REMARKS OF FCC COMMISSIONER AJIT PAI:
"TWO PATHS TO THE INTERNET PROTOCOL TRANSITION"

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Thank you, Harold, for that kind introduction. From your distinguished tenure at the Federal Communications Commission to your recent work as the Director of the Center for the Economics of the Internet at the Hudson Institute, you have been a consistent advocate of smart regulation, rigorous economic analysis, and liberty. Your work, and the work of the Hudson Institute more generally, has played a vital role in guiding policymakers toward policies that will keep the United States prosperous and our people free. I appreciate your continued service.

Today, I'd like to talk about the Internet Protocol (or IP) transition or what some have called the Internet transformation. It's an important topic, one that I've spoken about a few times before. In fact, someone recently warned me that at the rate I'm going, I'll soon be discussing the IP transition about as often as Bob Barker used to talk about spaying or neutering pets.

This afternoon, I'll focus on the steps we should take to expedite an all-IP future. But before I do so, I want to start where Commissioners should always start: the law, and most importantly, the Communications Act of 1934.

It's not much of an exaggeration to say that the telephone was built on top of the railroad. The Communications Act borrowed from the railroad precedents that formed the foundation of 19th century common-carrier law. The Act was premised on the theory that telephone service was a natural monopoly. And a monopoly would best serve the public if it were regulated under state and federal law. So the Act set forth a detailed framework for regulating telephone service—things like cost studies, geographic averaging, and tariffing—that lasted mostly unchanged for more than six decades.

Over the years, competition came in fits and starts, like the emergence of long-distance companies in the 1970s and the breakup of Ma Bell in the 1980s. Then came the Telecommunications Act of 1996. Seventeen years ago, Congress wisely abandoned the natural monopoly theory and embraced a "deregulatory and pro-competitive" framework. That Act envisioned intramodal competition—that is, competition between and among local exchange carriers and long-distance providers, all to the benefit of consumers. The Telecommunications Act was revolutionary for its time. And it succeeded in part. In 2011, for example, almost 7.5 million customers received service through the intramodal means envisioned in the 1990s. But even with these tweaks, the Communications Act is still showing its age.

How so? As is often the case, the market has developed in a way that policymakers didn't anticipate. In particular, they didn't foresee the importance of convergence—of companies from different parts of the communications industry competing to provide the same service. This has come to be known as intermodal competition. Take voice over IP (VoIP) services. There were almost 37 million VoIP subscriptions in 2011. Eighty-seven percent of VoIP customers didn't get telephone service from their local carrier. Instead, most of them bought their service from their local cable company. And for good reason: Cable companies already offer video services to 93 percent of American households, so they can offer VoIP services to subscribers with relatively little additional investment.

And that's just the wireline competition. The numbers for wireless are even more startling. In 2011, there were over 317 million wireless connections in the United States. That's 102% of the population and more than twice the number of landline connections. That same year, 34 percent of American households had "cut the cord." That is, more than 39 million households chose to forego landline telephone service and rely only on wireless. I myself did so in 1999, when I became a rebel without a cord (although I must admit, now that I've reached 40, I do once again have a landline).

Increased competition, new technologies, once-separate industries battling on the same turf—these are the hallmarks of convergence today. But the Communications Act still divides the marketplace into silos of technologies and services. Telephone services go in Title II. Wireless services go in Title III. And cable television services go in Title VI. Because the FCC's charge is to administer the Act, we often look at each segment of the industry in a vacuum.

Another thing the Act missed was the transformative impact of broadband Internet access. To be fair, the Act did acknowledge broadband—kind of. It requires the FCC to report on the deployment of "advanced telecommunications capability." It says that the Universal Service Fund will support "access to advanced telecommunications and information services" throughout the country. And it makes it "the policy of the United States . . . to preserve the vibrant and competitive free market that presently exists for the Internet . . . , unfettered by Federal or State regulation."

