Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	GN Docket No. 09-191
Preserving the Open Internet	WC Docket No. 07-52
Broadband Industry Practices	

COMMENTS OF
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TeleDimensions, Inc. (TDI) hereby files these comments in response to the Federal Communication Commission's ("Commission") Notice of Proposed Rulemaking in the above-referenced proceeding (FCC 09-93).

TDI is a public sector telecommunications consulting firm advising local governments and non-profits including universities, hospitals, libraries, schools and work force development agencies. TDI's public sector clients, typically, the largest consumers of telecommunications services in any community, are the anchor institutions responsible for providing public safety, emergency and public right-of-way management, public, education and government access programming, Institutional Network planning and operation, cable franchising and renewals and the social services that characterize viable American cities and towns. TDI appreciates this opportunity to comment on the issue of 'Net Neutrality' on the Internet.

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INTRODUCTION

1. Rationing Internet Communications

At the heart of the net neutrality dialogue—the *elephant in the room—is SCARCITY*. We're discussing net neutrality because the U.S. doesn't have enough broadband to support the demand for content distribution. Discussing 'net neutrality' evokes thoughts of ***'rationing'***. Net neutrality is an issue because the U.S. doesn't have enough broadband to handle the explosive growth in content volume. The fundamental, structural flaw in the Internet is that incumbent and non-competitive, phone and cable duopolists can't handle demand created by content generation businesses and communities.

What's at stake are the following: whose content is carried on a competitor's telecom network, how often, at what quality, IF the content is ever distributed and at what cost. **Simply stated, incumbent duopolists, the phone and cable operators, practice *rationing* under the rubric, 'reasonable network management for quality of service', a fancy phrase to describe 'rationing' or *discriminatory control of content delivery*.** When in doubt, the incumbent's content wins out, gets distributed first and at the best quality. That's what happens when a private entity owns and controls the highway or the gateway to any marketplace—the carrier distributes it's own products first and under favorable terms and conditions.

Why wouldn't telecom incumbents favor their own content services over competitors and rightly claim to protect stockholder interests? And how in the world can any federal agency create regulations to correct the problem of scarcity created by monopoly ownership without breaking up the monopoly? Isn't the question the FCC has to ask prior to dealing with net neutrality this? *When does the public's need for affordable, accessible, next generation telecom infrastructure trump private telecom's stockholder profitability interests?* When do the rights of the many supersede the rights of the few? And who can protect the telecom rights of the many in our country's 21st Century telecom economy if not the Federal Communications Commission (FCC) and its sister agencies? At best, the FCC must, on an interim basis, define net neutrality so as to keep the Internet as open and accessible as possible.

The FCC is in the position of discussing *rationing* versus *not rationing* content distribution under the guise of '*net neutrality*', instead of addressing the critical issue of private ownership of essential broadband infrastructure that must become publicly owned in an

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information dependent 21st Century economy. In the past, we wouldn't dream of letting Chrysler own the entire highway system. Imagine how private ownership of all highways would have strangled development of the industrial age with a private company or two deciding who got on the highway, who didn't, and how much each had to pay. Whose cars, trucks and buses would have priority access to the road – Chrysler's or a competitor's?

2. COMPETING IN THE GLOBAL ECONOMY

We are in the throes of starving America's 21st Century nascent businesses. U.S. small businesses[1] have difficulty operating in a global economy if Internet costs $550 a month for 3 Megabits per second (Mbps) service and overseas competitors in Hong Kong pay $13 a month for 100 Mbps Internet.[2] "While we're [Americans] having trouble agreeing on five-year goals of 50 or 100Mbps, South Korea's working on getting 1[Gigabit per second] G/bps to 80% of its citizens by 2012. This means that by 2012, South Korean users will have twenty to a hundred times more capacity available to them than Americans. While we're debating whether our goals should be 2Mbps or 4Mbps, Australia's putting a plan together that sets the goal of wiring 90% of its population with 100Mbps." [3] You don't have to know the difference between kilobits, megabits, and gigabits to understand that U.S. Internet speeds of 1 Megabit versus international speeds of 100 Megabits are seriously deficient.

