



**Testimony of Milo Medin, Vice President of Access Services, Google Inc.
Committee on Oversight and Government Reform
Field Hearing On Innovation and Regulation
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Thank you Chairman Issa and members of the Committee for this opportunity to discuss the ways in which government regulation can sometimes hold back innovation and investment. Google shares your vision of the importance of creating a modern regulatory environment that fosters economic growth and helps make American companies competitive globally.

I'm Milo Medin, and I'm Google's Vice President of Access Services. In that capacity I manage the Google Fiber team and am overseeing the build-out of an ultra high-speed network in Kansas City, Kansas, as well as at a testbed that we're deploying at Stanford University, as well as a number of wireless initiatives.

Prior to joining Google I co-founded M2Z Networks Inc. in 2005 and served as its Chief Technology Officer. Before then I co-founded At Home Corporation in 1995 and served in a number of senior positions there. I'll note too that I have worked in government. For a decade beginning in 1985 I worked as both a contractor and civil servant on several NASA Internet initiatives, including the NASA Science Internet, which was a core Federal network that connected 200 sites in 16 countries and six continents including Antarctica, as well as managing the Internet's primary west coast interconnect, FIX-West and MAE-West.

I joined Google last year because I was incredibly impressed by the vision of the Fiber project, and because I thought we could be the vehicle for delivering on the promise of what broadband really could be like. I'm proud of the work we've done so far with the Fiber team and to be working for a company that has contributed so much to our economy. For example, in 2009 alone we generated \$54 billion in economic activity for American businesses, website publishers, and non-profits. In a time of tighter budgets and a slow economic recovery, we're glad to support so many small businesses and entrepreneurs across the country by helping them find new customers more efficiently and monetize their websites through targeted advertising.

To contribute to your exploration of how to improve the regulatory environment, I'll first discuss three types of regulation that have had a significant impact on the Google Fiber project.

Following this, I'll draw on my past experiences and my view of the larger innovation economy to discuss other regulatory issues that present a more generalized threat to innovation and investment. In my view there is a demonstrated need for the Federal government to revisit some foundational processes and procedures to ensure that we are creating an environment that is friendly to both investment and innovation that will lead to economic growth and job creation. We also need to update our patent system and take other steps to ensure that companies continue to invest and create jobs.

Regulation and the Google Fiber Project

I'll start with regulation and the Google Fiber Project, which is one of my main responsibilities at Google. Google Fiber recently announced that it will work with Kansas City, Kansas to deploy a large-scale ultra high-speed network, at speeds up to one gigabit per second, in that community. In addition, over the coming months we will be talking to other interested cities about the possibility of bringing ultra high-speed broadband to their residents.

But the recent experience of picking the community in which Google would make this significant new investment highlighted for me exactly how regulation can get in the way of innovation and drive companies to seek out or avoid certain locales.

At Google, we believe that innovation on the web is only in its beginning phases, and a key ingredient for fueling that innovation is to deliver a step function increase in speeds. Our goal in Kansas City is to provide at a competitive price Internet access that is more than 100 times faster than what most Americans have access to today. As the initial broadband network deployments a decade-and-a-half ago took us from the kilobit web to the megabit web, Google is hoping our efforts here can take the U.S. from the megabit web to the gigabit web.

Over the past 15 years, the jump from dial-up to broadband connections has led to streaming online video, digital music sales, video conferencing over the web, and countless other innovations that have transformed communication and commerce. We at Google cannot wait to see what new products and services will emerge as Kansas City moves from traditional broadband to ultra high-speed fiber optic connections.

Google wants to be able to build strong relationships and partnerships with local government and communities so that we can work together to use technology to help make communities better places to live, work, and learn. But my recent experience deciding where to make the investment that the Google Fiber project represents highlighted for me just how regulation can sometimes get in the way of innovation. I'll focus on three types of regulation that make this investment harder and interfere with our ability to enable access to next-generation network connectivity.

Rights-of-Way

First, I'll discuss regulations related to physical infrastructure that deter investment. Infrastructure such as rights-of-way, utility poles, conduit, and ducts plays an important role in the economics of broadband networks. All broadband service providers need access to this infrastructure.

Let's start with rights-of-way. Governments across the country control access to the rights-of-way that private companies need in order to lay fiber. And government regulation of these rights-of-way often results in unreasonable fees, anti-investment terms and conditions, and long and unpredictable build-out timeframes. The expense and complexity of obtaining access to public rights-of-way in many jurisdictions increase the cost and slow the pace of broadband network investment and deployment.

