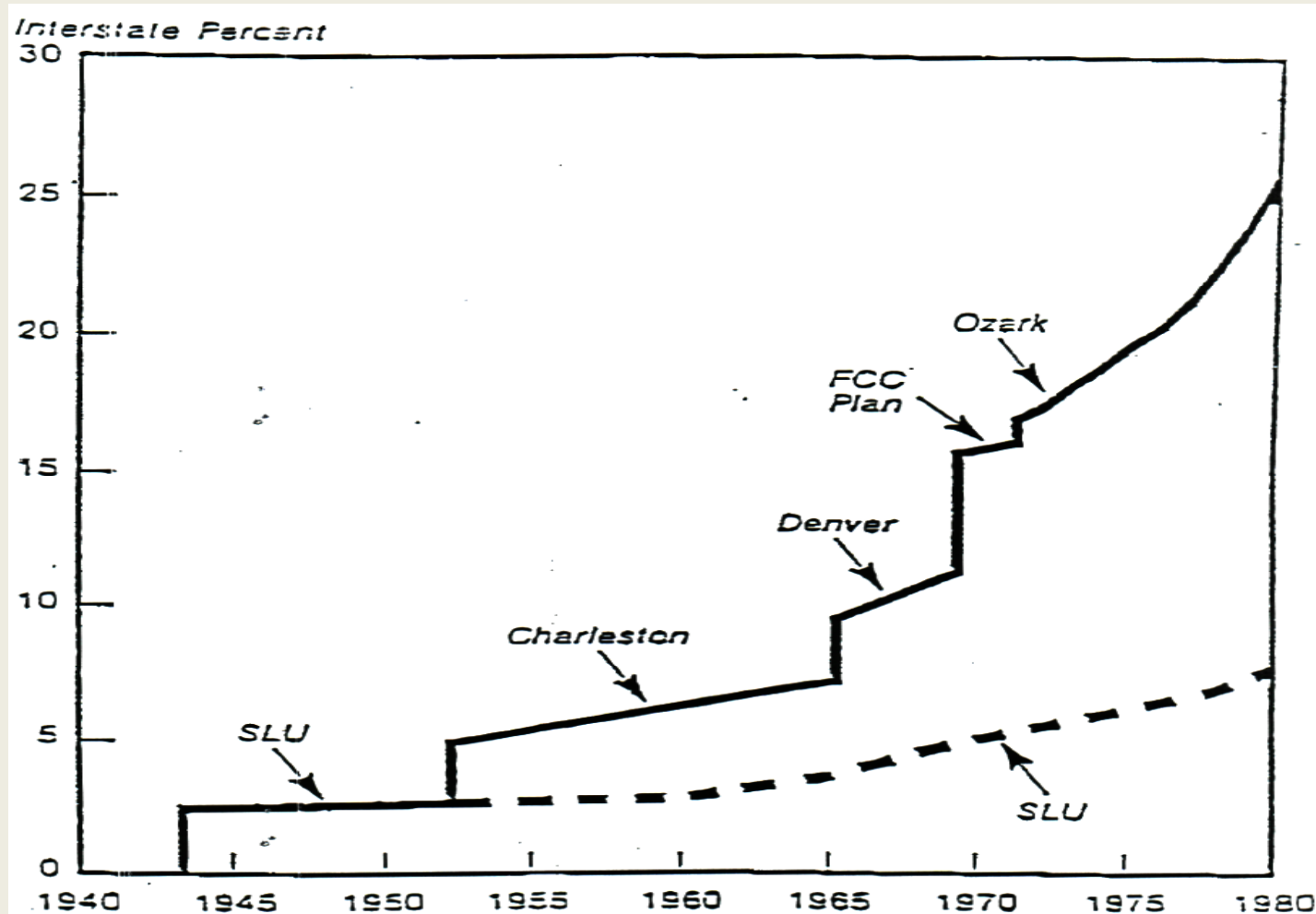
# Epoch one, 1947-1982: Increasing Telephone Penetration:



# 1947-1982: Increasing Telephone Penetration

- What caused the increased telephone penetration rate?
  - FCC and state commissions adjusted separations in ways that shifted cost to the interstate jurisdiction.
  - Interstate costs were recovered through per-minute toll charges.
  - Local rates were lowered.
  - Rural Utility Service gave loans to rural carriers.
  - Family income in the United States increased.

# Historical Interstate Separations Factors for Local Loops: 1940-1980



# Epoch two, 1982-1996: Encouraging Toll Competition and Lowering Toll and Access Rates

## Policy changes:

1. Divestiture of AT&T and the Bell Operating Companies
2. Implementation of Equal Access Calling
3. Reduction of Interstate Access Rates

# 1984 Divestiture of AT&T

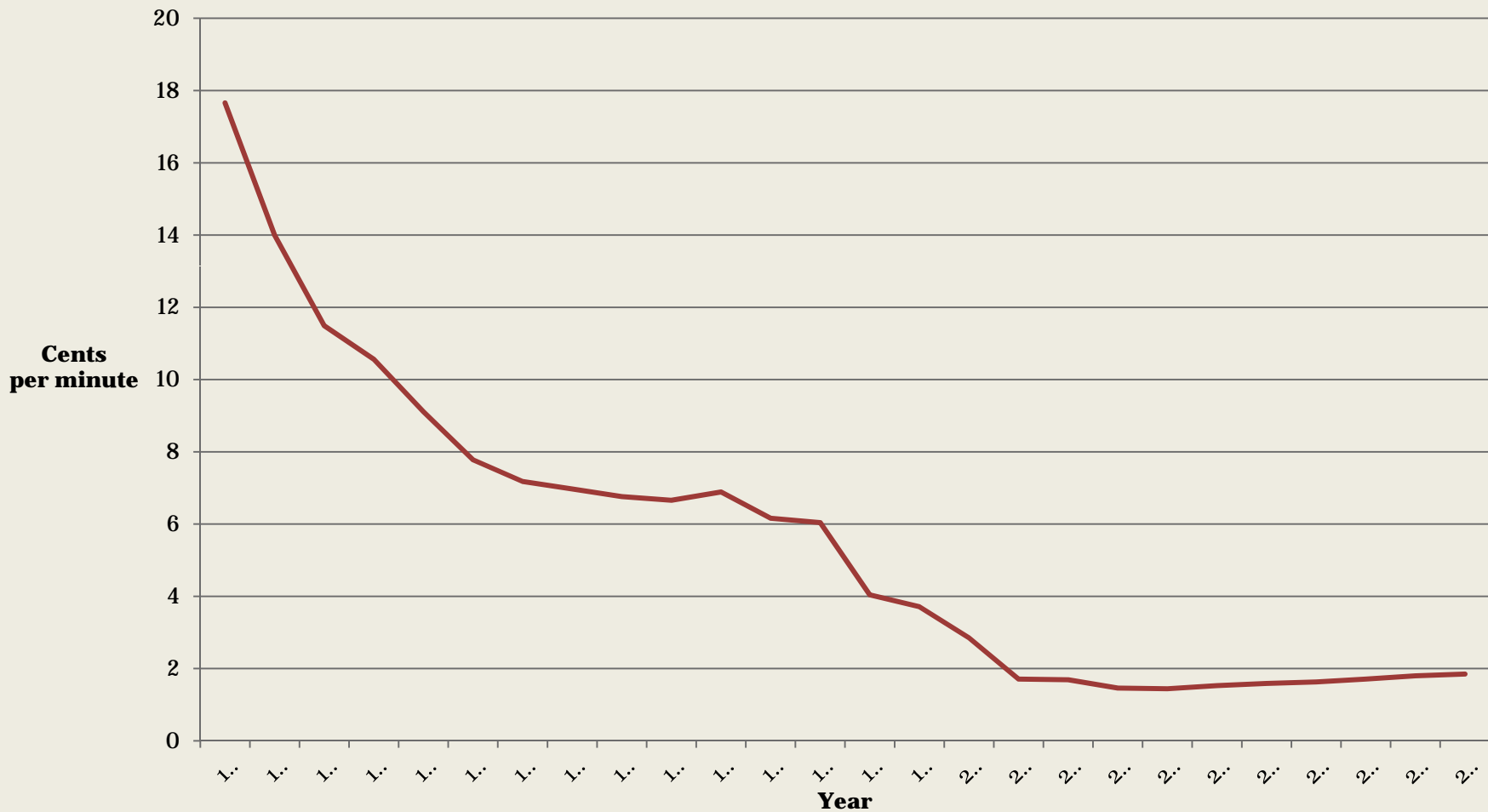
- Created Interexchange Carrier (IXC) industry
  - Access charges
  - Per-minute charges paid by
- Separations revised
- Beginnings of Universal Service Fund support