But to acknowledge the Internet's existence is not to recognize its profound implications. Today, almost every part of the communications industry is competing to offer newer, faster, and better broadband services. Carriers are upgrading DSL with IP-based technology and blazing-fast fiber. Cable operators are deploying DOCSIS 3.0 to increase bandwidth tenfold. Satellite providers are offering 12 megabit packages in parts of the country that never dreamed of such speeds. And millions of Americans—many of whom don't subscribe to fixed broadband service at home—now have access to the Internet on the go using the mobile spectrum the Commission auctioned back in 2006 and 2008.

Underlying these changes is a technological revolution. Analog signals have gone digital. Circuit switching is giving way to packet switching. And first-generation cellular has been replaced with ultra-fast LTE. The common thread knitting all of these changes together is IP, a near-universal way to organize and transmit data.

What are the results of all this broadband competition? More choices for consumers, and major challenges to old business models. Traditional voice telephony is a good example. Vonage was one of the first commercially successful nomadic VoIP services. But now there's MagicJack. And Google Voice. And Skype. Even Facebook is giving its users the ability to make telephone calls using its Messenger product. And that's just traditional voice service! Add in video teleconferencing and you've got even more options. Essentially, voice is becoming just another application riding over the Internet backbone. It's no surprise, then, that today only a third of U.S. households subscribe to plain old telephone service over the public-switched telephone network (PSTN), and that number is dropping each year.

Yet the Communications Act still assumes that everyone gets plain old telephone service over the PSTN. And it doesn't say clearly how IP-based services should be regulated, if at all.

As the Supreme Court put it, "[i]t would be gross understatement to say that the 1996 Act is not a model of clarity."

That ambiguity leaves the door open for reform, but year after year we've been reluctant either to walk through it or to close it. Nine years ago this month, then-Chairman Powell opened the IP-enabled services docket. But many of the questions raised in that proceeding still remain. How should IP-based services be classified under the Act? What's the FCC's authority to regulate these services? And if we do have authority, how should we exercise it? In short, what approach should we take to the IP transition?

No matter how we at the FCC answer these questions, make no mistake: our transition to an all-IP future *will* happen. It is as inevitable as death, taxes, or another reality show starring a Kardashian. But what we do will have a dramatic impact on the speed and success of that transition. I see two paths in front of us.

The First Path clings to the past. If tariffing has worked for eighty years, why not eighty more? If the PSTN served us well in the 20th century, why not make carriers maintain it in all cases? The First Path basically embraces the status quo. If we follow it toward the IP transition, we'll carry with us all the baggage of traditional common-carrier regulation, including at least 608 pages of FCC regulations that apply to the traditional telephone network.

And where would the First Path take us? To a less competitive future. Innovative companies would avoid the voice business because of regulatory barriers. Want proof? Well, there's a reason why Google doesn't offer voice service through its fiber project in Kansas City. According to a Google executive, "We looked at doing that. The cost of . . . delivering telephone services is almost nothing. However, in the United States, there are all of these special rules that apply." I couldn't say it better myself.

And so it would go across the country. There would be less deployment of fiber, less build-out in rural America, and less facilities-based competition. The National Broadband Plan itself acknowledged that legacy requirements involving the PSTN "siphon[] investments away from new networks and services." Think for a minute: Would the automobile industry have developed as quickly if the government had forced manufacturers to keep making horse-drawn carriages? Would consumers have been better off if the government required Apple to keep making the IIe in addition to Macbooks and iPads? I very much doubt it.

Now, I'll acknowledge that the First Path wouldn't be bad for everyone. Those who arbitrage our rules, who build a business around regulation, who use that regulation as a shield against competition, would thrive under the First Path. And for the communications bar, business would boom. Ensnaring more companies and new technologies in a complex thicket of regulations would keep lawyers fully employed for the foreseeable future. Look, many of my friends are lawyers. And I'm a recovering lawyer myself. But I'd rather see companies spend their money on engineers and work crews, not attorneys and accountants.