Reducing the red tape, overly-restrictive regulations, and delay associated with government rights-of-way would make a big difference. Luckily, some local governments get it right and are good examples for others to follow. In fact, part of the reason we selected Kansas City for the Google Fiber project was because the

city's leadership and utility moved with efficiency and creativity in working with us to craft a real partnership.

There are also some common sense ways of leveraging new infrastructure projects through "dig once" policies. Anytime a roadway is opened up for any purpose, conduit is installed, which cuts the cost for later deployment of fiber by 90 percent or more in some cases. The conduit itself costs almost nothing; it's the labor cost to open up the street and then close it up later that is the bulk of the cost. By installing conduit any time construction is going on, the cost of that construction is amortized over all projects that later utilize the conduit, reducing costs dramatically and minimizing disruption to drivers.

Pole Attachments

Now let's move to regulation of so-called pole attachments. Another key part of building new fiber infrastructure is the ability to hang this fiber on existing utility poles. Where we can do this, we don't need to tear up a street. Theoretically this should result in our being able to move faster to make the investments that foster innovation and lead to more consumer choice among providers.

But regulation gets in the way. Outdated pole attachment regulations create huge delays and can result in blocked-to-access utility poles. The Federal Communications Commission itself has recognized that the lack of reliable, timely, and affordable access to physical infrastructure – particularly utility poles – is a significant barrier to deploying broadband services.

To its credit, the FCC issued a new order just over a week ago that clarifies the rights of several types of companies to attach equipment to poles at reasonable rates. But the order doesn't appear to help those of us who want to offer pure broadband Internet access service. Because broadband Internet access services don't fit into the right regulatory box in the Communications Act, we do not have automatic attachment rights. Pure broadband providers are exactly the group you wouldn't want to leave out, so the existing requirements need to be clarified or changed if we want to get more dollars, jobs, and broadband into our communities and enable competition from non-traditional operators.

Municipal Broadband

Finally, I'll discuss the regulation of municipal broadband. The Google Fiber project has shown me great local communities around the country that want to harness the power of the Internet to build jobs, better educate their kids, and save money through greater efficiency. Localities know more about what works for their communities than state governments or the federal government do. In the end, we feel that while this is probably not the right choice in many cases, it is something that should not be prohibited.

During my tenure on the California Broadband Task Force, the panel concluded that allowing communities to form special service districts to construct broadband network facilities was an option that needed to be available, and would be most helpful in rural areas that tend to have fewer service offerings than those in larger cities.

As you have observed, Mr. Chairman, a free market with numerous competitors and distinct technologies leads to efficiencies, productivity, and innovation. And that is the goal of what we are doing in Kansas City, Kansas.

Regulation, Innovation, and Investment

With the time I have left, I'll step back from the Google Fiber Project to discuss my views on the impact of regulation on innovating more broadly. Specifically, I'll briefly touch on five other regulatory issues that concern me personally that relate to the government in general, and that I care about deeply as a technologist, a business executive, and an American.

First off, the government generally must strive to be more efficient in its decision-making processes, and recognize that time is in many ways the most valuable thing we invest with in Silicon Valley. Starting a regulatory process that may affect specific sectors in a market, in either a positive or negative way, creates ambiguity that can often freeze investment. It is important that such processes are optimized for speed, so the ambiguity involved can be removed as quickly as possible. By taking a lot of time to make the "best" decision, oftentimes companies invest in a few lawyers as opposed to many engineers. Once a decision is made, the market reacts quickly and companies move on to deal with whatever the consequences are. But too often, time to decide is not considered one of the metrics of how successful a process is. This needs to change.

I once heard General Colin Powell say that all good decisions are made with between 40 percent and 70 percent of information. If you have less than 40 percent of information, you really don't know what you are doing. If you have more than 70 percent, you have waited too long. Silicon Valley companies like Google fully embrace this sort of thinking, and it is essential to our ability to deliver innovative products that compete worldwide. But investment disincentives are created when we have to wait on government processes that are not time-bound and materially impact what products we can develop.

Agencies like the FCC all too often open up rulemaking dockets soliciting formal comments, receive a flood of documents from interested parties, and then fail to act for months or years – if they even act at all. The result is uncertainty, which is bad for business, bad for innovation, and bad for investment.

