THE HAMILTON PROJECT

THE BROOKINGS INSTITUTION

INVESTING IN AMERICA'S INFRASTRUCTURE:

FROM BRIDGES TO BROADBAND

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Opening Session

ROBERT E. RUBIN, Citigroup Inc.
LAWRENCE H. SUMMERS, Harvard University

Special Guest:

GOVERNOR TIM KAINE, Commonwealth of Virginia

Overview of Strategy Paper

DOUGLAS W. ELMENDORF, The Hamilton Project,
The Brookings Institution

Roundtable on Telecommunications Infrastructure

Moderator:

GLENN HUTCHINS, Silver Lake

Panelists:

BLAIR LEVIN, Stifel Nicolaus
JON M. PEHA, Carnegie Mellon University
PHILIP J. WEISER, University of Colorado

Roundtable on Physical Infrastructure

Moderator:

NANCY CORDES, CBS News

Panelists:

RONALD BLACKWELL, AFL-CIO
JASON BORDOFF, The Hamilton Project,
The Brookings Institution
DAVID LEWIS, HDR Decision Economics
DOROTHY ROBYN, The Brattle Group

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P R O C E E D I N G S

MR. RUBIN: Good morning. Welcome. I'm Bob Rubin. On behalf of all my colleagues at The Hamilton Project, let me welcome you this morning to our program on infrastructure, from bridges to broadband.

As most of you know, The Hamilton Project was begun about three years ago. Our objective was to set forth, which we did in the form of a paper, an economic strategy for the country in the face of a period of change of truly historic proportions, transformational change. And since then we've had a series of panels and papers and different policy areas pursuant to that strategy. We believe the United States, with its dynamic economy, its willingness to take risk, its flexibility, can do very well in today's rapidly changing global economy once we get past this presently exceedingly difficult period. But in order to realize that potential, we must meet the usual consequential challenges, and failure to meet those challenges could lead to serious secular difficulty. We also believe strongly that economic activity should be organized around markets, but that government also has a critical role to play in meeting the many needs for a

successful economy that markets by their very nature will not provide.

Today we're going to explore the question of infrastructure. Our distinguished authors and their papers will explore the many issues around this critical area with respect to our economy going forward, providing infrastructure for a successful economy in areas ranging from the traditional, like bridges and water systems, to cutting-edge areas, like broadband. The issues that will be explored will include at least the following: What criteria should be used for evaluating alternative infrastructure investments? How can more effective use be made of existing infrastructure? How should political capital and financial resources be allocated amongst maintenance and repair, measures to create more effective use of existing infrastructure, and investment in new infrastructure? Very importantly, can infrastructure best meet the criteria for economic stimulus in terms of being immediate, being temporary, and maximizing short-term benefit for dollars expended? Or should infrastructure decisions be based on long-term criteria and only be used for fiscal stimulus when they can as well meet these

criteria for fiscal stimulation. With fiscal stimulus then obviously provided in other ways that best optimize in terms of the fiscal stimulus criteria. How can infrastructure be financed, including the possibility of more innovative financing using privatization, tolling, and other possible methods? What are the issues around financing infrastructure through a capital budget or through the sale of valuable real estate, valuable government-owned real estate, whose functions could then be moved elsewhere? How could infrastructure be coordinated across state and regional boundaries? And finally, how should we think about expanding access when we evaluate infrastructure investment?

Let me now outline our program and briefly introduce the speakers. What I will not do is go on extensively about any speaker because the résumés are in your materials. Our opening session will begin with remarks by Larry Summers. Larry as you know was former secretary of the United States Treasury, former president of Harvard University, and is currently Charles W. Eliot university professor at Harvard University. Larry's remarks will address, amongst other things, one of the

issues I mentioned a moment ago, the role of infrastructure investments in stimulating economic growth from the perspective of demand creation and job creation, with particular focus on the exceedingly difficult economic environment that we're now experiencing. After that we'll hear from the Governor of Virginia, Tim Kaine. We're enormously honored to have Governor Kaine with us. As all of you know, Governor Kaine is very widely respected for the enormous thoughtfulness that he has brought to the issues of his state and to the issues of states more generally. His remarks will deal with the challenges of infrastructure from the perspective of the states and he will focus particularly on his experience in Virginia. After Governor Kaine finishes his remarks, he will then entertain questions before we go on to our next session. Subsequent to the opening session, we will have a summary by Doug Elmendorf of the paper that's been distributed to you prepared by The Hamilton Project on infrastructure. I thought it was an enormously insightful paper with a really interesting discussion of the pros and cons around the various issues. I would strongly commend it to you. Doug has previously been on the staff of the Federal Reserve

Board of Washington, the United States Treasury Department, and the Council of Economic Advisors, and we are absolutely delighted that Doug is now the director of The Hamilton Project as well as a senior fellow at Brookings. After Doug's presentation, we'll have two papers, or two Roundtables rather, on papers developed under the aegis of The Hamilton Project with respect to infrastructure. The first Roundtable will be on Telecommunications Infrastructure. The moderator will be Glenn Hutchins, chief executive officer of a highly successful private equity firm that specializes in technology, Silver Lake. He'll be joined by Blair Levin, managing director of Stifel Nicolaus. And by the authors of two new papers, Jon Peha, professor of engineering and public policy at Carnegie Mellon University, and Philip Weiser, professor of law at University of Colorado. The second Roundtable is on Physical Infrastructure. All of us as we go through our daily lives are aware of the enormous problems with respect to bridges, roads, water systems, and so much else. And the moderator of that discussion will be Nancy Cordes, transportation and consumer safety correspondent at CBS News. She'll be joined by Ronald Blackwell, the enormously

well respected chief economist of the AFL-CIO, and by the authors of three new papers, Jason Bordoff, policy director of The Hamilton Project, David Lewis, senior vice president at HDR Decision Economics, and Dorothy Robyn, formerly at the National Economic Council and now a principal at the Brattle Group. You put it all together, it is a remarkably robust program, intellectually and in terms of the range of issues covered. And I'd like to recognize particularly Doug Elmendorf, who I've already mentioned, the director of The Hamilton Project, and Karen Anderson, our managing director, for putting together this terrific program.

With that, it is my pleasure and honor to introduce our first speaker, the Honorable Lawrence H. Summers. Larry?

MR. SUMMERS: Thank you very much Bob for that. Sometimes it's better to be introduced by you than to be introduced with you. I remember the time in late 2000 when someone introduced the two of us, and the introduction went something like this: "Bob Rubin is the best secretary of the Treasury since Alexander Hamilton. Larry Summers is the best secretary of the Treasury since Bob Rubin."

I am glad to be here and glad to be addressing what I think are a consequential set of issues. Let me say at the outset that I share the general judgment that runs through the papers to be presented here that the greater application of economic logic and analysis can do an enormous amount to support wiser infrastructure investments and equally important, more effective use of the infrastructure investments that we have already made to the very great benefit, not just of measured income and GDP, but also to the quality of lives of American citizens. Those are in economic parlance the microeconomic and growth aspects of infrastructure investment, and ultimately they are probably the more important set of issues that are involved when one is talking about infrastructure. Speaking intelligently about them requires detailed microeconomic knowledge of infrastructure issues, which I lack. I am therefore going to talk about what I know about, a little bit, maybe, and is perhaps consequential at this instance. And that is the macroeconomic and cyclical aspects of infrastructure investment decisions. I had a clear view on this question in January. And I continue to think that on the basis of all the facts and data available

in January, it was a reasonable view to have. That view was that in a context where it was not clear how the economy would perform, where there was a case for very rapidly delivered short-term stimulus, the appropriate emphasis was elsewhere away from infrastructure and on tax and other measures that could be delivered more quickly. Not because I felt infrastructure investment was unimportant, but because I felt that infrastructure investment decisions were best put in a longer term context. I think that was an entirely reasonable view based on the data available at that time, and my own reading of the evidence so far, while it is very preliminary, is that if anything the fiscal stimulus that was delivered in the form of tax rebates has been somewhat more effective than one might have expected. But that the economy is somewhat worse than one might have expected because it has been offset by the very consequential increase in energy prices and other commodity prices. So we have successfully, with our tax rebates, increased the disposable income of consumers, but unfortunately a different shock -- a different and larger shock -- has been reducing the disposable income of consumers. My belief

today is that in the context of our current economic situation, the balance of risks favors additional efforts directed at fiscal stimulus to the economy, and that there is a role for infrastructure investment within the overall envelope of that fiscal stimulus program. Why do I hold these convictions? Four considerations strike me as of particular importance. First, the current economic context: I think there is a reasonable argument to be made that our economic situation today is as critical and uncertain as at any juncture since the current financial crisis began last August. There is increasing evidence that problems in the housing market are not just continuing, but likely to be enduring for a substantial interval. Even with the recent rallies, financial stocks, -- depending on how you look at it -- which are a forward-looking indicator of the health of the financial system, are as low or lower as they were at the previous moment of maximum alarm before the weekend when Bear Stearns was bailed out. While there have been favorable fluctuations in the last six days, it remains the case that energy prices are at levels that would have been almost inconceivable even six months ago. Consumer confidence is

at a low ebb, as the measures added to the current housing bill remind us, questions of capital adequacy loom over the financial system. In that context, the risks seem to me much more to the downside than they are to the upside. And even if the current cyclical context resolves itself in a favorable way, consideration of the history of past episodes like this one, economic downturns caused by financial excess giving way to contraction, a pattern very different than the more traditional one of the feds stepping on the brakes. Such contractions have lasting impacts. In the early ‘90s they were referred to as the headwinds after the financial problems of the banking system in 1990 and 1991. In this most recent decade, the recession ended at the end of 2001, but unemployment did not reach its peak level until 2004. The prospect that the economy is going to need support for demand over an interval going forward seems to me to be the preponderant probability in the current situation.