# 1984-1996: Reduced Interstate Access Rates

## What did the FCC do?

- Mandated lower inter-carrier rates.
  - Established universal service support mechanisms to replace lost revenues
    - Interstate Access Support and Interstate Common Line Support universal service mechanisms
- Established the Subscriber Line Charge or “SLC” (slick), a monthly per-line charge paid by all local customers. Like an interstate version of local monthly rates. SLC is now \$6.50 per month in many areas.
- Moved costs to the state jurisdiction.
  - Caused local rate increase in many areas.
- Reduced the interstate rate of return.

## Interstate Per-Minute Access Charges - Total Charge Per Conversation Minute: 1985-2010



# 1982-1996: Beginnings of Universal Service Support

To protect Universal Service the FCC established:

- The High Cost Loop Mechanism (originally called “universal service”) to reduce the cost of providing service in high cost areas.
  - Benefitted all customers in a study area equally by giving support to the carrier.
- The Lifeline program
  - Reduced monthly charges for low-income consumers.

# What is High Cost Loop (HCL) Support?

- HCL support is based on the loop revenue requirement. The revenue requirement is also the cost of service.
- HCL support is based on the books and records of the carrier.
- HCL support is a function of the difference between a study area cost and the national average cost.

# Sample HCL Support Calculation

Sample support calculation for a carrier with less than 200,000 lines						
National average	\$	20				
carrier cost	\$	40				
Percent of National Average Loop Cost	Gross Allocator: interstate, 25%	Gross Allocator: state: 75%	Fund allocator	Support	Final Federal Assignment	Final State Assignment
less than 115%	\$ 5.75	\$ 17.25	0%	\$ -	\$ 5.75	\$ 17.25
115%-150%	\$ 1.75	\$ 5.25	65%	\$ 4.55	\$ 6.30	\$ 0.70
greater than 150%	\$ 2.50	\$ 7.50	75%	\$ 7.50	\$ 10.00	\$ -
total	\$ 10.00	\$ 30.00		\$12.05	\$ 22.05	\$ 17.95

## Epoch three, 1996-2010: Competition, Deregulation and Universal Service

- “Reciprocal compensation” is a new way for carriers to compensate one another. Different mechanism than for traditional toll access.
- Carriers owe broader “interconnection” duties to one another.
  - Resale and “unbundled network elements.”
- States and localities cannot establish any barrier to entry as a telecommunications service provider.
  - No more exclusive franchises.
- Universal service principles declared and support mechanisms authorized.
  - Support must be explicit and sufficient to achieve goals of the act.
  - Act also looks to ensure widespread distribution of advanced services.
- FCC allowed to “forbear” from most regulations.

# 1996 Act - Broadband and Universal Service

- § 254 sets goals for advanced service, including:
  - Access to advanced telecommunications and information services should be provided in all regions of the Nation. § 254(b)(2).
  - Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas. § 254(b)(3).

# 1998 Changes to Lifeline Program

- Lifeline becomes available in all states.
- Three tiers of support are established. At highest tier:
  - Federal support less; and
  - State match required.
- All eligible telecommunications carriers must offer Lifeline.
- FCC adopts default eligibility rules. States can replace with own rules.
- Carriers are reimbursed from federal universal service fund for credits granted.

# Maximum Lifeline Benefits Depend on State Participation

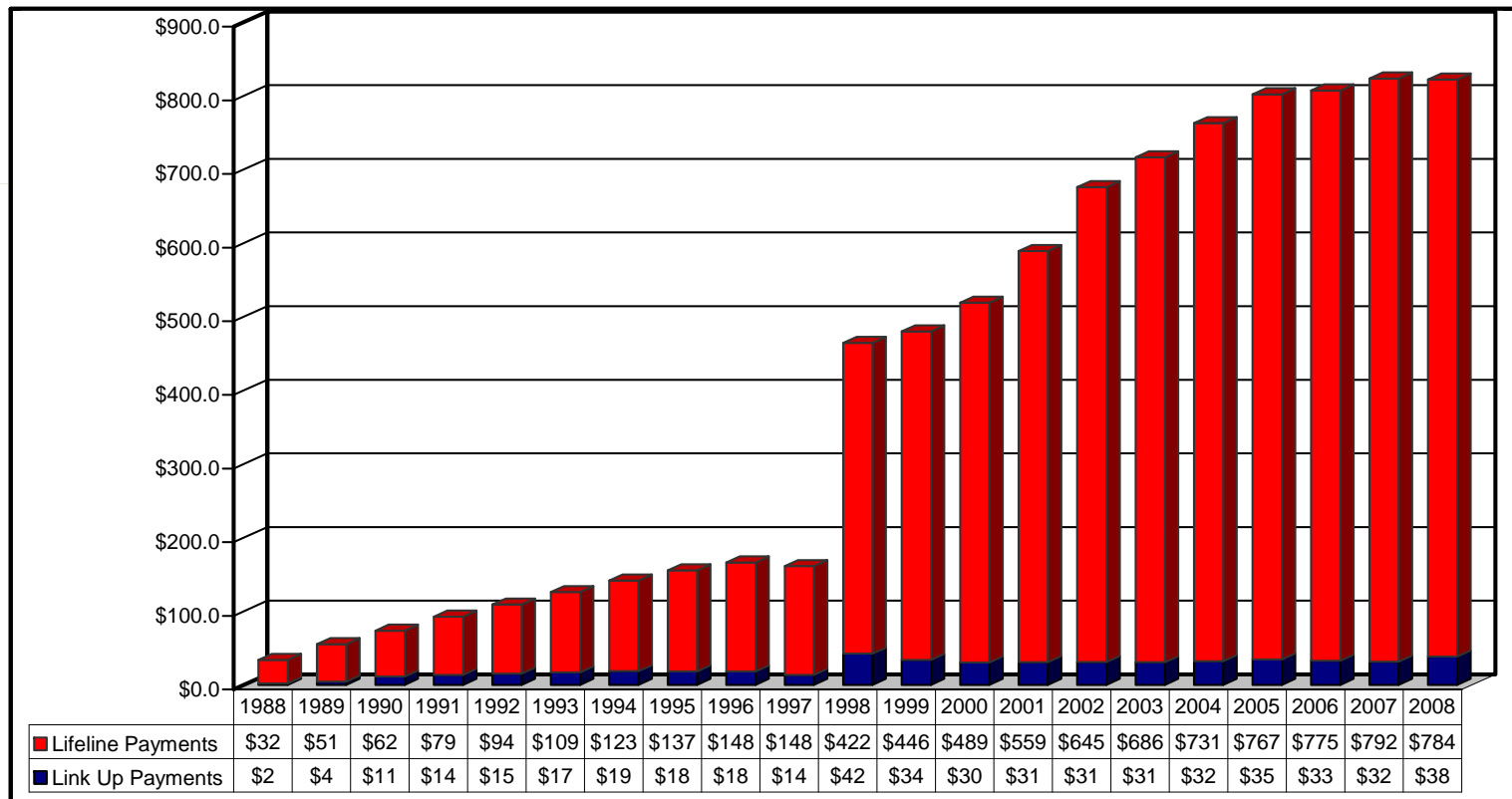
Maximum Lifeline Per Line Per Month Support Under Federal Rules							
	1998 rules				current rules		
	federal	state	total		federal	state	total
Tier I	3.5	0	3.5		6.5	0	6.5
Tier II	1.75	0	1.75		1.75	0	1.75
Tier III	1.75	3.5	5.25		1.75	3.5	5.25
total	7	3.5	10.5		10	3.5	13.5