3. ALL COMMUNICATIONS ARE LOCAL

Net neutrality is a critical local issue, essential to the vital sustainability of communities, both urban and rural. While the FCC focuses on a net neutrality policy, it is diverted from attending to the underlying problem driving the net neutrality divide—the telecom disease of *scarcity of a minimum 100 Mbps Internet carried on fiber to the premise networks (FTTP)*. This *fiber-based broadband scarcity* [4] threatens the robust development of America's

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[1] U.S. Small Business Administration *NEWSRELEASE* September 28, 2006 ,SBA Number: 06-17 ADVO, Small Business Drives The U.S. Economy, *Represent 99.7 Percent Of All Businesses, Employ 57.4 Million*, http://www.sba.gov/advo/press/06-17.html

[2] Fiber Revolution Blog, by Felton Benoit, 100Mb/s guaranteed bandwidth for US$13/month... from HKBN! http://www.fiberevolution.com/2009/11/100mbs-guaranteed-bandwidth-for-us13month-from-hkbn.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+typepad%2Ffiberevolution+%28Fiberevolution%29

[3] App-Rising.com Blog, Does January 4, 2010 9:23 PM
Does America Want The World's Best Wireline Broadband? http://www.app-rising.com/2010/01/does_america_want_the_worlds_b.html

[4] Fiber is the only 'broadband' technology capable of carrying 1 G/bps bidirectional Internet; it also is the only technology with unlimited upgradeable capacity to meet future demand for content distribution.

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economy. The FCC is diverted from addressing how 'rationed scarcity' camouflaged as 'net neutrality' directly affects local government's ability to:

- **Deliver essential services** because existing broadband offered on privately owned telecom infrastructure is obsolete (only upgradeable to 10 Mbps downstream Internet), exorbitantly priced and thus not accessible when upgrades are needed, and often sufficient capacity is not even available for purchase at any price. [5]

- **Support new business development and create jobs** because universally deployed and affordable Internet at 100 Mbps+ is not available; and monopolist/duopolist incumbents refuse to upgrade existing obsolete infrastructure.

- **Develop the integrated, interoperable fiber/wireless communications infrastructure needed by public safety/homeland security departments** to protect the community in case of natural disasters or if terrorist attacks move from planes to local venues such as stadia, universities, downtowns, shopping malls, water treatment plants, mass transit and electric grids, etc.[6]

In fact, incumbent telecom operators spend millions to lobby state governments to pass laws that prohibit municipal ownership of affordable telecom networks that would render the discussion of net neutrality moot. How can local governments, the ***'first responders'*** for pubic services in any community, sustainably operate essential, community anchor services such as public safety, emergency management, road maintenance, schools, water, sewers, electric, universities, hospitals, libraries, economic and work force development without access to **affordable** fiber-to-the premise, publicly owned *'first responder communications networks'?* Networks that support Internet carried at gigabit speeds,[7] networks that support all the institutions and initiatives that form the fabric of democratic communities.

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[5] Often, communities can't afford institutional network upgrades when purchased from the private sector.
[6] Hurricane Katrina Power & Telecommunication System Failure Modes PROJECT OVERVIEW
NSF SGER Research Grant No. ECS-0554149 www.nsf.gov/nsb/committees/archive/hurricane/3/henry.pdf
[7] kilobit - megabit – gigabit. By Bradley Mitchell, About.com Guide
The terms kilobit, megabit, and gigabit refer to the amount of data moved per second on a network. "**Definition:** In computer networking, a **kilobit** normally represents 1000 bits of data. A **megabit** represents 1000 kilobits and a **gigabit** represents 1000 megabits (equal to one million kilobits)."
http://compnetworking.about.com/od/basicnetworkingconcepts/g/bldef_kilobit.htm

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Local governments own and manage the public rights of way that MUST be used to house telecommunications infrastructure. To allow incumbent phone companies to construe 144 year-old telegraph franchises as permanent **free** access to public right-of-way property, in perpetuity, is an economic death sentence to any U.S. effort to create a competitive, sustainable, next generation telecom infrastructure.