Second consideration militating in favor of fiscal stimulus is that I think there is reason to believe today that a significant amount of stimulus can be delivered with reasonable rapidity. It is certainly the

case that if you look at traditional infrastructure programs, the lags are very long, that typical federal highway spending, for example, spends out only about 25 percent in the first year. However, when people put their minds to it, they can do much better. If one looks at the several hundred-million-dollar-infrastructure commitment that was made after the bridge collapse in Minneapolis about a year ago, 86 percent of the money had not just been obligated, but had been spent within a nine-month interval. The sense that there is a backlog that can be moved rapidly is reinforced by the extensive anecdotal evidence of projects that have been slowed partially through the process of construction or that are ready to let, but have been held back for budget reasons. Some of those budget reasons have to do with the strains that are being felt by state and local budgets across the country. But there is a rather simpler reason why we are not fully delivering on past infrastructure commitments. If one looks at the price of inputs to infrastructure, they have risen very rapidly. Indeed, the Producer Price Index for highway construction has increased by 70 percent since 2004. Whatever infrastructure one thought one was buying with a given

budget appropriated in 2004, 2005, or 2006, is proving not possible to buy with that budget. In that context, it seems to me that it serves the efficiency of project completion, it serves the objective of economic stimulus, and it serves the objective of rapidity to allow those original plans to be carried out. And that means the provision of additional federal support for infrastructure.

The third consideration that I believe militates in favor of beginning now a significant effort at -- increased effort -- at infrastructure is the structural dimension of our current jobs issues. This is not a good time in the American economy for anyone. But after a period of considerable decline in manufacturing, a major source of employment for men with relatively little education, where slack has been taken up to some degree by construction, we are headed into a structural situation of a double whammy for those less educated men, with manufacturing and construction both under great pressure. Indeed already, and much of the decline in construction has yet to be felt, if one looks at the unemployment rate of men who have dropped out of high school or men who have only completed high school degrees, their unemployment in

ratio to national unemployment is higher than it has been in more than a decade. On the order of 20 percent of their employment comes from construction jobs, compared to only 5 percent for the overall economy. And so even when the economy reverts to a cyclically normal situation, there will be a case for addressing our policies to demand towards the areas where employment demand is most needed, and construction is such an area. And that, too, points towards targeted stimulus directed at infrastructure.

The fourth consideration that militates in favor of inclusion of infrastructure in the context of a discussion of economic stimulus is the longer run consideration. I don't see how anyone who has spent anytime looking at American public schools -- 75 percent of which have structural deficiencies, 25 percent of which have problems in their ventilation systems -- or who has had the opportunity to compare Kennedy Airport with almost any international airport to which one could fly from Kennedy Airport, can be satisfied with the state of America's infrastructure. There was a set of data released two or three days ago by the Pew Foundation that was in many ways the most disturbing data that I've seen in a long

time. It reported on a survey of 32 countries in which people were asked whether they were satisfied with the state of the country's economy and whether they were satisfied with the state of the country's direction. Interestingly, and I suppose inspiringly if you're an economist, the answers to the two questions lined up extremely well. People who liked their economy liked their country, and vice versa. What was less satisfying was that China ranked first with 80 percent, roughly 80 percent, of the people satisfied. Australia ranked second. Russia ranked third with roughly 60 percent of the people satisfied. And the United States on these measures ranked somewhere in the twenties with 20 percent of the people satisfied. That I would suggest makes a case for a redirection of economic policy and a redirection of public efforts in taking responsibility for economic outcomes, and a visible functioning infrastructure is a crucial part of all of that. If it is right, why delay? Why not do everything one can to accelerate the application of prudent investments? Just what are the right criteria for selecting investments? Just how should the funds be provided? These are crucial questions and there's a great

deal of insight in the papers to be presented that bears on those questions. But this assessment of the broad macroeconomic context convinces me that there is far more danger that over the next year we will initiate too little and do too little in the way of infrastructure investment than there is that we will make excessive efforts to repair bridges in America, excessive efforts to rebuild levees, excessive efforts at repairing our schools. And so I hope that we will move promptly as a country to increase our efforts at fiscal stimulus and when we do, infrastructure will be an important component. Thank you.

MR. RUBIN: Larry, since we don't have mikes on, maybe we want to just both come up here.

MR. SUMMERS: Okay.

MR. RUBIN: I think that'd probably be easier than trying to strangle ourselves. Okay. I'm going to start, Larry, with one --

MR. SUMMERS: The Hamilton Project with its logistic experts have recommended differently, but I am once again deferring to your leadership, Mr. Secretary --

MR. RUBIN: You know, life is what it is, but in any event, let -- I -- we're going to have questions from

everybody. I'd like to start with one, though. I heard everything you said, and as always, everything you said was exceedingly insightful and persuasive. Having said that, -- no, no, it was, it really was, it's just that it was my failure to understand, which is causing me to ask this question.

Let's assume that we really need stimulus, which I'm inclined to think we do, and let's assume we really need infrastructure, and there is no question we need that, why is it that we marry the two sub-optimally as you're recommending instead of optimizing in each area with our scarce dollars? That was my question -- unless, of course, there are some things which happen to optimize them both.

MR. SUMMERS: I think there are two parts of the answer to that question. The first is that we no longer have you as the secretary of the Treasury and in that context it's just possible that the policy process might have difficulty doing two really important, really complicated things in two months , and so some effort to combine high priority items might make it more likely that they would both get done.

MR. RUBIN: It might have been in deterioration when I left. That could be it. That's one possibility.

MR. SUMMERS: But I think that's actually a serious -- a serious possibility. I think if we have one major further piece of economically oriented legislation before the presidential election, that would be a substantial accomplishment, and the prospect that we would have two strikes me as being very small. And so a recommendation that we treat these things entirely on separate paths is either a recommendation that do the infrastructure components of stimulus as intelligently as possible, which I would strongly support. Or it is a recommendation that we just defer thinking about infrastructure for a year, which in light of the considerations that I induced I think would be a mistake.

The second thing is that we sort of live in the world -- as you constantly remind me coming from the private sector while I was an academic -- we live in an intensely practical world, and whatever set of analyses one could do along the lines of the papers here about how more refined cost benefit analyses could lead to much better infrastructure choices -- and I completely agree with that

-- it is also the case that there is a substantial backlog of projects that are one-third or two-thirds finished that are now being finished very slowly and very inefficiently because of lack of funds caused by the various economic changes. Allowing those set of projects to which we were previously committed to be finished more rapidly and more efficiently strikes me as the right thing to do. And you can call it stimulus, you can call it infrastructure investment, you can call it a recovery program, you can call it a duck for all I care. But it seems to me there's a pretty strong economic case for doing just that. I think the principle -- another part of the argument against the position that I've taken is oh, look, infrastructure equals bridges to nowhere when you have a Congressional appropriations process and, therefore, we shouldn't have infrastructure or -- which is kind of what got us Kennedy Airport -- or, therefore, we should have thirteen new kinds of safeguards to ensure that none of it is ever pork again. And I guess the question is what about those projects that sort of are ready to go and are either are going to go slowly and badly or are going to go more quickly, part one. And part two, that you really do have a set of economic

benefits when many of the resources you're putting to work on these infrastructure projects would be otherwise unemployed rather than otherwise drawn from other parts of the economy. But I suspect we really don't disagree because I certainly would share your sense that stimulus should not become an excuse for thoughtless traditional infrastructure, and my guess is you would relate to my consideration that if there are a set of projects that can be identified in a reasonable way that can be accelerated to the benefit of both the long-run economy and the short-term economy that that's a good thing to do. And I guess I worry at the end of the day more about the number of people who are going to be unemployed than I do that we're really going to just have too much infrastructure or just have the wrong infrastructure. And so it's a matter of balancing the risks.

MR. RUBIN: Yes sir?