You can probably guess that I am not a big fan of the First Path. Thankfully, there is a Second Path, one that welcomes the all-IP future and doesn't fear change. The Second Path starts with a basic premise: The IP transition will be delayed and prolonged so long as regulatory uncertainty deters investment in next-generation technologies. The Second Path acknowledges that, to borrow once again from the National Broadband Plan, "current

government policies hinder innovation and investment in broadband." It seeks to modernize the law to keep pace with today's converged, competitive market.

It should come as no surprise that I believe the Second Path will accelerate the IP transition. With regulatory certainty and rules that reflect the current marketplace, innovators would have the incentive to build out their own networks, upgrade their equipment, and focus on serving their customers. For the industry, this would mean more capital investment, more fiber deployment, and more facilities-based competition. For the American people, this would mean faster and cheaper broadband, more jobs, and a brighter future, especially for rural citizens.

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All of this brings us to the $64,000 question: Are we currently on the First Path or the Second Path? Are we running toward or away from the IP transition? The signals are mixed.

For example, before I came to the FCC, Chairman Genachowski, then-Commissioner Copps, Commissioner McDowell, and Commissioner Clyburn took an historic step by overhauling the Universal Service Fund and the intercarrier compensation system. They recognized the need for reform—the need to move away from implicit subsidies for telephone service and toward explicit support for broadband. And through an admirable act of political will, they managed to pull it off. Was it perfect? Of course not. But that kind of forward-thinking was a step along the Second Path.

And just this past December, Chairman Genachowski created a Technology Transitions Policy Task Force. Back in July, I called for such a task force, one that would help us take a holistic approach to the IP transition and focus our deliberations on a task that so desperately needs to be done. The Task Force will hold its first workshop in two weeks. I hope it will continue to solicit input from the public and develop proposals for hastening the IP transition. Given the pace of change, the Task Force should act promptly. If it does, we'll be on a good start down the Second Path.

Unfortunately, I can't report that all of the signs are favorable. For instance, I disagreed with last summer's decision to suspend our longstanding, bipartisan rules governing special access services. That decision took us down the First Path. It sent a signal that the FCC could re-regulate the market for low-capacity services such as T1 lines. Why would we want to force some companies, but not others, to invest in services based on the old standard of time division multiplexing, or TDM? Some of those services aren't even fast enough to qualify as broadband! Why would we want to dictate the prices for those services? That would only discourage anyone from investing in newer, faster networks. And most importantly, why would we raise the fear that we might regulate fiber in a similar way?

Another problem is the FCC's Title II reclassification docket. That docket remains open. So long as it does, it dangles over the heads of broadband providers like the proverbial sword of Damocles, threatening to impose legacy economic regulations at a moment's notice. As with special access, reclassification would take us in the wrong direction. Just think about what happened back in 2005, when the Commission relieved wireline broadband services from Title II regulation. Deployment and adoption skyrocketed, prices fell, and speeds increased. The lesson I draw from this is that reclassification, a back-to-the-future approach to regulation, just won't work.

Looking at recent developments, I think the best way to describe the situation is this: The FCC has one foot planted on the First Path and another planted on the Second Path. But we can't follow Yogi Berra's advice for much longer. Berra, you might recall, famously said "When you come to a fork in the road, take it." No, a time for choosing is upon us.

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Right now, the most critical choice we face is whether to move forward with an All-IP Pilot Program. This program would allow forward-looking companies to choose a discrete set of wire centers where they could turn off their old TDM electronics and migrate consumers to an all-IP platform. Now, you may have noticed that when it comes to the IP transition, everyone has a prediction about what will or will not happen if carriers are allowed to provide services exclusively through an all-IP platform. But as we found out during yesterday's "snowstorm"—what we Kansans call "weather"—predictions are no substitute for hard facts. Albert Einstein had it right: A "pretty experiment is in itself often more valuable than twenty formulae extracted from our minds."

Fortunately, we don't need to rely on formulae any longer. The FCC has sought and received comments on a proposal to create an All-IP Pilot Program. I've reviewed the record carefully. And having done so, I am proposing today that the FCC move forward with this program.