RECOMMENDATIONS

4. **Keep the Internet Open:** In the short term, the FCC must institute net neutrality requirements that keep the Internet open and accessible to all with stiff penalties for carrier violations. The FCC must create a regulatory arm to monitor compliance and enforce penalty payments.

5. **Regulate and Enforce Open Internet:** Institute requirements for disclosure of financial and technical capability information for all telecom carrier networks. Include penalties for noncompliance. After all, this information can no longer be considered proprietary since many other countries already deployed fiber-to-the-premise networks, which far exceed the capability of phone and cable's obsolete, copper wire networks. (It's challenging to imagine competitors seeking to steal proprietary, copper-based telecom technology when the world has moved on to fiber optics). Also, phone companies hide the fact that they offer more than home service on their twisted-pair wire networks—mostly inadequate, and expensive business services thus distorting their requests for regulatory relief from offering simple home phones, their only regulated service and the one that gives them so-called free access to public right of way land.

6. **Require Maps and Information Re Capability of Existing Networks:** Requiring submission of network capacity information would save millions by eliminating the wasteful expenditure of stimulus dollars for mapping, since the phone and cable companies are well aware of their un-served areas. Incumbent duopolists can be assured that the information provided to the FCC is not for public release, but rather to save the public the costs associated with mapping and funding upgrades of obsolete networks. Rural areas need more than Internet carried on upgraded copper plant if these communities are to compete in a world economy.

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7. **Economic Development Needs 100 Mbps Internet carried on FTTP Networks:** For economic development planning purposes, if every home doesn't have access to affordable 100 Mbps Internet, it is located in an un-served area. In the 21st Century, information dependent, digital age, the promise of new jobs and business development will be realized in virtual homes and garages, as well office buildings. From a policy development, '*user's point of view*', the un-served 100 Mbps Internet service void covers almost the whole country.

8. **Fiber/Wireless, the Next Generation of Telecom:** Technically, the U.S. telecom policy must recognize that **future telecom infrastructure is 'combined fiber/wireless distribution networks'.** Wireless supports mobility and can never carry the volume of content transported by fiber on its own. Wireless uses fiber for *backhaul* and is a *complimentary* service that supports user mobility, not a competitive technologic alternative. There is no "future proof" [8] technologic telecom alternative to fiber. At a minimum, rural areas can start to upgrade with fiber backbone supporting wireless networks. **Net neutrality and separation of distribution and content applies to all wireless and wired networks**. Businesses and individuals aren't going to create new jobs, generate strategic master plans, CAD drawings, training videos, or graphic intensive work products on wireless-hand-held devices, distributed via Facebook or Twitter.

9. **Example of FTTP/Wireless Network Void:** Several weeks ago, ATT asked its I-phone users to refrain from downloading music and videos in LA and New York. Apparently, the volume of I-Phone usage in the two largest U.S. cities is crashing the AT&T network so users are asked to refrain from using data intensive applications to preserve the capability to make simple phone calls. I-Phone users are contractually obligated to use AT&T service (another non-competitive practice) and can't even make a simple phone call or send a text when the network crashes, sometimes staying down for hours at a time. [9] **Is the U.S. going to rely on private, profit-driven companies to provide critical public safety and homeland security communications? Companies that**

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[8] Transition Networks: The Conversion Technology Experts, Fiber Optics Basics. "Fiber technology allows companies to "future proof" networks. We use the phrase "future proof" because fiber is theoretically unlimited in bandwidth. Bandwidth is a measurement of the data carrying capacity of the media (in this case, fiber). The greater the bandwidth, the more data or information that can be transmitted. Copper has a bandwidth and a distance limitation, making it less desirable."
http://www.transition.com/TransitionNetworks/Resources/en/PDF/fiber_wp.pdf

[9] AT&T: The most hated company in iPhone land, By David Goldman, staff writer, December 29, 2009: 4:36 PM ET. http://money.cnn.com/2009/12/29/technology/att/index.htm

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can't support the needs of seriously overcharged subscribers' wanting to make simple phone calls?