QUESTIONER: Thank you. That was extremely interesting. I have written about -- oh, Antoine van Agtmael. I'm a Brookings Trustee. I've written about and I'm very strongly in favor of infrastructure spending, but I have in thinking about these over the last couple of

months developed one reservation, and you alluded to it in your presentation. If you look at infrastructure in the United States, you have to look at it in the context of a huge infrastructure boom around the world, where basically emerging markets now have more infrastructure. I mean they have spent more on infrastructure than we have spent in the United States or Europe, and where it's growing there at 22 percent, and here it's growing basically if you look at it after inflation at a negative rate. When you do that, then there is an issue that you alluded to, which is that on the one hand there is slack in the labor market, but there is huge price pressure in construction materials. And so when you argue, as you did, for pushing this forward and moving this up, you have to deal with these inflationary problems, which is another set of problems that we have to deal with in the economy in general. How do you do that? I haven't figured that out.

MR. SUMMERS: You know, there's sort of two parts of that question -- I have thought a little bit about that and there are two parts of the question. And I am not sure I have great answers, but the first question is if materials to build a highway are going to cost $100 this

year and $70 next year, then it's probably a bad idea to spend a lot -- to invest a lot of money this year rather than next year. That's a bet on what you think about commodity prices and whether they're going to revert or not, and I would refer you to that sage, Secretary Rubin, who observes on such topics that markets go up, markets go down, and tends to discount the views of those with strong opinions about just which way they're going to go next. So I don't think -- I don't think on timing -- I don't think on timing materials prices. I just think that's a bad business to try to be in because you're not likely to get -- it's just very hard to get right and it doesn't get easier because you become a government operating with a nine-month lag. So I think you have to try to take your best shot on that and probably there's some good things you can do involving hedging that may minimize the risks.

The second part of the question is will our infrastructure investments run up against an inelastic supply curve and push prices further up? You know, if -- from the way you spoke, know more about the figures than I do. If you look at the size of the worldwide construction market, and you ask yourself if the United States

accelerated an infrastructure program by $30 billion, by $50 billion in the next year, what's the increment to world prices and to the prices we're going to have to pay? I think you'd conclude that that increment was probably not large. And I think if you took the logic a little further and you said all right, so I'm worried about this, you'd say God, we've got to slow down in the United States right now, we've got to slow down in Europe right now, we've got to -- looks like we're going to have a slowdown in India right now. If we think we've got to make infrastructure investments some time, should we do it now when there's slowdowns in all these places, or should we do it right when the next boom starts? I think that would become another reason to try to move it forward into the current context because life is about choices, and I think one of the reasons why being late on infrastructure as we are is going to be more expensive is precisely because of the relative price changes that you described.

MR. RUBIN: Yes?

QUESTIONER: Chris Leinberger. I'm here at Brookings, and I'm a real estate developer who's gone out to bid on a number of projects recently. And so I've seen

the fall in costs of labor and the rapid rise in the cost of the construction materials. Question of what kind of infrastructure -- is it an infrastructure that allows me to build low-density stuff or allows me to build high-density stuff? That the high-density stuff is a much more efficient way -- and I believe it's what the market wants -- can we manage that somehow? Or is it the short-term issue such that you just take what's in the pipeline and go with it?

MR. SUMMERS: Guess I'd say two things. One is when things are in the pipeline and far enough along that they're going to happen anyway, I doubt any useful social purpose is served by causing them to happen over seven years when they could happen -- when they could be constructed with reasonable speed. And so with respect to a portion of the backlog, you sort of got to go with it. Beyond that, you need to make rational strategic choices, and the one you raised between high-density and low-density is one of those important rational strategic choices. It's one where the judgment you expressed seems very very reasonable to me, but I don't have the expertise to make an intelligent judgment between the different strategies.

There’s certainly a whole set of environmental considerations, which we haven’t gotten into so far, which would militate in the direction that you favor.

MR. RUBIN: A slight change in our schedule; let me announce it. The Governor’s about 15 minutes away; I think he had some problem getting out of his airport or something, which may say something about infrastructure , so we’ll take one more question for Larry and then Doug will come up and present the strategy paper, if that’s okay Doug? By that time the Governor will have come and we’ll have Tim Kaine.

QUESTIONER: Vic Miller with Federal Funds Information for States. You mentioned the Minneapolis bridge; the authorization was provided, the appropriation was provided, and unusually it provided a zero federal match. Usually the ER programs require a federal match. Think that got done fast because there was no state role in providing funds. Now in general, the states are required to provide funds and I think it’s a good idea; it gives them financial commitment, but also gets the Legislature involved, which doesn’t usually get involved when there’s no state funds. But would you be in favor of a two-tiered

sort of world where we're looking at a short-term stimulus infrastructure package, but a longer term investment package?

MR. SUMMERS: In, you know, in some sense two-tiered plans are always better than one-tiered plans because you always have the option of making the two tiers essentially equivalent, and so allowing for the possibility of more differentiation has to be better. I think there are hugely important questions involved with doing something that is sensible in the short run and better in the long run. And that's, I think, the essence of the two-tier idea that you're suggesting. Just what the right way to marry them is I don't feel qualified to make a detailed prescription, but I think the core strategic choice for the next year is the one that was implicit in Bob's judgment, Bob's first question, which is should we in pursuing a strategy make a sensible judgment that gets us a sensible set of judgments that gets us started rapidly in the best way we can on infrastructure as a prelude to whatever optimal long-run rational program can be designed? Or should we remain inert with project budgets being cut while

we wait to design the optimal rational system? And I'm opting for the former view.

MR. RUBIN: Larry, I'm told we have time for one more question. Sandy?

QUESTIONER: Sandy Apgar, Woodrow Wilson Center and the Boston Consulting Group. In reviewing the housing privatization program set up during your respective tenures, I've seen that a number of infrastructure projects and similar large-scale programs have run into a major hurdle on stricter interpretations of federal budgetary scoring by OMB and CBO. And it has actually stopped several major programs in DOD and, by extension, in four other agencies under GSA's stewardship. Both as economists and as practical people, how do you get around or over the obstacle of a strict scoring interpretation and, frankly, unleash much of the private capital that I think you're hoping for?

MR. SUMMERS: I don't know anything about the scoring issues associated with federal infrastructure programs. It was -- it's been my observation over the years that I've heard often that people who want to do things that they think are very important think that their success in doing

it is being thwarted by these Byzantine scoring rules that OMB and the Treasury and the Congressional Budget Office have. And so I've seen a movie with broadly this plot a fair number of times and I would say my observation is that about half the time when I get myself into the details, I conclude that probably the people at CBO are doing a good job of protecting the nation's fisc. And the person who's eager to do this thing -- actually it's kind of a trick to make something like a loan guarantee, to take a subject that's a tad topical. Like a loan guarantee where something's being made to look like it's free that's really imposing and implicit liability on the taxpayer or that it turns out that the reason the people are doing what they're -- scoring it the way they are is that somebody pulled an outrageous scam four years before that distorted the deficit figures while doing nothing that was fiscally responsible. That's the case about half the time. And about half the time, in our zeal to prevent the deficit from being increased, we are failing to give credit for some obviously sensible thing to do that is, and as a consequence we are really setting back rational decision making. The example that I always gave in the second area

was that it's as well as social science can know anything, it's very clear that if the IRS spent a half a billion dollars more on collecting taxes, the extra revenue might be $2 billion, then it might be $5 billion, but it couldn't possibly be less than half a billion dollars. And yet if the IRS does, it costs half a billion dollars more. And there are other examples of surely good things to do in healthcare, for example, that would drive us to better outcomes but that turn out to be very hard to do because the costs get scored and the benefits don't. So, I find your suggestion plausible in the sense that many times when -- there are many oddities in scoring that distort outcomes. I caution, however, that one of the very great accomplishments we had going, I think, in this country over a period of a significant number of years -- and President Clinton and Bob deserve very substantial credit for it -- is the progress we made on the budget and a lot of care about the accounting, and a lot of being careful to prevent abuse was an important part of how that happened, and so one needs to be very careful about dismissing the current -- dismissing scoring conventions in search of particular advantage in a particular area. But, look, there's a lot

of issues in scoring that would profit from a lot of analytic work. Thanks very much for the chance to be with you.

(Recess)

MR. HUTCHINS: -- mostly on two other aspects on infrastructure policy, how to use existing infrastructure more efficiently, and how to make better decisions about investing our current infrastructure dollars. This focus is not meant to discourage interest in the level of infrastructure investment overall, but we wanted to emphasize that improvements in these dimensions of infrastructure policy have the potential to yield very large benefits for the American people and for the U.S. economy. Let me be more specific first as regards to physical infrastructure, and then concerning telecommunications infrastructure.

Physical infrastructure of course includes roads and bridges, airports and air traffic control systems, water and sewage systems, and facilities for energy production and distribution. As one key step toward using our physical infrastructure more efficiently, we recommend

establishing pricing mechanisms such as road congestion fees and air traffic controls fees to make users bear the cost of their infrastructure use more fully. In addition, at least part of the revenue from these fees should be used to offset the potential adverse distributional impacts. For example, road congestion fees would cause drivers to pay for the traffic delays they impose on others thereby encouraging drivers to shift their trips to other times or to reduce the number of less essential trips. But these fees would have a larger adverse effect on the budgets or low-income drivers than high-income drivers, so some of the revenue collected should be used to compensate low-income drivers. One way to combine congestion pricing with such compensation is presented in David Lewis's paper that you'll hear about shortly.