# Lifeline Subscribers – 1997 to 2008



# Lifeline and Link Up Support Payments – 1988 to 2008

Chart 2.1  
Lifeline and Link Up Support Payments  
(Dollar Amounts in Millions)



# 1996-2010 - Cost Models

- Cost models are engineering estimates of building a new network.
  - They are “forward looking.”
    - Use most efficient technology.
    - All network costs are estimated without depreciation.
- FCC started using cost models to estimate the costs of intercarrier purchases and for universal service payments.
  - Some states (KS included) eventually adopted cost models for some state USF purposes.

# 2001 HCL Program Changes

- Fund size cap continues. Adjusted annually for line growth or loss and for inflation.
  - The cap is lower every year because of incumbent line losses.
  - To meet an increasingly stringent funding cap, the threshold cost to receive support will grow every year.
    - The effect is that all carriers must clear an ever-higher bar for support.
  - Many rural carriers have lost support since 2001, even though their costs have increased.
- FCC allowed carriers to “disaggregate” service by smaller areas. This affects what happens when line counts grow or shrink in different areas.

# Federal High-Cost Funding to Kansas Incumbent Carriers (2011 support)

- Rural (“rate-of-return”) carriers
  - High Cost Loop = \$5.95 MM/mo.
  - Local Switching = \$0.71 MM/mo.
  - Interstate Common Line = \$3.99 MM/mo.
- Nonrural (“price cap”) carrier areas
  - Interstate Access Support = \$0.4 MM/mo.
- Miscellaneous = \$0.5 MM/mo.
- Total FUSF = \$11.5 MM/mo.
- Incumbent access lines = 1.00 MM (12/31/08)
- Per access line = \$11.50 per line per month
  - Most help goes to rural carriers (0.6 MM lines)

# Separations Problems after 2001

- FCC imposed separations freeze in 2001.
  - All carriers stopped measuring traffic.
  - Larger carriers stopped measuring investment.
- Two major developments after 2001:
  - Networks now support DSL.
    - DSL revenues are unregulated, but states still get 75% of costs based on traditional voice network separations factors.
  - Networks (especially large carriers) now sell a lot of point-to-point services called “special access.”
    - Overwhelming majority of special access revenue is interstate.
    - Costs are still being allocated based on 2000 network configurations, which had little investment for special access. Network costs still go mostly to the states.
- Effects are to increase pressure to raise local rates.

# Separations Proposal from State Members of Joint Board

- **Special Access**
  - Assign costs the way that revenues come in, not on the basis of 2000 investment patterns.
- **DSL**
  - Create new categories of investment that assign more costs to the FCC and interstate traffic.

# Interconnected VoIP

- A special problem. FCC has never said whether VoIP is an information service or a telecommunications service.
  - VoIP is an Internet-based service.
  - But it competes with switched voice service.
- VoIP services may have a competitive advantage over traditional voice services.
  - Lower cost for interconnection.
  - Exempt from some USF charges.
- Different versions:
  - “Interconnected VoIP” terminates on the public switched network.
  - “Fixed VoIP” is offered from fixed locations, such as cable television companies different.

## Epoch four, 2010 to present:

- **Recent Federal Proposals and Actions:**
  - National Broadband Plan (March, 2010)
  - The Broadband Availability Gap (April, 2010)
  - NPRM (February, 2011)

# The National Broadband Plan (“NBP”)

- FCC declared national goals:

At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 Mbps.

U.S. should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.

Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.

Every American community should have affordable access to at least 4 gigabit per second broadband service to anchor institutions such as schools, hospitals and government buildings.

Every first responder should have access to a nationwide wireless interoperable broadband public safety network.

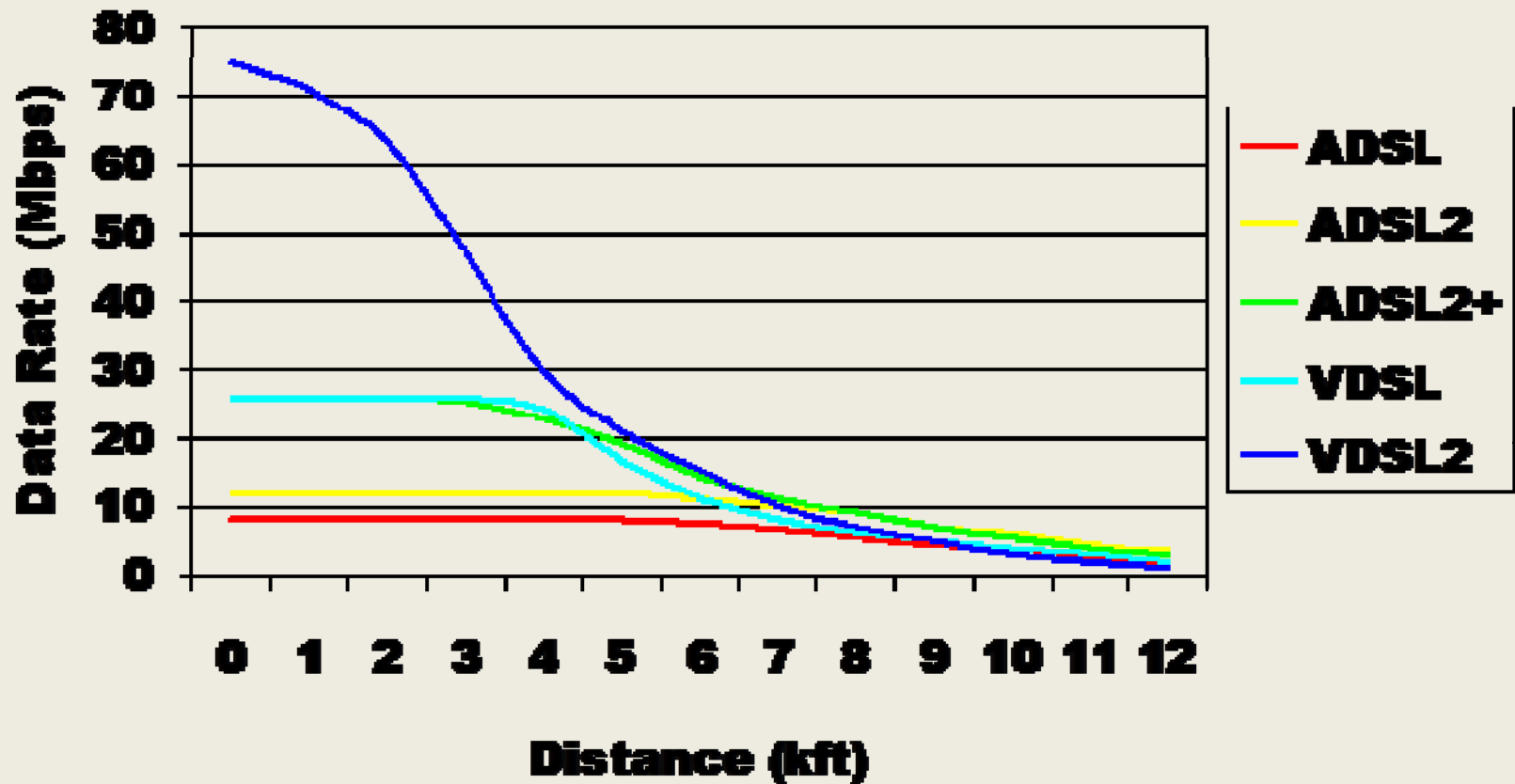
Every American should be able to use broadband to track and manage their real-time energy consumption.