There is a specific issue on which I would ask the government to act more quickly: clear policies on spectrum. Right now, the FCC is looking into holding incentive auctions for spectrum in the broadcast bands. This has the potential to make more licensed spectrum available for broadband use. However, this initiative has the potential to kill White Spaces, an unlicensed use of the broadcast TV bands that can be used to deliver broadband.

The White Spaces rulemaking has been going on for many years, and just this year operation was finally authorized. But with repacking the UHF spectrum through incentive auctions now the priority, the uncertainty over the future of this technology has resulted in diminished investment in chipsets and radios that just last year was getting ready to take off. This uncertainty needs to be resolved soon, and, if the UHF spectrum is repacked, a sizable allocation of that repurposed spectrum should be made available for unlicensed use. This is the same kind unlicensed allocation that made Wi-Fi possible, and has empowered whole new classes of devices and services that would not have been possible without it, as well as offloading traffic from cellular networks that has allowed them to scale in ways that would have been far more expensive without it.

A second area of regulatory reform that is critical to the technology industry is fixing the patent system. While I have not had as many patents issued to me as you have, I do have a few, and probably like you I have seen the patent process work well and not so well. Simply stated, the American technology industry's success depends on a functioning patent system that produces and protects quality patents. In recent years, this system has become increasingly difficult to navigate.

The number of annual patent grants has risen from fewer than 80,000 in the early 1980s to more than 240,000 in 2010. Consequently, our products are surrounded by "patent thickets" – densely overlapping patent rights held by multiple patent owners. Far too many of these patents never should have been granted. This thicket of poor-quality patents has spawned an entire litigation industry and impeded innovation. Frivolous lawsuits built around patents of dubious validity are targeting the profits of true invention. Companies often settle rather than risk losing millions of dollars in front of a jury, and consumers, innovation, and the economy all suffer for it. A better funded and more efficient Patent and Trademark Office will be able to better analyze patent applications and conduct reexaminations, thus improving patent quality. A more effective reevaluation process after patents are issued would greatly reduce expensive, time-wasting litigation. I know you understand this Mr. Chairman, and I want to thank you for your comments in support of the supplemental examination amendment offered by Congressman Goodlatte during the House Judiciary Committee's markup of the America Invents Act last week.

Getting good patents issued quickly is very important. But if it means more frivolous patents are also issued and create a drag on real innovation, that is a major problem too, and should be recognized as such. It is possible to get one without the other, but lawmakers will have to work hard to avoid unintended consequences that result in more harm than help. Ensuring the right balance for intervening rights and protecting the confidentiality of settlement documents is critical to the future success of the PTO.

Finally, I'll make a brief note on environmental regulations. Google is a big believer in protecting the environment for future generations, but certain types of state and local environmental rules make investment very difficult. Laws like the California Environmental Quality Act can make it prohibitively expensive for companies to invest in new projects, such as our fiber project, within California. Many fine California city proposals for the Google Fiber project were ultimately passed over in part because of the regulatory complexity here brought about by CEQA and other rules. Other states have equivalent processes in place to protect the environment without causing such harm to business processes, and therefore create incentives for new services to be deployed there instead. When companies face a bevy of different and overlapping regulation, especially in relation to Internet services, they simply invest less.

Conclusion

To sum up, regulations – at the federal, state, and local levels – can be central factors in company decisions on investment and innovation. These decisions are the ones that hold the promise of creating jobs and growth. They should be made on the basis of economics and technical expertise.

Well-defined and unambiguous regulations can establish clear rules of the road that may be necessary in some cases. However, unclear and ambiguous regulations push companies to invest less or operate less efficiently. Less capital for innovation and the sub-optimal strategies forced by poor regulation represent a real loss for the country. Silicon Valley loves to invest in engineers building new products that create U.S. leadership in technology. Investing instead in lawyers to address the unintended consequences of poorly defined

regulations doesn't increase our gross domestic product like real innovation can.

I'll close with this: If regulations create disincentives for a large, well-established companies like Google, just imagine the impact on small and medium-sized enterprises, including the next generation of entrepreneurs who are just getting started. We have a great mix of both large and small entrepreneurial businesses here in Silicon Valley, and it's clear that investment flows into areas that are less affected by regulation than areas that are dominated by it. I know you are eager to understand this trend better, and I hope your colleagues on Capitol Hill will take these lessons to heart as legislation is debated and passed.

Thank you for the opportunity to participate and I look forward to our discussion.