10. **Break Up Private Telecom Ownership of Distribution and Content:** Obviously, the U.S. phone and cable operators have failed to upgrade networks to meet content demand, jeopardizing not only their own survival, but also the public safety and economy of the country. The federal government must move expeditiously to **break up telecom monopolies and separate content ownership from communication distribution.**

COSTS FOR DEPLOYING FIBER TO THE PREMISE NETWORKS

11. **Taxpayer Subsidies to Phone Companies:** Since the mid-nineties, AT&T, Verizon and Qwest collected "an estimated **$320 billion dollars** for fiber optic networks, [that were never deployed], in the form of overcharging customers, tax breaks and other financial incentives. This money continues to be collected in many states." [10]

12. **Public Right of Way Land:** The U.S. owns and maintains almost four million miles of public right of way and roads, the land used to house existing water, sewers, electric, phone, cable and the next generation of telecom—fiber-to-the-premise (FTTP) networks.[11] Since local governments own and maintain the lion's share of right-of-way infrastructure, then the FCC and the Federal government must develop policy and regulations that ensure that local government has the authority to manage the land it owns, and collect sufficient fees to sustain the nation's vital telecom infrastructure for the purpose of protecting the public interest. There is no justification for giving one private company free use of public property while charging another.

13. **Public Owns 4 Million Miles of Road/Right-of-Way:** The following breakdown shows the level of government responsible for managing public right-of-way, arguably a valuable public asset, since it houses infrastructure needed to support essential community services.

[10] Teletruth News Alert: January 5th, 2010: AT&T Declares War on Consumers. To read the full analysis: http://www.newnetworks.com/attharms.htm.

[11] Note: Wireless and Wi-fi towers are connected by copper wire or fiber landlines to switching centers. Fiber is the ideal connection for wireless communication networks since it supports the fastest Internet service.

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FOUR MILLION MILES OF PAVED ROADS IN U.S.		
Jurisdiction Ownership	Number of Miles	Percent of Total
Local governments—cities, towns, counties 3,200,00 rural miles, 800,000 urban miles	3,008,000	75.2 %
State governments	820,000	20.5 %
Federal Government	172,000	4.3 %
TOTAL	**4,000,000**	**100 %**

14. **Cost for Fiber to the Premise Deployment:** The range of costs for deploying fiber in conduits in the U.S. is $15,000 to $35,000 per rural mile and $70,000 to $100,000 per urban mile. [12]

Estimated Range of Costs for Deploying 4 Million Miles of FTTP Networks		
Number of FTTP Miles	Range of Cost Per Mile	Estimated Range Total Cost
3,200,000 Rural Miles	$15,000 - $35,000	$48 to 112 Billion Dollars
800,000 Urban Miles	$70,000 - $100,000	$56 to $80 Billion Dollars
TOTAL RANGE OF COSTS		**$104 to $192 Billion Dollars**

Assuming fiber was installed as new construction at a range of $15,000–$35,000 dollars per rural mile, it would cost between $48-112 billion dollars to build 3.2 million miles of rural fiber-to-the-premise (FTTP) networks. Assuming fiber was installed as new construction at an average cost of $70,000-$100,000 dollars per urban mile, it would cost between $56-80 billion dollars to build 800,000 miles of urban fiber to the premise networks. The cost to build 4 million miles of FTTP networks ranges between $104 billion to $192 billion dollars.