Another example of pricing as a means of achieving more efficient infrastructure use is in Jason Bordoff and Pascual Noel's paper today. They advocating switching the pricing of auto insurance to a per-mile basis from the current system of mostly flat rates. As they will show you, the result will be a notable reduction in miles driven.

As a key step for making better decisions about infrastructure investments, we recommend in the strategy paper that the federal government remove distortions in its own policies and provide more flexibility to states and localities in exchange for more accountability. One proposal for improving decision making about infrastructure for air travel appears in today's paper by Dorothy Robine . She supports separating operation and regulation of the air traffic control system, and she will describe the advantages of that and the other changes that she proposes.

Telecommunications infrastructure is a more recent source of concern for many people. This infrastructure includes the natural resource of the electromagnetic spectrum as well as the constructed resources such as telephone wires, cable lines, and equipment. Despite the high-tech wonders that many Americans enjoy, the United States in fact lags behind many industrial nations in high-speed internet access and its economic and social benefits.

One important step in making better use of our existing telecom infrastructure is to shift the allocation of wireless spectrum from industries and firms that had

good historical reasons for controlling parts of the spectrum to those industries and firms that can put spectrums to most valuable use today. To accomplish this, today's paper by Philip Wisor recommends that the government facilitate leases and sales of unused spectrum, also that the government adopt a more flexible approach to avoiding interference among spectrum users, and he will describe that to you more fully later on.

Another important consideration for telecommunications infrastructure is access. We recommend that the government consider targeted, cost-effective subsidies to encourage private firms to expand high-speed internet access to unserved rural areas. Just as the government has facilitated low-cost mail delivery, electrification, and the provision of other services to rural areas, so it can facilitate access to the critical information source of the 21st century. In a paper today, John Peeha will present an innovative auction mechanism for increasing high-speed internet access as the lowest possible public cost.

In conclusion, the nation's infrastructure problems are daunting but solvable. Increased spending on

infrastructure is likely to be part of the solution perhaps as part of a short-term stimulus package as Larry Summers discussed, perhaps separately or in addition as part of a long-term strategy as is being discussed currently around the country.

In addition to spending more money though, we can reap tremendous advantages from simply using existing infrastructure more efficiently and by making better decisions about how to invest in infrastructure. As I said, using existing infrastructure more efficiently must start with setting appropriate prices so that users of infrastructure bear the costs of their use that they impose on other users of the infrastructure and on society more broadly. Making better decisions about how to invest in infrastructure needs to start with better mechanisms in which the federal government makes decisions, but also extend to better ways in which the federal government influences made by states and localities. And these themes, using infrastructure more efficiently and making investments more intelligently are our themes for today's conference.

I am suggested through various hand gestures from people at the back of the room that Governor Kaine is very, very close. I mistimed a bit when I thought he was likely to arrive. I could take questions if you want.

MR. : (inaudible)

MR. : My guess is that Larry will find out what I've said and I will have to crunch it later. I should admit to having skepticism about Larry's position, or maybe I shouldn't admit, but I have skepticism about Larry's position. I agree with Larry that the country is at a moment of great economic peril both through dangers of slower growth and through dangers of higher inflation. I am skeptical though that infrastructure investment will be in general well targeted enough to provide much effective stimulus. I think we agree that there are objective stimulus and objectives regarding infrastructure. The question is to what extent those objectives overlap and my sense of this is they overlap less well than Larry suggests. For example, it's not obvious that infrastructure projects that are ready to build are in the places with the highest unemployment rates for construction

workers -- this alignment I think is not likely to be very --

MR. : Never let it be said that the Hamilton Project is not flexible logistically. Governor, Larry started us off with really deeply thoughtful comments about infrastructure as stimulus as well as long-term investment. Doug just summarized a terrific paper that the Hamilton Project had prepared. I have already introduced you as being deeply thoughtful about the issues of states and the issues of your own state and said that we were deeply honored and privileged and flattered to have you with us. So with that, Governor Tim Kaine of Virginia.

GOVERNOR KAINE: Thank you all. Somebody's got to do something about that traffic, I tell you. I thank Brookings and the Hamilton Project and Bob and Larry and Doug for the invitation to be with you today and to talk about an issue that is very, very important, and I do apologize for being a few minutes later, but I'm thrilled to have a chance just to share the stage with these great thinkers and to lend my own voice to this important effort. I think I was invited because I have scar tissue, a lot of scar tissue on this topic, and so my comments may be deeply

thoughtful, but they'll definitely be deeply felt I will assure you as I talk about the important role that we have really in facing our states and our country on infrastructure funding and offering some lessons from Virginia.

This is a very critical topic to governors. The National Governors Association every year picks a topic at the choice of the chair and the chair this year was Governor Rendell of Pennsylvania and he chose infrastructure funding as our area of focus beginning about 2 weeks ago, and for the next we'll focus heavily on it with a lot of effort on it in February when we convene in Washington. And that is just an indication of how deeply this matters to states around the country -- perspective.

Let me start with a punch line. I worry that we've had a more coherent strategy about infrastructure investment in Iraq than we've had in the United States in the last 8 years and that worries me, it troubles me. I think we've talked more about it and we've thought more about it and we've tried to strategize about rebuilding the infrastructure there in very intentional ways and we haven't had that kind of a dialogue or thought in the

United States and we need to and we're fast getting to the point where I believe we will.

A couple of bullet points. In 2009, I'm sure it's already been mentioned, the Federal Highway Trust Fund will be out of cash under current projections and so earlier this week the House voted to take $8 billion out of the general fund of the budget to shore up the Highway Trust Fund. That was an interesting proposal because it was different than the White House's proposal. The White House proposal was to take $8 billion out of rail and public transit to shore up the Highway Trust Fund. At a time when we've got gas high and public transit ridership is increasing, what a proposal. This isn't a partisan speech at all but just an indication of we're all wrestling do we take it out of transit, do we take it out of health care and education. I think there are better ways to deal with the infrastructure problem.

A few thoughts. I'm going to talk quickly about why it's important and you've already heard that, but let me just offer from a governor's standpoint why I think this is such a critical issue. Let me talk a little bit about what Virginia has done and what we struggle to do, some

things we've gotten done and some things we've haven't, and let me share that briefly. I'm going to talk about challenges why I think it's hard for the public officials of today to really tackle this and why we've been slow maybe in tackling it. And then finally offer a thought about a couple of opportunities and strategies going forward.

First is why it's important. You've heard the argument I know from Larry this morning about the long-term economic importance of infrastructure investment. No economic improves with a declining infrastructure to zero. You're not going to find an example of that happening anywhere. So for long-term economic growth, stable growth of society, infrastructure investments are key. I know the Hamilton Project has taken a pretty broad view of infrastructure investments, transportation and telecom primarily, but I throw in other infrastructure investments. I believe education and higher ed is a powerful infrastructure investment, and I'll talk a little bit about that.

The long-term economic importance of it I know is shared by folks -- has already been covered. We also

believe deeply that there's a definite short-term economic advantage of a stimulus in infrastructure spending in Virginia. We just completed a legislative session where I got the Legislature to come together around about a $2-1/2 billion bond package mostly for higher ed, probably four-fifths of it for higher ed. But one of the sells was not just what it would do for the higher-ed community, but this is a lot of jobs and construction jobs at a time when the economic is challenged and we believe in short-term economic stimulus as well. If you're looking for short-term economic stimulus you can send somebody a rebate check that they might use to make a purchase, but I think stimulus that involves putting physical infrastructure and hiring people is some of the best economic stimulus you can do in the short term and that's the reason it's -- third, there's synergy between infrastructure investments that I think are very, very important. What we're seeing in Virginia for example is the work that we're doing to build out broadband in rural Virginia is helping our transportation problem. It's helping transportation in congested areas because businesses -- to have the ability to have high-speed telecom access are willing to locate in

some parts of the state where they aren't. If a business in Northern Virginia needs to hire more folks, they can hire them here and add to the congestion or they can hire them in a place where telecommuting is easier and easier, but unless you make that telecommuting option easy by having that high-speed access, you don't get the ability to spread out some of your employee base. The telecom investments that we've made in rural Virginia have already really helped us start to spread out the employee base out of the most congested regions. So one of the nice things about infrastructure investments if you look at them as a whole is that they do create a synergy where you're helping out with the other and I would say the same thing about education. When you do higher ed investments, that helps you on telecom and other technology advances that then help you solve transportation process, so they do connect.

A final benefit that I think important is a psychological one. There is something psychologically uplifting especially at a time when the economy is challenged about seeing action, movement, projects, cranes, innovative strategies for public transport. That's something that really is important and we are in a tough

economic time and one of the tough aspects of the time we're in is none of us know when the inflection point up is coming. We're all doing our revenue projections, in my state budget I've done two rounds of budget cuts, I've got a third that I'm going to be doing now, we have the tools to do it and we'll make the hard decisions we need to, but we don't know when the up inflection point is coming.