Conducting a trial run before implementing big changes is nothing new for the FCC. Before we turned off analog broadcasting, then-Commissioner Copps had the good idea of testing the concept. That experiment, which was held in Wilmington, North Carolina, provided valuable feedback and helped make the nationwide DTV transition a success. Similarly, the FCC launched a rural healthcare pilot program in 2007. The success of that pilot led to the creation of the Healthcare Connect Fund this past year. There are other examples, from spectrum sharing to the E-Rate program, but you get the point.

So then the question is how to structure this experiment. Let's start with some basic principles. *First*, participation in the All-IP Pilot Program should be voluntary. No carrier should be forced to participate, and pilot sites should be located in states that are ready and willing to embrace the IP transition.

Second, tests should ideally be conducted in a variety of places that represent our country's diverse geography and population. We'll learn the most from the pilot program if there are sites in urban, suburban, and rural communities. And we have to make sure that low-income and minority communities are included, because the IP transition is for everyone.

Third, speaking of leaving no one behind, residential customers with fixed telephone service today should continue to have voice service available to them, even when that service is based on IP. And business customers should know in advance what IP-based services will replace what they currently have.

Fourth and finally, we must be able to evaluate the All-IP Pilot Program in order to figure out what worked and what didn't. This will help us make the broader IP transition. With empirical data in hand, we can reject the rhetoric in favor of reason.

I've been impressed by the groundswell of support for an All-IP Pilot Program. This isn't an issue that divides the left from the right, Republicans from Democrats, or urban America from rural America. Just look at who has endorsed the pilot program.

Carriers like AT&T, Verizon, and CenturyLink. The National Cable and Telecommunications Association. Next-generation operators like Bandwidth.com. Manufacturers like Alcatel-Lucent and ADTRAN. Organizations like the NAACP, the National Urban League, the Rainbow PUSH Coalition, the National Grange, and the National Farmers Union. Advocacy groups like the Minority Media and Telecommunications Council, the Asian American Federation, the League of United Latin American Citizens, Women Impacting Public Policy, the U.S. Chamber of Commerce, and the American Consumer Institute. Last but not least, Blair Levin, the father of the National Broadband Plan, has encouraged us to move forward with the experiments, saying they're "worth a thousand pleadings." I think Blair and all of these groups are on to something.

Moving forward with an All-IP Pilot Program would send a powerful message to the private sector that we intend to head down the Second Path. We would signal that we won't force carriers to invest in old *and* new networks forever. We would move closer to the day when carriers will be able to focus exclusively on investing in the networks of tomorrow rather than maintaining the networks of yesterday.

One last point. The American people are ahead of Washington on this issue. Through millions of individual choices, consumers are sending a clear message about the superiority of IP-enabled networks. Government should heed this message and give the private sector the flexibility to make investment decisions based on consumer demand, not outdated regulatory mandates. The All-IP Pilot Program will move us an important step closer to achieving that goal.

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As we go about implementing an All-IP Pilot Program, our other work on the IP transition should not and must not stop. Instead, we should continue our efforts to advance down the Second Path. The experience that we gain through the pilot program will help guide us down that path. But we can't delay.

And at every stage in this process, I continue to believe that the FCC's work on the IP transition should be informed by certain core principles. As I outlined last July, those four principles are consumer protection, repeal of obsolete regulations, the ability to address market failures, and fidelity to the law. If we follow these principles, we will establish a modern, deregulatory framework for the dynamic, competitive all-IP world.

First, the FCC must ensure that vital consumer protections remain in place. One important example involves public safety. When consumers dial 911, they need to reach emergency personnel. It shouldn't matter whether they are using a landline, a wireless phone, or a VoIP application. So we need to prioritize the deployment of Next-Generation 911. Our report to Congress just last week was a good start. But we've got to do more. Our rules for the 911 system only contemplate legacy infrastructure. This means that VoIP providers still have to use selective routers, even if a local jurisdiction is ready for IP-based routing. We need to fix that.