# National Broadband Plan (cont.)

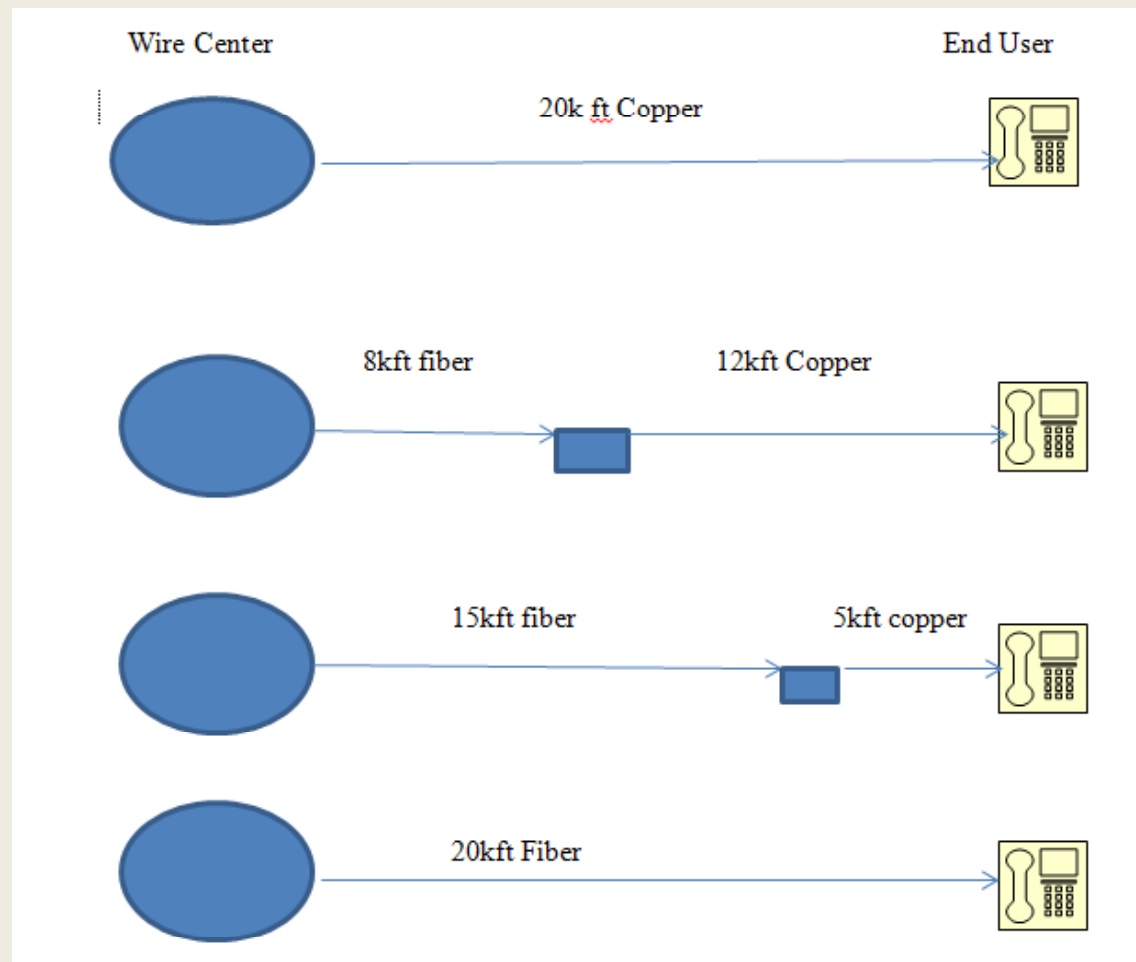
- **Steps to ensure universal access**

- Create the “Connect America Fund” (CAF)
- Create a “Mobility Fund” to ensure that no states are lagging behind the national average for “3G” wireless coverage.
- Transition the legacy universal service programs over the next 10 years “and shift all resources to the new funds.”
- Reform intercarrier compensation by eliminating per-minute access charges over 10 years.
- Design the new CAF and Mobility Funds in a tax-efficient manner.
- Broaden the USF contribution base.
- Expand Lifeline and Link-Up programs to cover broadband.
- Transform FCC’s rural health care program.