[12] Optical Communications: Rules of Thumb, by John Lester Miller and Ed Friedman, McGraw-Hill Telecom Engineering, Copyright 2003 by The McGraw-Hill Companies. Pg. 39. "Cost of Deploying a Fiber Cable Underground. It costs about $70,000 per mile to install fiber cable in the ground. Industry standards range from approximately $35,000/mile in rural areas to approximately $100,000/mile in urban areas."http://books.google.com/books?id=ySXNTaCDr8wC&pg=PA39&lpg=PA39&dq=cost+per+mile+fiber+underground+construction+%24100,000&source=bl&ots=UWH_BrgyVS&sig=FTv0GTpMGCh41BV6KZxXF1mo9Vw&hl=en&ei=3u9MS6GKN4GGNovO5P8M&sa=X&oi=book_result&ct=result&resnum=2&ved=0CAsQ6AEwAQ#v=onepage&q=cost%20per%20mile%20fiber%20underground%20construction%20%24100%2C000&f=false

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ESTIMATED DEPLOYMENT OF FTTP NETWORKS USING COMBINED RURAL/URBAN AVERAGE COST		
Number of FTTP Miles	Average $15,000-$100,000 Cost Per Mile	Total Estimate
4,000,000 Miles	**$58,000**	**$232 Billion Dollars**

15. **U.S. Paid for FTTP Networks That Weren't Deployed:** If we use $58,000 dollars per mile, the average of $15,000 and $100,000, the estimated cost for building 4 million miles of FTTP networks is $232 billion dollars. The estimated cost for deploying 4 million miles of fiber-to-the-premise networks ranges from a low of $104 billion dollars to a high of $232 billion dollars. The highest range, of $232 billion dollars, is $88 billion less than the $320 billion dollar subsidy given to the phone companies since the mid-nineties. If the incumbent phone companies had used the $320 billion dollars to deploy fiber-to-the-premise networks as promised, the cost would have been $80,000 per mile for the total 4 million miles, far more than what is needed to wire the entire country at today's dollars.

16. **Addressing Future Telecom Needs:** Can the U.S. afford to subvert its economic future by continuing to prop up telecom monopolies that have squandered $320 billion dollars and left the nation somewhere between 17th and 21st place internationally in deploying FTTP networks? Isn't a net neutrality debate just a smoke screen covering up America's serious telecom capacity voids?

17. **Collaborative Planning and Regulation:** The FCC must collaboratively work with the other federal agencies that deal with right-of-way, transportation, conduits, health, education and homeland security to make sure that America's 21st Century telecom infrastructure has technologic transparency, interoperability and interconnection at local, state and federal levels of government. **Regulation of telecom infrastructure must take into account the fact that over 75% of public right of way is owned and managed by local governments.** All communications originate and terminate locally.

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CONCLUSION

As a consultant to local governments, I can attest that they stand ready to assist federal agencies in developing strategies to include the following:

18. **Self-Supporting Conduit System:** Build a self-supporting locally managed, conduit system to house fiber-to-the-premise networks capable of handling all content without discriminatory control of content delivery. An underground conduit system would allow fiber to be pulled through conduits, installed in public-right-of-way during open trench construction and reduce the cost of deploying fiber-to-the-premise networks by 70%.

19. **Mandate Deployment of Locally Owned Fiber/Wireless Networks:** Develop plans and deploy publicly owned, municipal and regional fiber-to-the-premise/wireless networks that are self- sustaining. To realize economies of scale, the creation of Regional Telecom Authorities in rural areas is recommended to plan, deploy, operate, maintain and upgrade, as needed, public owned FTTP/Wireless networks.

20. **Create Federal Loan Program to Fund Mandated Fiber/Wireless Networks:** Develop a 20 to 25 year payback, federal loan program for municipalities and rural regional authorities to plan, deploy, manage, operate and routinely upgrade self-sustaining, fiber-to-the-premise/wireless infrastructure that provides universal high-speed broadband service at a minimum of 100 Mbps.

21. **Develop Universal Fee Structures to Sustain Fiber/Wireless Networks:** Develop franchise, conduit, and licensing fee structures for publicly owned conduits and fiber/wireless infrastructure to support public, education, government access channels, facilities, institutional networks, local media program production, media content generation, management, operations, upgrades that keep pace with technology changes,

22. **Research and Innovation Grants:** Include local funding for research and innovation grants for small businesses and entrepreneurs, specifically designed to boost economic development in the conduit, right-of-way and franchising user fees fee structures.

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