Similarly, we should review other consumer protections, like our anti-slamming rules and the privacy provisions of the Telephone Consumer Protection Act. We should make sure that our rules reflect current technology and that they can be enforced after the IP transition. Consumer choice has to remain a guiding principle for the FCC no matter what technology is used.

Second, the Commission must make clear that 20th century economic regulation will not be imported into the IP world. To do that, we have to repeal the obsolete rules that were designed for copper-wire networks operated by monopoly providers. We have to scour from our books the tariffs, the cost studies, and the hidden subsidies that were the foundation of the old regulatory system.

Notably, states have already taken the lead here. By my count, almost half the states have taken economic regulation off the table when it comes to IP-based services. Last year, Governor Brown of California signed a bipartisan bill that establishes a deregulatory framework for IP-enabled services. My home state of Kansas is headed in the same direction. These states and others have recognized that common-carrier regulation and the IP transition are not compatible. They see that the old rules can't keep up with technology and the marketplace.

States have also taken the lead with respect to tariffing, one of the more arcane aspects of price regulation. Florida has eliminated tariffing for end-user services. Virginia phases out tariffing this year. Other states, from Michigan to Missouri, Alabama to Illinois, have reduced their oversight of residential pricing, made tariffing optional, or limited tariffing only to the most basic residential services. This deregulatory model acknowledges the world of communications as it is becoming, not as it once was.

It's worth noting that tariffs were created in the 19th century to help authorities monitor the rates railroads charged and to prevent competing railroads from offering lower prices to induce customers to switch lines. Well over a century later, mandatory tariffing is hurting companies, consumers, and competition. Companies find it harder to attract new customers with discounts. Consumers can't get an exception to the language of the provider's tariff, as they could with a contract. And competition is weighed down by the burden of compliance. Compare the landline industry, with all its tariffs, to the wireless industry or the cable industry or the broadband industry or even to the VoIP industry, not one of which is subject to tariffs. Would anyone contend that the most innovative, competitive sector has been landlines?

For these reasons, I propose that the FCC eliminate residential tariffs in states that have done so already and consider detariffing wherever the market is competitive. If we did this, we could send another signal that we won't cling to the rules of the past. And we could eliminate several regulatory burdens all at once. For without tariffs, there is no need for backward-looking cost studies and the inefficient cross-subsidies that are inherent to the tariffing system.

Third, the FCC must still be able to combat discrete market failures and protect consumers from anticompetitive harm. Numbering is a good example. We know that carriers have little incentive to port numbers to a competitor and that telephone numbers will play a vital role even after the IP transition. So it's critical to ensure that our numbering rules keep up with the times. Unfortunately, they haven't. VoIP providers today can't directly access numbers despite the increasing use of VoIP in American households. This could change soon. I'm pleased that yesterday the FCC's Wireline Competition Bureau circulated a Notice of Proposed Rulemaking to begin the process of modernizing our numbering rules by allowing VoIP providers to directly access numbers. My office has been calling for such a proceeding for the last several months. In this proceeding, we should also consider reforms to the Commission's number conservation rules. Many were premised on the particular technology used by local exchange carriers in the 1990s. And let's take a look at our numbering contribution rules, under which contributions don't really match the numbering resources used by providers. These efforts

on numbering illustrate the role the FCC can and should play in preserving a vibrant, all-IP marketplace.

Fourth and finally, we can't overstep our authority. The Communications Act isn't perfect by any means, but it is our governing statute. We have to respect its constraints so long as it's on the books. If the Act prevents us from doing something necessary to the IP transition, we should alert Congress so that our elected officials can direct us on how to proceed.

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Thus far, I've talked about the "whether" and the "how" of the IP transition. But I also think it's important to think about the "why." Why does all of this matter? I realize that the IP transition can sound like an abstraction or perhaps the title of a *Star Trek* episode. But its real-world impact will be widespread.