# DSL Data Speed and Copper Wire Length



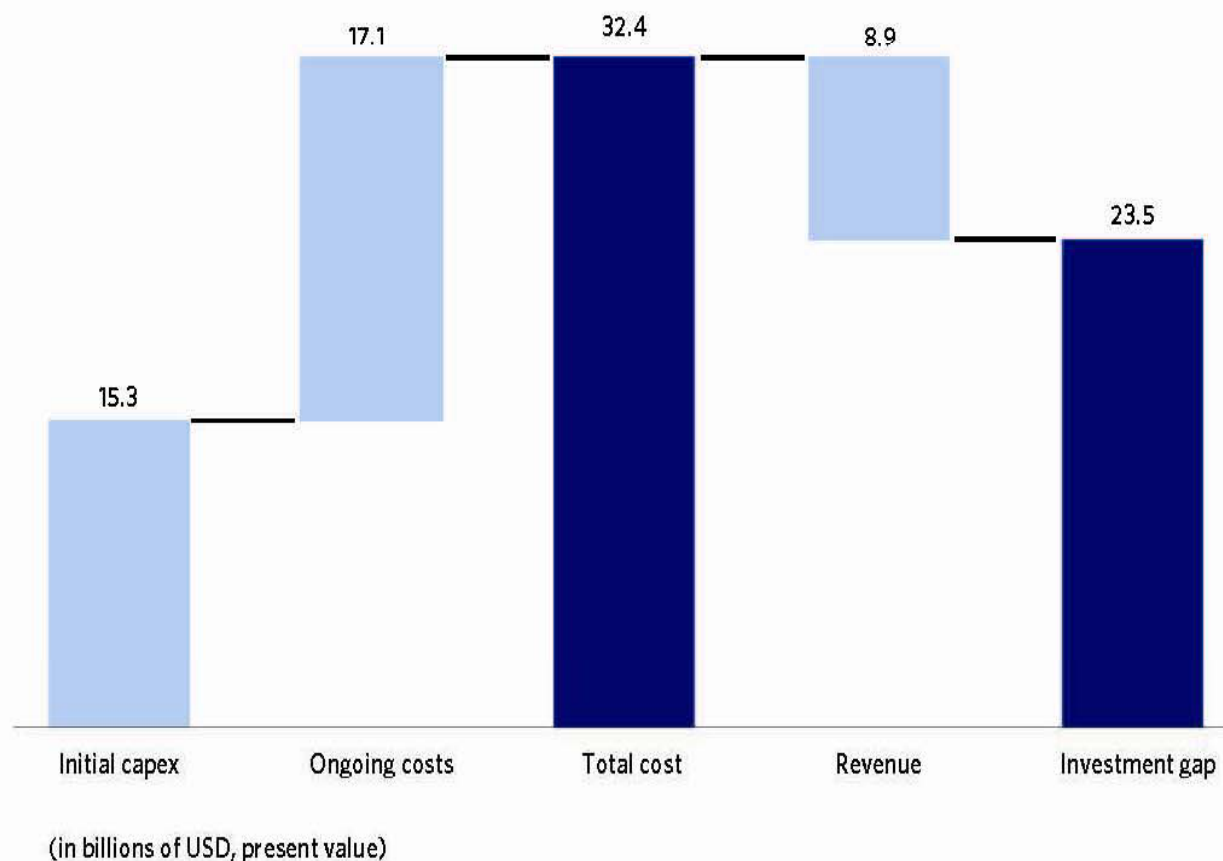
# Four Methods of Connecting an End User Who Is 20,000 Feet Away from a Central Office



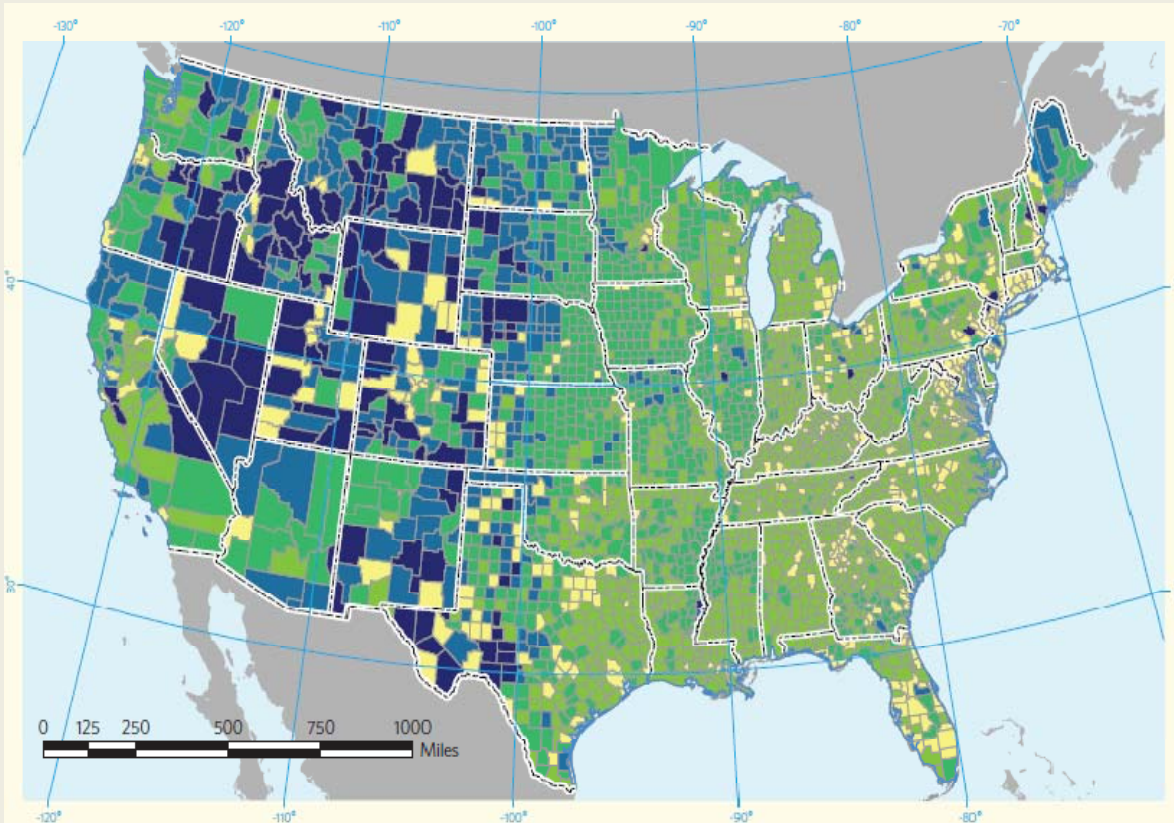
# The FCC's Estimate of the Broadband Availability Gap

## *Exhibit 1-A:*

*Base-case  
Broadband  
Availability  
Gap—Cash Flows  
Associated With  
Investment Gap  
to Universal  
Broadband  
Availability<sup>1</sup>*



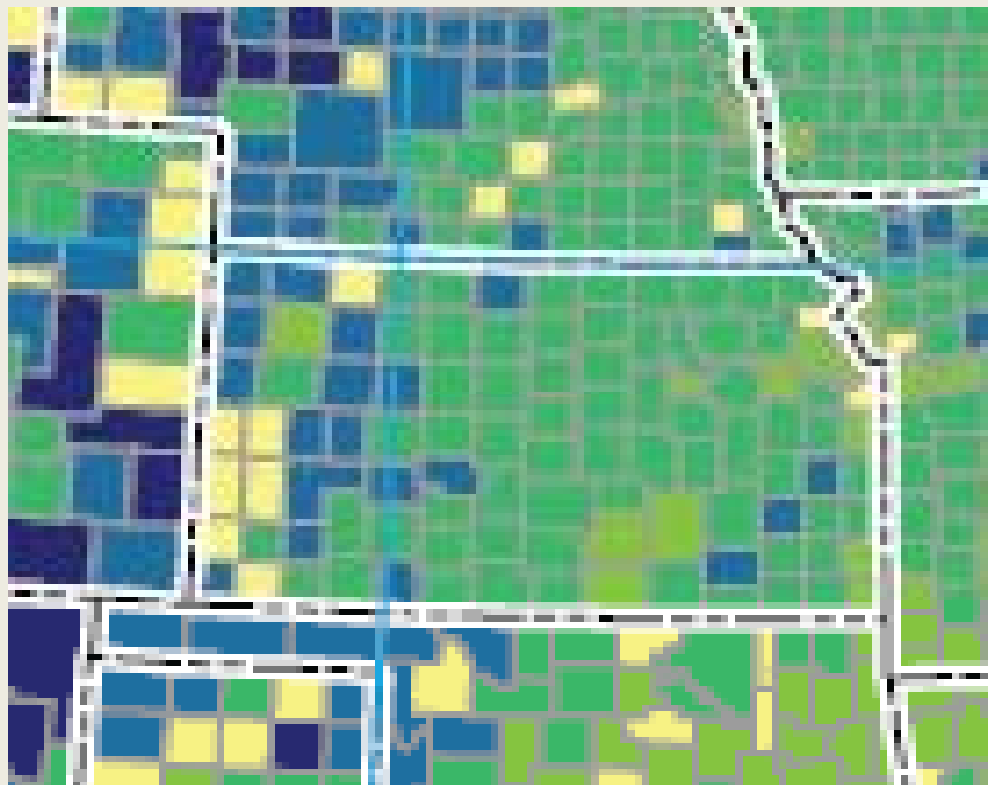
# FCC Estimated Investment Gap per Housing Unit, by County