Infrastructure investments are visible. They are visible action. We just did a groundbreaking this week on -- project we're doing on the beltway around Northern Virginia. Visible action is a good thing. So there's a lot of positives to this infrastructure investment issue that Hamilton is tackling.

In Virginia what we've done, we are a large state, twelfth or thirteenth largest in population, but in transportation infrastructure for example we're uncharacteristically large. We have the third-largest state-maintained road system in the United States. So we're big, we're diverse regionally, we have a large system that's growing because our population is growing, and it's aging. Our average bridge age is 47 years in Virginia. So large, growing, aging, and construction and maintenance

costs increasing has been kind of a recipe for a perfect storm that we've wrestled with and really wrestled with in Virginia for about two decades.

What have we done recently on infrastructure investment? Quickly, I mentioned that we did this educational bond package to expand our higher-ed institutions to serve more students, train more workforce, and create research opportunities, and research is key because we use research to drive economic activity in a state that has gone from a back-of-the-pack state in median income 50 years ago to a top-10 state in median income today.

In the broadband area, we've put about $300 million into a broadband network in rural Virginia in the last few years, much of it through the E-rate (?) and funds that came out as a result of the Telecom Act, but we also did something pretty smart in Virginia. When the tobacco litigation as settled, instead of putting that all in the general fund, we took half of the money of the tobacco settlement which was an annuitized annual payment and we invested in the tobacco-growing regions of Virginia. We used it for economic transformation of the tobacco-growing

regions of south -- and southwest Virginia, and much of that money has gone into broadband. Eighty-eight percent of the industrial parks in Virginia now have the best access to high-speed telecom. We may be one of the first states in that within about the next year we will have precise data on what percentage of residences have telecom access right at their door. Even getting that kind of data is very difficult but we have a measurement project in place now where we're getting proprietary information in an appropriate way that we can measure the percentage of our businesses and citizens who have telecom access, and that's what we've done on the telecom side.

Transportation, let me tell you what we've done and what we haven't been able to do. We have a $3 billion bond authorization for an issuance in 2007 for new road and major road improvements around Virginia. We have done dramatic work in land use reform in Virginia. In Virginia we have a weird disharmony. Transportation planning has been done by the state, land use planning has been done by local governments. That was okay when the state was 80 percent rural, but that lack of an harmonious planning between transportation and land use has really exacerbated

sprawl in the commonwealth and we've worked very hard years to give local governments tools and get the state more involved in land use transportation planning decisions.

We are a leader in public-private partnerships. Congestion pricing, public-private financing of road projects, the Dulles rail project we're working on is an interesting mixture of state, federal, and property tax enhancements paid by landowners in the corridor. And we are pushing on public-privates -- probably in the top three or four states who are doing public-private financing. The one area of transportation that has been increasing, our road funds have been decreasing because of gas tax declines and some other areas, but the one area that really has been increasing in Virginia is rail and public transit. We've been an underinvestor in rail and public transit in the commonwealth for a whole series of reasons some because of fiscal conservatism, some because of race politics in Virginia that goes back generations, but we're waking up to the power of rail and public transit investments and we've been able to increase operating expenditures for public transit by 45 percent.

Finally, we are trying on the transportation side to really enhance the value of the two most global assets we have, Dulles and the Port of Hampton Roads. Dulles, 400 nonstop flights a week to foreign cities, Dulles, 300 million passenger embarkments in and out and in 1984 26 million today on a foot print that could grow to 50 million. The best thing for the state of Virginia and the nation will be that would continue to grow, but we don't have a road access sufficient to serve it. We can't do it all off roads. We've got to have rail. And in the Port of Virginia is the second-most-active port in the United States and it will surpass New York Harbor in my lifetime. I can say that with confidence and this is not just a Virginia politico talking. We have the virtues of geography and topography. New York Harbor is rock. They keep building the ships bigger and bigger which requires wider and deeper draughts, and you just can't do it with rock. Hampton Roads is sand and we already have the deepest channel on the East Coast and they're going to need to be deeper and deeper and wider and wider and at some point we will surpass New York Harbor for that reason.

So those are the things we've been doing in the 2-1/2 years I've been governor to advance transportation, but what I'm not going to be able to do and what I see at the federal level and what I see in most states, I've not been able to get my Legislature to make investments of new money in transportation infrastructure. They will allow me to borrow money, bonds, they will allow me to take money from general fund programs, we took recordation taxes that were going into the general fund and earmarked them to support an increase in public transit, they will allow me to do private partnerships, but one of my Houses has not allowed me to find new money, new money that I think is very important and needed in the commonwealth to serve the important goals that I laid out earlier. And quickly, in Virginia the three main revenue sources that most states use for transportation, general sales tax, auto title tax, and gas tax, in each of those three areas we're significantly below the national average. I got people saying we've got to have a better system, better system, better system, and I tell them you can have a C-minus system on a C-minus revenue stream or an A system on an A revenue stream, but you can't have an A system on a C-minus

revenue stream. You just can't. So that has been my scar tissue, that's been my battle, and that definitely continues.

Why is it hard to find funding for transportation infrastructure in states, and other states are wrestling with the same issue I am? Governors and I kvetch about this all the time. Why are they having a hard time? Why is it hard at the federal level? First, they're tough times. It's hard to ask for new dollars and new revenues in tough times obviously. And yet again I go back to that proposition that you're not going to grow as an economy or you won't grow your way out of a difficult situation without infrastructure investments. There's no history of that happening. And so you have to make infrastructure investments if you want to climb out of doldrums, but that has obviously been a challenge.

Infrastructure isn't sexy. A lot of infrastructure is improvements or maintenance to higher standards, but there are a lot of other things that are a lot sexier and that are a lot better for ribbon cuttings and activities. In Virginia I have a huge maintenance deficit that I need to fill and I have to take money out of

the highway fund to fill maintenance. But when I go to the Legislature and say give me more money for maintenance, maintenance isn't the sexiest thing in the world and that's tough.

Transportation involves another issue that is very thorny in the kind of sense of NIMBY which is land use. Most transportation infrastructure investments involve land use decisions, and everybody wants a better transportation network but most people would want it a mile away from their house rather than a half-a-mile from their house. So asking for new money and making land use decisions are probably the two most controversial things we do that, and I say that as a former mayor and city council member and transportation involves both land use decisions which are thorny in asking for new money.

Obviously a challenge is the current gas tax dilemma, and I'm going to say a little bit more about that. I've heard somebody say that the gas tax is a dinosaur. I think a better word is a fossil because we're dealing with a fossil fuel. The gas tax has been a wonderful user fee, but in a time of escalating MPGs and CAFE standards and new technologies and higher gas prices, I think I saw this

right, that Americans drove in the spring quarter of this year billions of miles fewer than they had driven in the quarter of the year before and that obviously creates a very tough situation.

Finally, let me tell you what I think the biggest challenge is about infrastructure investments. I think Americans are the best reactors in the world. We are the best reactors in the world. In a time of crisis we will act, we will belly up to the bar, we'll do what we need to do. We've shown that again and again and again. I worry that we're not going enough proactors. In Virginia I have a very particular concern about my second-largest metropolitan area, Hampton Roads, 1.6 million people, the second-most vulnerable costal area to storm surges and hurricanes after New Orleans. I know how long it takes; there are 700,000 people in that metropolitan area that I would need to evacuate out if there were a cat-3 hurricane. There might not be one this year. There is going to be one sometime in my lifetime. I know that there will be. To evacuate those 700,000 people takes 40-plus hours if nobody has a flat tire or forgets to fill up their car. Somebody is going to have a flat tire and somebody is going to fill

up their tank and so I need better east-west access out of Hampton Roads to help evacuate that population. That is a critical need that I have, I know that I have, we've talked about it over and over and over again. But maybe won't happen, new money is hard to ask for. I predict there will be a day that cat-3 will hit and if we haven't solved this issue in Virginia by then, there will be serious problems and then my Legislature will rush back whoever is in the Legislature whenever it happens, they'll put new money on the table and they'll be very invigorated about spending money on infrastructure. We saw the bridge collapse in Minnesota. There's a reaction to something like that. But I worry that we're not good proactors, and I worry about that more generally, but I think in the infrastructure area when you're talking about long-term planning and then financing and then constructing, not being good proactors means you're not doing what you need to do.

A couple of opportunities and then I'll conclude. I think there are opportunities for us right now in this challenging time in planning, in financing, and in performance, and the first two, the planning and financing, kind of relate to the same state of affairs right now which

is the challenging situation we're in with respect to gas prices and national energy policy which is causing all kinds of heartburn and all kind of challenges for regular folks also gives us a wonderful opportunity to rethink the way we do things. The system that we have was a system that was basically thought and designed with the notion that gas would be under a dollar or a $1.50 and it might be a system that we would still do if gas were $2.00 or $2.50, but it's not a system that is the right system with gas at 4 bucks or even 3 bucks. We're going to slide down a little bit, we always do after the summer, but we're not going to slide down much. So the challenge we have now with energy and gas gives us a wonderful opportunity to rethink everything about the way we do infrastructure particularly on the transportation side.