For one thing, IP infrastructure will boost network capacity and improve service quality. Take Sprint's Network Vision project. Sprint has spent billions to upgrade its backhaul network from last-generation T1 lines to IP-based Ethernet services. Ethernet backhaul allows Sprint to increase the capacity of its network twentyfold to meet insatiable consumer demand. That means more robust, reliable access for mobile consumers.

Also, when it comes to voice communication, today's public-switched telephone network leaves much to be desired. Remember the pin-drop commercials? Well, I don't know about you, but phone calls certainly don't sound that clear to me. And that can lead to real problems. If you're as old as I am, you might recall the 2001 Sprint commercial where a football coach asked for "a back-up for O'Neill" but instead got the 1970s singing duo of Captain and Tennille.

One reason for this is that the PSTN was designed to capture and transmit only a fraction of the frequencies used by the human voice. There's actually a better standard, one that allows wideband audio. Wideband audio captures a much broader range of frequencies, making it a lot easier to hear someone over the phone. And it's been around for more than 20 years. So why can't we just snap our fingers and upgrade? Because the old standard is hard-wired into the system. We can't change it so long as we rely on TDM infrastructure.

This isn't the case with IP networks. VoIP providers are already offering business customers high-quality voice services using wideband audio. And network providers are beginning to offer HD Voice, which combines the benefits of wideband audio with the smart filtering of background noise. With HD Voice, consumers can have conversations that are so clear it feels like they're in the same room. And HD Voice isn't some far-off technology; it's happening now. At this year's Consumer Electronics Show, for example, T-Mobile announced the launch of nationwide HD Voice for select handsets across its network. AT&T Wireless is promising HD Voice later this year. Over time, more and more people will have the ability to talk to one another in HD Voice—as long as they're connected via IP, that is.

I know I've focused a lot on voice, but the IP transition will be felt much further than that. It will mean improved health care through telemedicine, as I saw during my visit to Packard Children's Hospital in California last year. It will mean better educational opportunities through distance learning for children and adults in rural America, including those in my home state of Kansas. And it will mean more job creation. Studies estimate that every $1 billion spent by the private sector deploying fiber creates 15,000 to 20,000 jobs.

The IP transition also will revolutionize the field of emergency communications. Right now, everyone knows to call 911. But few people realize just how tied the 911 system is to copper wires, landline phones, and 1970s technology.

There are several problems with this system. For one, the use of legacy routing equipment can lead to long call setup times, which means precious seconds are lost during a fire or home invasion. For another, circuit-switched systems aren't built for redundancy, so a single point of failure can take down a call center's operations. For yet another, if a natural disaster disconnects a call center or increases call volumes above what the call center can handle, it's often hard to transfer the call and the caller's information to another location. In short, when you call 911 today, your call may be delayed, it might be dropped, or it might not go through, all because of the architecture underlying the system.

Next-Generation 911, an IP-based architecture that I mentioned earlier, can change all that. These systems are built with redundancy in mind, and the use of IP allows widespread interoperability. This means that calls are rerouted seamlessly from one public safety answering point (PSAP) to the next without losing information about the call. NG911 also allows for more efficient public safety operations. Legacy 911 networks tend to be geographically specific. They trace county lines and even the so-called LATA boundaries that telephone companies once used to distinguish local calling from long-distance. As a result, we now have over 6,000 PSAPs across the country. Individually, they do great work. But with NG911, public safety officials can pool their resources. They can set up calling centers that cover entire regions. And yet they can stay more interconnected and thus more resilient.

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In conclusion, it's safe to say that when it comes to the IP transition, the stakes are high. The choices that we make at the FCC will have dramatic real-world consequences for consumers, for companies, and for competition. So as we survey the two paths in front of us, it's vital that we make the right decision.

A fellow American, almost one hundred years ago, wrote of two paths. In 1916, Robert Frost told of two roads diverging in a yellow wood. The first path was well-worn, the second path less traveled by. Like Frost's lone traveler, we should take the Second Path and embrace the IP transition. For that will make all the difference. I look forward to getting to work alongside my colleagues as we travel down that path together. Thank you.