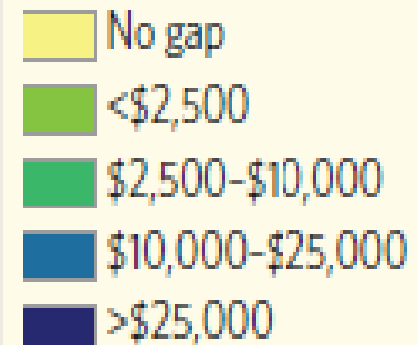
## Legend

- No gap
- <\$2,500
- \$2,500-\$10,000
- \$10,000-\$25,000
- >\$25,000

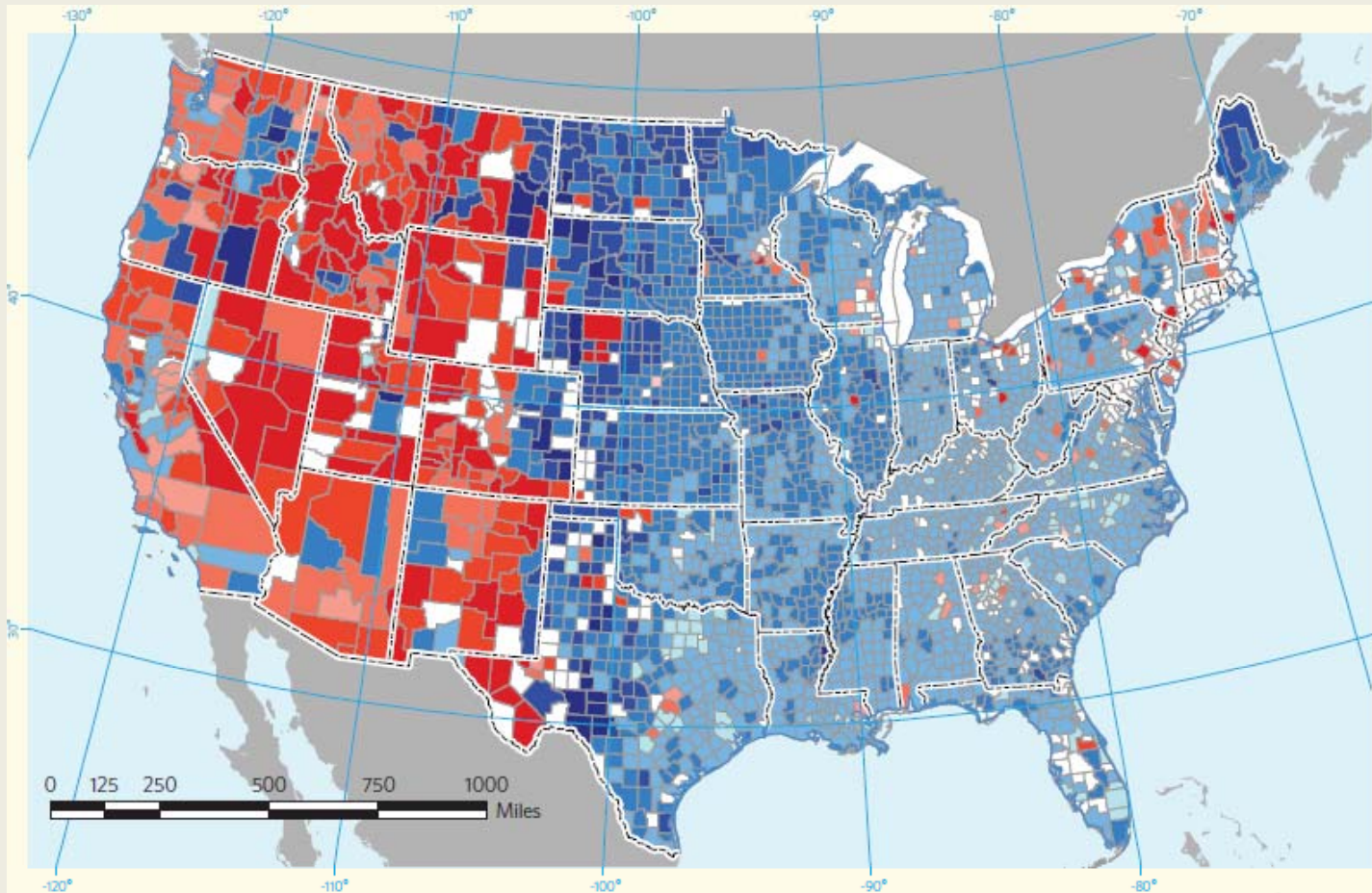
# FCC Estimated Investment Gap per Housing Unit, by County in Kansas