I think as increase in gas prices changes people's behaviors in terms of where and how they travel and it also changes the revenues that we use to finance the system, it is a big-picture change that's not going away and we ought to use that to analyze the basic premises. Two things I would suggest are first much more focus on land use. Unsustainable sprawling land use patterns are

part of the problem. It was an unforeseen or intended consequence of the great effort to build an interstate highway system. We created opportunities for sprawl but we've got to make land use critically a part of our infrastructure financing decisions in transportation. And the second thing is there will be I know and you're seeing this too a much greater emphasis on rail and public transit investments. We've done that in Virginia in the last couple of years and people are just saying more, more, more. They want to see a rebalancing of the dollars we spend with a greater percentage going to rail and public transit and so that needs to happen and it needs to happen at the federal level as well.

The second thing is finance. We got to diversify our financial portfolio. I'm no finance guy, but I talk to finance guys and they tell me this in my own life to diversify, diversify, diversify. We got to do that in financing at the state and federal levels. Leaning on the gas tax is very, very problematic. Increasingly the overreliance on the gas tax is like saying we want to pay our health care system with cigarette taxes. Cigarette taxes can be a good part of health care system revenues but

when you lean on a revenue source that you hope in some ways will decline, we're chasing after a revenue source that's running away from us faster than we can chase it. We want to push CAFE standards up. We want to push alternative fuels and different kinds of vehicles. We want to get more people in public transport, and if we do those things, the gas tax will go down. As gas prices go up, gas tax revenues will go down, so we've got to diversify into other revenue streams; broader-based streams. Again Virginia uses a mixture of gas tax, sales tax, auto title tax, we've got to rebalance the portfolio and make it more diverse and not rely so heavily on the gas tax.

I will say this, that I am a big believer in public-private partnerships and private financing. I know there's a good paper on congestion pricing as part of this and an interesting paper on looking at different pricing mechanisms for auto insurance and that would be in the diversification idea that I'm suggesting. But while I'm a big believer in public-private partnerships, there are those in the policy world and in the legislatures that I deal with who say public-private is Jack's magic beans and all you have to do is say public-private partnership and

the private sector will magically build everything for you without a cost, and it's not going to happen. It is not going to happen.

Public-private partnerships and private financing are a great arrow in the quiver. I've said I think they're like the 25-percent solution to our financing needs, but I don't think they're the 75-percent solution and I know that they're not the 100-percent solution. Basic rules of economics, we've got roads that are of strategic importance to help a framer get poultry from Rockingham County to a market but that road doesn't carry enough traffic every day to justify a private financing mechanism with a toll or enhanced property tax. It just wouldn't. But there is public importance in Virginia for supporting updates and improvements to that road because ag and forestry are still our number-one industries, but traffic over that road just won't do it. So the notion that we should change to a system where basically it's just the direct users I don't think really will work economically. I think we need to spread it, and whether you spread it through specific transportation revenues like gas tax or auto title tax or look at more broad revenues, I recently pitched a proposal

in the Legislature that failed that was to use some of our sales tax for transportation to enhance the sales tax and some didn't like it. That's a general revenue source. Yes, but everything people buy that has a sales tax associated with it got to a store on a road or on a rail. So there are connections there, but I don't believe that public-private partnerships are the answer to all of our challenges. We've been creative, but even in being creative I see limits to it.

The last thing I would say is in terms of opportunities. It's use gas tax and the gas situation as a catalyst to change the way we plan, diversify our financing portfolio, and the third one is really focus on performance. If you have 5 minutes sometime and you just to amuse yourself, Google Virginia performs and take a look at the performance management system that Virginia has, and there's a section on transportation. We have really tried to build on what are the performance measures that we're trying to get out of the transportation system and too often in public life I think we don't focus on what the bull's eye, what the result is that we're going after, we focus on how hard we're trying or our good motives rather

on measurable performance. But the transportation system has to have measurable performance criteria whether it's time to market or whether it's congestion or whether it's safety, you have to define the end result by measurable results and then put a system in place that is trying to get you there rather than just saying we don't have enough, let's do more. I think again the challenge we have, some of the reauthorizations that will come in the next Congress, gives us an opportunity to build in performance measures in a very dramatic way that will help us have a system that's better designed for the future of country.

So with that, those are my thoughts as a guy with scar tissue who's fought some battles, lost some battles, won a few, but again this is an extremely timely project for Brookings for you to take on and I appreciate being here with you today. Thanks.

MR. RUBIN: Let me start you with the few question if I may. You mentioned rail transport and mass transit more generally. To what extent is our overall system nationally impeded by the fact that instead of having one federal system we obviously have states and yet our metropolitan states splash across states and you want

to be connected by rail to Colorado or Montana or wherever it may be?

GOVERNOR KAINE: I guess maybe I should break it into freight and then passenger. I think the major freight railways because they operate over such wide swaths of territory, they do look regionally and beyond, we have the good fortune to have one of the major railways headquartered in Virginia, Norfolk Southern and work pretty closely with them on a number of initiatives, and they are regional and national thinkers because of where their corridors are and their investments are. Passenger is really tough right now and I think we need to do more on the passenger side, but Amtrak has been kind of the subject of a jump ball for the last 8 or 9 years. What are we going to do about Amtrak, what are we going to do about the future of passenger rail in this country has been just an up-in-the-air question and that's been very frustrating. We really believe and we're working with other southern states for example that high-speed rail on the East Coast, Boston to Washington, should also go to Richmond all the way down to Atlanta and that should be the next extension and through North Carolina and we've got a pretty good

association of regional governors working on that and we got states willing to put money into it, but it's all money that is kind of based on we want to put it in but what's the future of Amtrak and obviously that is an issue that I hope the administration and Congress working together will give some clear direction on. I think once that happens there's a lot of state investments that might come in to enhance passenger rail.

MR. RUBIN: Why don't we open it up to --

MR. DOWNY: Thank you, Governor, Mort Downy, Parsons Franker Hoff , and I was on your accountability commission and helped you put those measures together. Larry Summers when he talked earlier was proposing that there are projects out there that are either delayed, not starting, or not moving fast enough and now would be the time to put more money into them. Does Virginia have some projects of that nature?

GOVERNOR KAINE: You've really set me up. So the question is are there projects that have been delayed, et cetera. Let me give you the stats on this because it's very recent. We do planning in Virginia in a 6-year plan so we will take our best projections of revenues and then

plot out what we can do with them in the 6 years. Every year we come back and we revise the plan obviously a year later, but also revenues and costs have changed and we revise it. We just did a revision of the plan in June that reduced spending on primary, secondary, and urban roads over 6 years by 40 percent. That's drastic. Why is it being reduced? It's being reduced for a couple of reasons. Gas price increases are causing people to drive yes so the gas tax revenues are slowing down. Second, I have a maintenance deficit that is growing in my state transportation budget that as our system grows and ages I have to maintain. The Legislature gives the Governor the power in Virginia to go into the construction budget and pull money out to make sure we maintain. That pull is about $300 million a year now. It's going to grow to $600 million by 2014. So when you first take out slowing gas taxes and then you take out the pull for maintenance, and then there are some other factors as well, that has dropped our spending plan for 6 years for primary, secondary, and urban by 40 percent. That was one of the issues I was pushing to my Legislature that we've got to come up with more dollars because we're just crossing projects off the

list right and left. That is creating a great sense of discomfort among the citizenry and among local elected officials in the communities around Virginia as they see their project lists get dramatically shorter. At some point that outcry will be of enough significance that I think the Legislature will act, but it's going to be a brutal next couple of years in Virginia on this.

MS. : -- Senior Fellow at Harvard University. Thank you very much for your enthusiasm. It's very refreshing and I hope it's contagious specifically regarding infrastructure and transportation infrastructure. I'm curious because I find that what's absent in the debate often is this concept of freight rail in particular and absent even in the discussion today. I know you're an advocate and I'm curious as to why you might think that is. Freight rail volume is going to double by 2035. We live in a world of finite assets where highway capacity is constrained. There are environmental benefits of taking trucks off the road. And I know that CSX has announced a gateway program that would bring benefits on a ratio of 8 to 1 to Virginia I believe as well. And I'm just curious as to why it's always absent from the dialectic and seems

to be very always focused on highway concerns and this kind of highway policy context or continuum and I'm curious how it might be encouraged as an answer to these rhetorical questions.

GOVERNOR KAINE: Very good question, and I certainly can say, yes, guilty as charged. In speaking and in hearing others speak, we don't often put freight rail up front, but I can tell you we're doing a lot about freight rail in Virginia because like you I see freight rail possibilities as really magnificent. I mentioned earlier the port that we have in Virginia as one of our great assets. It's served by both major East Coast railways, CSX and Norfolk Southern. We are significant investments in Virginia along with the federal government in a project called the Heartland Corridor which from the port all the way out essentially to near Chicago will raise bridges to allow double-stacking of freight east and west and that is a magnificent investment that will improve the economy and get tractor-trailers off the highways and help deal with congestion as well.