## Legend



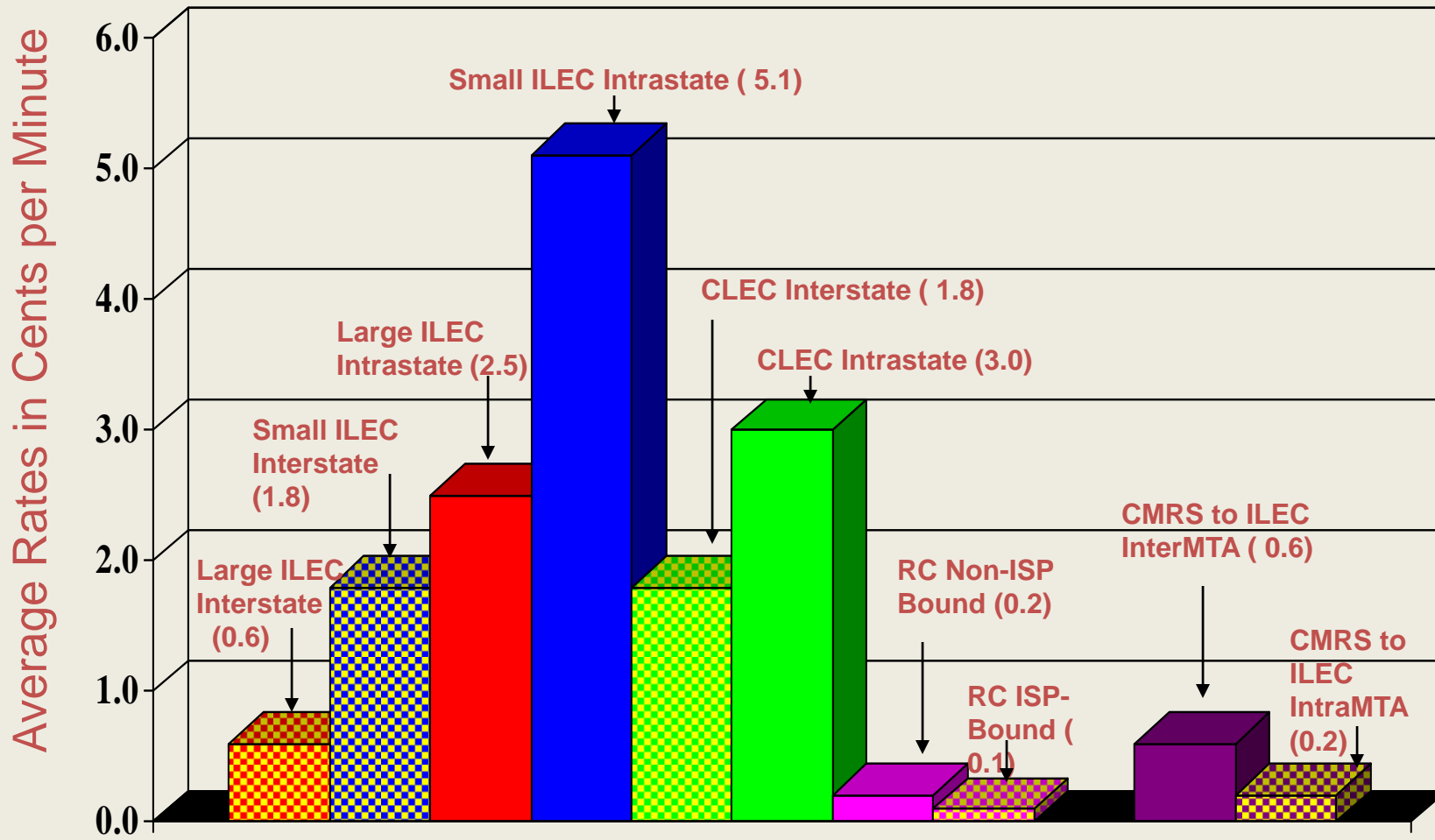
## National Broadband Plan Lowest cost technology: Blue means wireless 4G; Red means DSL wireline



# The 2011 NPRM

- Intercarrier compensation changes
- Short-term USF changes
- Long-term USF vision

# Intercarrier Compensation Rates



<b>High (¢/min):</b>	1.5	8.9	9.9	34.9	6.8	35.9	0.3	0.1	8.9	0.3
<b>Low (¢/min):</b>	0.5	0.3	0.4	0.7	0.2	0.4	0.0	0.0	0.2	0.0

# Intercarrier Compensation – Possible Changes

- **Mirroring Interstate**
  - KS already does this. Reset every 2 years.
- **Bill and Keep**
  - All carriers must accept traffic.
  - No carrier pays any other carrier.
  - If interstate rates fall, what is effect on the state?

# Short-term USF vision

- Modify existing high cost programs.
- Create “Connect America Fund” (CAF)

# FCC Notice: Near Term FUSF Reforms For Rate of Return Carriers

- **Modify high-cost loop support reimbursement percentages**
- **Eliminate “Safety Net” Support**
- **Eliminate local switching support as a separate funding mechanism**
- **Eliminate the reimbursement of corporate operating expenses**
- **Impose reasonable caps on reimbursable capital and operating costs**
- **Cap total high cost support at \$3,000 per line per year.**

# FCC Notice: Modify High Cost Loop reimbursement percentages

FCC Proposal						
National Average	\$20					
Carrier Cost	\$40					
Percentage of National Average Loop Cost	Gross Allocator: Interstate, 25%	Gross Allocator, intrastate, 75%	Fund allocator	Support	Final Federal Assignment	Final State Assignment
less than 115%	\$ 5.75	\$ 17.25	0%	0	\$ 5.75	\$ 17.25
115%-150%	\$ 1.75	\$ 5.25	55%	3.85	\$ 5.60	\$ 1.40
greater than 150%	\$ 2.50	\$ 7.50	65%	6.5	\$ 9.00	\$ 1.00
total	\$ 10.00	\$ 30.00		10.35	\$ 20.35	\$ 19.65

# Changes in the High Cost Loop Mechanism

- Due to the cap on the High Cost Loop Mechanism that FCC Proposal will not reduce the total amount of High Cost Loop Support
- Support will be re-allocated to:
  - Carriers with relatively low corporate operations expense
  - Carriers with relatively low total cost
- The net impact on Kansas carriers will be a reduction of approximately \$11.2 million
- Six Kansas study areas will receive approximate support increase of \$4.2 million
- Thirty-two Kansas study areas will receive approximate support reduction of \$15.4 million

# Elimination of Safety Net Support

<b>Kansas ILECs</b>	<b>\$ 1,151,760</b>
<b>Kansas CLECs</b>	<b>\$ 402,468</b>
<b>Kansas Total</b>	<b>\$ 1,554,228</b>
<b>National Total</b>	<b>\$82,464,624</b>

## \$3,000.00 Per-Line Support Cap

- 24 ILECs receive more than \$3,000 per-line in annual support
- The 24 carriers serve 15,725 lines
- The 24 carriers receive \$81 million in support, with two carriers receiving \$43 million
- If the FCC eliminates support for corporate operations the number of carriers receiving more than \$3000 per-line in annual support will be reduced.

# FCC Notice: Additional Near Term Reforms

- Eliminate Interstate Access Support
- Eliminate identical support rule
- Redirect the fund in two ways:
  - Disburse a specific amount of money to support the Connect America Fund (CAF).
  - Offset reductions in intercarrier compensation rates, particularly interstate access charges.

# Elimination of Interstate Access Support

Carrier	Annual Support
Century-Link	4,389,636
ATT-KS	737,856
Kansas ILEC Subtotal	5,127,492
Kansas CLEC Subtotal	2,958,864
Kansas Total	8,086,356
National Total	741,283,836

# Savings from Elimination of the Equal Support Rule by Program

Model Support	150,966,396
High Cost Loop	317,133,144
Safety Net	15,383,628
Safety Valve	1,792,092
Interstate Access	77,649,384
Local Switching	87,864,264
Interstate Common Line	495,141,240
Total	1,145,930,148

# Connect America Fund

- Use reverse auctions to award funds.
  - Construction grants, not debt service subsidies.
  - Greatest “bang for the buck” will win.
- Multiple technologies eligible to apply.
  - May give incumbent a “right of first refusal.”
- Bidders can:
  - Define own service areas by aggregating “census blocks.”
  - Join together with satellite provider to use that technology for some areas.
- Awards will go to areas with the highest number of new customers served by broadband per dollar of subsidy.

# Reverse Auctions

- Low bid wins
- Terms of Auction
  - 3-6 years
  - Depreciation
  - Long-lived plant
- Size of auction area
- Services covered
- What if incumbent loses?

# Jurisdiction Over Broadband

- Do states have legal authority to achieve their broadband goals?
- FCC decisions from 1998 through 2007 asserted broad authority over all common forms of providing broadband Internet service.
  - Eventually all forms of broadband Internet service were declared to be “information services” and not “telecommunications services.”

# FCC Jurisdictional Rulings

- The FCC repeatedly said that it expanded its own jurisdiction to remove regulatory uncertainty.
- Yet uncertainty remains.
  - Which kinds of state policies are preempted and which remain in place to promote broadband ubiquity and reliability?
- Can states do anything that involves broadband?
  - COLR duties?
  - Interconnection?
  - Service quality?
  - Consumer protection?
  - Public safety?