I think the railroads are in a good position economically. Every time gas goes up, shipments by rail

get more competitive and so friends of mine who live in rural Virginia tell me the anecdote of I used to only hear a train whistle twice a day and I'm hearing 10, 12, to 15 times a day now, so that the freight traffic is picking up in significant ways.

We for the first time ever right at the end of my predecessor's administration, Mark Warner, put a dedicated source of annual money into the budget for fail enhancements and we've used it pretty heavily for freight rail so far. We've used a little bit for some passenger projects, but we've used it for freight rail in tandem with CSX and Norfolk Southern. So I am a big believer in freight rail.

It's interesting, I had an experience not long ago or I guess it was about a year ago when I was in Europe on a trade mission chatting with European folks and Americans who go to Europe invariably come back and say their train systems are fantastic compared to the U.S. Europeans say your freight rail system is so fantastic compared to ours. The European rail system is great one for passengers and not so good for freight. European businesses look at the freight rail capacities of the

United States and think they're fantastic. We're getting a lot of foreign investment into Virginia now because of the port and Dulles, but the freight rail possibilities here are another real selling point for our country and so we need to be about making those investments, many states are, but there need to be investments at the federal level too.

MR. COLEMAN: I'm Bill Coleman and I'm a lawyer in town.

GOVERNOR KAINE: And an old friend.

MR. COLEMAN: -- admirer of yours. In fact, I voted for you and I'm a Republican. This morning already I've found two -- I'd like to mention to you. One is why didn't I when I was in -- think about making the federal tax on gas a percentage -- if we'd done that I think we'd all be better off -- what are you doing. If you go to Europe, gasoline costs much more and that's because they have a big tax. The second point -- make it so the trains go 200 miles an hour -- if you do that from Washington to New York, all of us can go by rail rather than taking the shuttle -- all I'm saying is as you make these changes look at what is going to be good 10 years from now because this

is a great country, great world, and there are a lot of -- all over the world which become --

GOVERNOR KAINE: That's a very, very good point. The point that the secretary made on the percentages, I think every governor kind of kicks themselves, and the last time Virginia really adjusted the revenue sources was in 1986 and they adjusted the gas tax and there was a provision in the original bill to adjust it to cent per gallon but at least have a CPI increase to it, but that was not passed. Our gas tax is 8 cents less than the national average for states, it's 17-1/2 cents a gallon, and increasing fuel efficiencies and increasing construction costs mean that the cost curve is going up and the revenue curve is going down and here we are 22 years later. So the percentage obviously would have been a wonderful strategy and we've kicked that around a little bit in Virginia where we could swap out some portion of the cents per gallon for percentage so that idea at least has some currency right now and very important.

MR. CLARK: Governor, my name is Drew Clark. I've just started a web service called broadbandcensus.com and we've about providing the public with free information

about availability and also competition, speeds, and prices of broadband. With regard to broadband availability and mapping broadband, you mentioned of course Virginia's interest in this as many states have and there seems to be I guess different approaches emerging from this. One approach that some states are taking involves collecting information but keeping it confidential and not allowing information about who the carriers are that are providing broadband. The other approach which actually Virginia Tech's E Corridor's program has pioneered involves identifying the carrier so that consumers can know who's offering broadband and who isn't offering broadband and also see the prices and speeds associated with those carriers.

I just wanted to ask you if Virginia has made a decision on which approach it wants to take as it pursued broadband mapping and why you would if you do choose the confidential approach.

GOVERNOR KAINE: Absolutely. It's a work in progress. I'm fortunate in that the chairman of my broadband committee who's working on this is a guy who knows a little bit about the telecom industry, Mark Warner.

He has agreed to chair it. I think he came in sort of the Governor has asked me as a favor, I guess I guess I got to do it, but I think as he's gotten into it he's been very excited. You put your finger on a very interesting point which is at the first level we're doing build-out in areas we know we need to, the rural parts of south side and southwest, the Eastern Shore, connecting industrial parks, but there is a project as we're going those build-outs that is an important one and that is get the best current data on the percentages of homes in Virginia that are served with direct broadband access. In working on that question, we have found in working with providers that a lot of the providers will share information with us but only if their competitors don't get to see it and if it is held in a proprietary way.

Obviously it is very important, and in some ways this whole discussion really is about choice. So whether it's transportation, aviation, public transit, rail, road, and then we've over on the telecom side, we want people to know what their choices are. So there will probably be a second step of what we'll do that we'll start to look at how can we take the information now that we have it and

make that information available to Virginia's citizens so that they will know what choices they have. But in the early stage of trying to determine this percentage, it interested me to know that there isn't a lot of good data in Virginia or elsewhere about what percentage of homes are served by the most high-speed broadband. So we're trying to get hands on that question first and in doing that we will probably keep a good bit of that information to ourselves because we're not going to get it otherwise. But you're right, the next step needs to be how do we then give the broad information to consumers so that they can pick.

MR. CORD: My name is Steven Cord . I'm research director for the Center for the Study of Economics. When infrastructure is put into place it costs some money and raises some taxes and also raises land values, so why not tax land values and then you don't have to tax what people produce?

GOVERNOR KAINE: That is an excellent question. Bill and I have worked together on a project that we both love but we have some differences on, the rail to Dulles project, we both share the ultimate goal, but the financing of rail to Dulles does involve that. Landowners in the

corridor are paying enhanced property tax assessments to help fund, not completely fund, to help fund the improvement. There will be tolls paid on the road as well, and then there will be money from the feds and from Virginia into that, but part of the financing is in fact enhanced property tax assessments. What's the big road right near Dulles? Is it 28 or 128 -- 28 goes north-south just on the east side of Dulles. As you've driven out there over the last years you've seen a tremendous amount of improvements to that eliminating crossings with flyovers to make that more of a corridor and that has been largely funded by an enhanced property tax payment of the property owners in the corridor.

MR. : (inaudible)

GOVERNOR KAINE: The state was involved in the deal, but the money just goes directly into the project.

One thing that Virginia does that's different than some other states, some states in their public-private ventures use the dollars raised in tolls or in enhanced assessments for projects that are far away from where they were collected. Virginia law, and I like this law, is that if you do a toll or you do an enhanced assessment, you have

to spend 100-percent of the money in the corridor where the money was raised. But I think that is in the diversification portfolio, tolls, property tax assessments, looking at the broad revenue sources, gas, auto, title, sales, public-private, they all have to be part of the mixture in coming up with the right financing strategy.

Great questions, and it's very good to be with you. Thank you.

(Recess)

MR. ELMENDORF: Our panel on telecommunications will be moderated by Glenn Hutchins. Glenn is a member of the Hamilton Project Advisory Council and a trustee of Brookings in addition to his day job in technology finance, and we are honored to have him here to moderate this panel. I will turn it over to him.

Thank you, Glenn.

MR. HUTCHINS: Our subject today is broadband technologies and wireless connectivity, obviously, a both topical and very important subject.

My personal view, which they've asked me to share a little bit with you since I've spent my life working in this area, allocating capital to it, is that this is likely

to be, the combination or the intersection of broadband technologies and wireless connectivity is likely to be the biggest technology trend in our lifetimes with the most consequential economic and social benefits. Let me give you an example of what I mean by that.

We're 25 years into the PC revolution with the associated growth of the network and the internet where I also spent a lot of time making investments, and right now there are about one billion PCs in use in the world.

In contrast, in the very early days of broadband wireless connectivity, there are 3 billion handsets already in use, 3 times the size of the PC market 25 years into its life, and we're adding about 500 million handsets per year. This reach is really unprecedented. No new technology in history has ever reached so many people, so broadly dispersed around the world, so quickly.

The economic activity this generates is enormous not just in the network, but we're obviously spending a lot of time building out the network and that's what we're going to talk about today. But there are the devices that run on the network which we all see: the supply industries that make the components that go into this gear that run

the network that are assembled into the devices, the operating systems that operate it, the application systems, the application software that runs on it, the services and content that are available on it. These are all nascent and enormous –- enormous –- activities that dwarf anything we've seen our lifetimes in technology.

The social benefits are also quite literally unprecedented. The ability to connect and enable people all over the world is something that we haven't seen in the social and economic opportunities and are amazing.

Now there's a central challenge here for the United States. We have led the internet and PC revolution. We're not yet leading the broadband wireless connectivity revolution. Our broadband infrastructure is clearly behind in the world. The commercial companies that are taking advantage of this are typically outside the United States. Think about the devices you use. Even Nokia, even BlackBerry, which is a device we all use, is a Canadian company. I mean that's the closest you get.

The central challenge for the United States is whether we're going to be a leader in this newest part of the new economy or we're going to fall behind and continue

to be behind, which is the subject we're going to talk about today.

Before we start, I have an announcement to make which I've deliberately not cleared with Bob Rubin or any other muckety-muck associated with the Hamilton Project. Customarily, at this junction, the moderator sanctimoniously cautions everyone to switch off and stow away their mobile devices. This futile effort to create what I call an unconnected Luddite oasis serves, for many of us, as an imitation subversion as we furtively work our BlackBerrys all through the session. So, today, I'd like to make a radical gesture and announce to this session that use of wireless devices is mandatory.