# Kansas Universal Service Fund

- Started as a revenue replacement fund in March 1997. Carriers received revenue to replace revenue reductions associated with decreasing intrastate access rates to interstate access rate levels
- AT&T and Century Link receive support to serve high cost wire centers.
- The cost is determined using a forward-looking model.
- Support for each wire center equals the difference between the cost of providing universal service in a wire center minus 125% of the average universal service cost times the number of lines in the wire center.
- The average cost is \$29.16 per month per line. KUSF support is paid in any wire center in which the average cost exceeds \$36.45 per line per month.

## KUSF (cont.)

- For all other carriers, support is the difference between revenue and intrastate revenue requirement
- Federal High Cost Loop Support is considered revenue for the Kansas support calculation
- Support is adjusted ever two years to reflect changes in interstate access charges. If interstate access charges increase (decrease), intrastate access charges increase (decrease) and support decreases (increases).
- Carriers with below the statewide affordable rates are authorized to increase their basic local exchange rates to the state-wide average rate. Revenue associated with local rate increases reduces state support. If the carrier chooses not to increase its local rate, the Commission imputes revenue as if the rate was increased, and reduces support accordingly.
- Lifeline Support – The Kansas Fund pays for the “state match” portion of the FCC’s Lifeline program. Each qualifying line receives a \$7.77 monthly credit.

# Likely Effects on Kansas

- Changes to FUSF receipts by carriers.
- Greater need to promote broadband through state policies.
  - Notwithstanding federal preemption issues.
  - State should consider strategies for promoting broadband.

# Recent Joint Board Activities

- **Staff plans**
  - Omaha
  - Shifman
  - Consultants'
- **Staff papers**
  - Intercarrier compensation paper suggests no need to adopt bill and keep.
  - COLR paper suggests drawing new list of COLR duties.

# COLR Duties for USF-Funded Broadband Providers

- Sample from COLR paper

Topic	Sample State COLR Requirement	Current FCC ETC Rules	Possible Broadband POLR Requirement
<b>Facilities</b>			
Geographic duty to serve	Offers retail and carrier-to-carrier services throughout the service area.	Offers retail service throughout the entire service area.	Retail and carrier-to-carrier services are offered throughout the service area.
	Construction contributions can be required, subject to limits. Later-arriving-customers can be required to reimburse first-customers for recently paid construction charges of mutual benefit.		Construction contributions can be required, subject to limits. Later-arriving-customers can be required to reimburse first-customers for recently paid construction charges of mutual benefit.
Facilities Ownership	COLRs generally must serve customers with their own facilities.	Facilities can be owned, rented (UNEs) or resold, so long as some are owned. § 54.201(d)(1).	POLRs must offer services using facilities that are either: 1) owned, 2) under long-term lease, or 3) under sufficient insurance or bonds to ensure continued availability if the provider fails.

# Possible State Strategies for Broadband - #1

- Leverage delegated federal roles
  - ETC designation cases
    - Encourage voluntary broadband commitments
  - Accept offers accepted to expand broadband.
    - Many states have heard broadband promises as part of the evidence.
      - Annual certifications for federal USF high-cost support.
    - Can require fund recipients to file 5-year construction plans.
  - Mapping
    - Identify locations of key broadband infrastructure
    - Analyze cost issues in high-cost or uneconomic areas.
    - Develop fine scale maps – census block or below.

# State Strategies #2

## Use traditional regulatory authority:

- Directly assign COLR duties.
  - Can states assign COLR duties for facilities used for broadband?
  - What if they're the same facilities used for intrastate telecommunications services?
- Mergers – conditions
- Incentive regulation plans – conditions
- Cable franchises – conditions

# State Strategies #3

## Provide funding through a state USF program.

- Include broadband in state high-cost programs.
- Include broadband in state low-income Lifeline programs.
- Anticipate changes to federal high-cost programs and establish mechanisms to react.

# State Strategies #4

## Use the state's fiscal power in other ways:

- Municipally owned networks
  - Chaska, Minnesota Wi-Fi network
  - Burlington, Vermont fiber to the home
  - Chattanooga, Tennessee
- State authorities
  - Bonding
- Grants and loans

# State Strategies #5

## Develop synergies with other investments.

- Smart-grid grants and investments
- Regional transmission investments
- Promote shared wireless platforms
- Share public rights-of-way
- Share public structures

# Is there a future for telecommunications regulation?

- Restated:

- Are there any public or common goods or benefits that we want but which market forces are unlikely to provide?
- How best can we secure these benefits?
  - Should traditional COLR duties be modified and expanded?
  - Should public benefit duties apply only as a condition of receiving public funds?

# Contra Regulation #1 - Competition

- Competition works better than regulation.
- Deregulation has produced good results:
  - Technological advancement
  - Large CAPEX investments
  - Increased network usage
  - Declining usage rates
  - Improved customer service

# Contra Regulation #2 - Internet

- The Internet is different.
  - History
    - No rate regulation
    - No service quality regulation
  - Economics
    - Intelligence at the edge
    - Usage costs naturally drive to zero
      - But, some new wireless data plans have capacity limits.
  - Technology
    - Digitized information leads to technology convergence.
    - Traditional regulatory silos are obsolete.
- New Variant – Wireless is different

# Contra Regulation - #3 – Imperfection

- **Regulation is imperfect.**
  - Regulation can lead to wasteful spending on “gold plating.”
  - Rate regulation is difficult when companies are performing both regulated and unregulated functions.
  - Regulatory agencies are often captured by powerful stakeholders.

# Pro Regulation #1 - COLR

- COLR duties are still important.
  - Most states still apply the “duty to serve” to ILECs, in most or all parts of their states.
- Industry CAPEX expenditures may be large, but they have not solved the universal service problem.
- Without COLR-like duties there is no guarantee that:
  - ILECs will continue to serve unprofitable voice markets.
- Who will provide broadband in areas where there’s no business case to build facilities?

## Pro Regulation #2 – Market Power

- **Market power still exists:**
  - Many retail customers still have only one option for voice and broadband.
  - Wholesale:
    - CLECs still need rate and anti-discrimination protection from ILECs.
    - Special access rates are a longstanding issue.
- Providers of broadband Internet access have increasing incentives to push their own content.
  - Note recent limitations in Comcast-NBC merger.

## Pro Regulation #3 – ILEC Duties

Some traditional “telephone company” duties are still important.

- Following the numbering system rules
- Terminating all calls
- E-911
- Cooperating with law enforcement
- Telecommunications relay
- Paying surcharges
- Protecting customer information

## Pro Regulation #4 – Deep Roots

- Can something this old really be unnecessary?
  - Historical franchises were granted only if the franchisee performed specified duties.
  - Common carriers were tasked with providing nondiscriminatory service, with reasonable care, and in some cases with strict liability for failure.

## Pro Regulation #5 - Subsidies

- Subsidies are still needed to maintain universal service.
- Support mechanisms often look surprisingly like traditional “rate-of-return” regulation.
  - About ten states perform some kind of revenue requirement calculation in their USF plans.
  - The FCC’s National Broadband Plan model estimates the “financial gap” resulting from building and operating an efficient network to provide broadband service in unserved areas.

# The End