So bring your BlackBerry out of the shadows, expose it to the sunlight. I recommend Brick Breaker to alleviate some of the tedium today. Connect your PC to the Brookings wireless network and take notes on it during the session. Surf the web on your 3G iPhone. Check out Obama's international tour on the VCast service on your Verizon cell phone.

Today, for a brief time, we can strike a blow for wireless freedom and let a thousand devices bloom.

We're going to have three presentations today, two by papers by illustrious academics who are sitting on either side of me and one then in response from someone who's been very involved in the public policy end of private markets associated with this, and I'll introduce each of our speakers as they go to the podium today.

So our first speaker is Jon Peha. I assume I got the pronunciation of your last name right. Good enough. Whose paper on the untapped promise of wireless spectrum, he is going to speak about. Sorry?

MR. ELMENDORF: That's not Jon's paper. So I'm not sure.

MR. HUTCHINS: I'm sorry.

MR. ELMENDORF: That's Bill's paper.

MR. HUTCHINS: I'm sorry. Jon's paper is on bringing broadband to underserved communities. Pardon me.

Jon is the Associate Director of the Center for Wireless and Broadband Networking at Carnegie Mellon, a Professor in the Department of Engineering and Public Policy and the Department of Electrical and Computer Engineering. His research spans technology and policy issues of telecommunications networks.

He has also spent a fair amount of time in public policy arena, working in Congress on telecom and e-commerce issues and, interestingly enough, has also been the Chief Technology Officer for several high-tech startups following, I think, earlier experience at some of the most important research organizations in this country: SR International, Dell Labs and Microsoft.

So, we're truly very, very pleased to have him today to talk about bringing broadband to underserved communities. Thank you.

MR. PEHA: I'm going to talk about bringing broadband to unserved communities, and by unserved communities I generally mean rural communities. There's been an interesting debate of late that some of you might have heard about, wondering why is it that the percentage of households with broadband is one-third lower in rural areas as opposed to urban or suburban. Is it income issues, education issues, cultural issues?

Having plowed through some of the numbers, I think there's a much simpler explanation. Roughly, a third of rural households simply cannot get access to broadband at any price. The infrastructure simply isn't there.

And, the disparity is actually growing. Some urban areas are getting the next generation of broadband, fiber to the home, great stuff, while some rural communities wait for 1990s technology to reach them. Also, as broadband becomes pervasive, some content and services are now available only via the internet which means if you don't have internet or broadband access, you may lose things that you already had.

So the problem here is also not just limited to rural internet users. It affects other people too which is why this is a market failure. Entire rural communities can be put at a disadvantage. The governor talked about job and economic impacts of broadband. It also has an effect on housing prices, and urban users can be affected. I can't video conference with some of my colleagues who are in rural areas. E-commerce sites can't sell products very easily to them.

The question is what we're going to do about this. There's no single policy that's likely to change everything, but I think a suite of interrelated policies might make a difference, and part of that has got to be spectrum reform. If you are going to build an entirely new

broadband system for a rural area, it would certainly be wireless technology. If you're going to do that, you need enough spectrum and, not just any spectrum, you need spectrum with rules that are conducive to low cost rural broadband.

Lots of ways we could provide more spectrum: I think one of them is to tap into what is currently federal government spectrum, if the federal government is the largest user or I really should say the largest holder of spectrum in this country by far, and lot of it is used inefficiently. I would argue the first step towards releasing some of that is to do an inventory of federal use and for the first time make that inventory public, so we can look for opportunities.

You might be able to get some spectrum in the so-called white space in the TV bands and make that available for rural broadband as opposed to making it all available for, say, low power consumer devices which seems to be the path we're on at the moment.

You might also be able to get some public safety spectrum by using that spectrum much more efficiently, by developing systems that serve much larger areas than, say,

a municipality. That would save spectrum and, by the way, it would also save lives and save taxpayer dollars.

So freeing up some spectrum, I think, will help win some communities. Others are actually going to need some subsidies, and I would argue that the subsidies ought to be focused on the one-time cost of infrastructure expansion. Note that is exactly the opposite of what we do in the telephone world where universal service policies subsidize ongoing monthly costs, so you can't just throw broadband into existing universal service policy.

I think a new approach that might be more effective is to establish a flexible system of tradable obligations. So an obligation consists of two separate components. There's a milestone which, for example, give broadband access to a thousand homes in this region and a deadline which says by January 1st you must meet some milestone, don't care which one, and let the providers mix and match.

So organizations could then go out and bid in auctions for sets of obligations. Then they could go to an open market and trade these milestones and deadlines until they put together a set of obligations that minimizes their

costs and fits their specific technology, which is key. Despite all this flexibility, we will all know that every time a deadline passes, some provider will meet some milestone. So progress is guaranteed.

Other elements of the policy: Get local governments involved. I think you can start this by having Congress override state laws that limit what municipalities can do today. Those tend to protect incumbents a little more than they protect taxpayers. Beyond that, you can get local agencies to pledge to become broadband customers before obligations are auctioned and also pledge to make resources available such as places to put antennas.

I'd also look at preventing subsidized providers from abusing the monopoly status that they're likely to obtain. You can do that simply by building this into the tradable obligation. If a provider engages in some of the extreme forms of discrimination to extract monopoly rents, it will not have met the obligation.

So, to summarize, I suggest a suite of policies that actually build upon each other, beginning with gathering better information on which communities are unserved which, as the governor mentioned, it's remarkable

how little we know about this.

Auctioning tradable obligations which uses flexible market-based mechanisms to target subsidies at specific market failures.

Reforming spectrum policies will let wireless providers join in auctions and join in trading, and that competition is essential if you're going to make the auctions work.

Placing lightweight constraints on auction winners to prevent the most harmful behavior and unleashing local government agencies both to meet local needs and to give providers greater certainty about revenues and about access to critical resources.

Thank you.

(Applause)

MR. HUTCHINS: Thank you, Jon. Well done.

Our next speaker is Phil Weiser. Phil is a Professor of Law and Telecommunications at the University of Colorado. He's been a profound thinker in the field we're dealing with today. He founded the Journal on Telecommunications and High Technology Law. He has also co-authored two very important books: *Digital Crossroads*

and the *Textbook on Telecommunications Law and Policy*.

He has also had tremendous public policy experience starting, interestingly enough, at the Supreme Court where he clerked for Byron White and Ruth Ginsberg but later as Senior Counsel to the Assistant Attorney General in charge of antitrust, focusing on telecommunications matters.

Phil, thank you for joining us today.

MR. WEISER: Thank you, Glenn.

I have to say my day was made when Governor Kaine referred to the people kvetching and, with that, I'd like to take the Yiddish tradition and say a few words before I speak.

The first point is to connect the two parts of the panel, that is, the telecom infrastructure and physical infrastructure. Governor Kaine already anticipated this very nicely. A recent study showed using broadband for telework can cut down energy consumption by 15 percent. That is a phenomenal savings that comes from ubiquitous broadband deployment. That only is a drop in the bucket of the type of high powered economic activity that can happen.

Thomas Friedman of the *World Is Flat* fame says

you need two things as a state to succeed. You need smart people, and you need broadband, and if you lack both of those two things you're in trouble. Now having a higher education can help you with the smart people. You probably need an airport too, but most states have an airport. They don't all have enough smart people, geeks, entrepreneurs, and they often don't have enough broadband.

I also think Glenn's point is absolutely on the money. The fundamental technological transformation around broadband and wireless is revolutionary. We did a lot in this country with roads and with cars. That was an incredibly important industrial revolution. Airplanes and the whole aerospace industry was another one. But what we're going to see in the internet and with technologies that are yet to be developed is going to blow people's socks off.

Yet, we had former Secretary Summers here, talking about infrastructure and, unless I missed it, he didn't a mention a word about wireless spectrum or broadband because it is difficult for people to understand. It's elusive and, as a result, it gets lost in the policy debate, and it doesn't get focused. Thus, the status quo,

often which leaves some people without, is hard to shake free of.

So the status quo won't remain the status quo forever particularly because young people are going to demand more and better broadband and wireless-enabled devices. You can look at these curves and look what people are doing with these devices. The demand for bandwidth when you take and send pictures, when you have real-time messaging, et cetera, et cetera, watching videos, that's only going to go up.

Now, obviously, for some people, it's still a phone but for most people -- and I'd echo Glenn's remarks and say you can email me now your instant comments on my talk if you're so inclined -- this is a lot more than that.

So, in the United States, we spend a lot of money, around $150 million a year measuring and monitoring agricultural products, a lot of which is focused on corn. We spend almost nothing measuring and monitoring spectrum. That is a public policy that is, to my mind, very misguided where our priorities and focus is there.

Now, on broadband, as Governor Kaine said and Jon repeated, there's an effort to measure where we have

broadband. That's starting to happen. Spectrum, however, there is extraordinarily little focus on what is being used as opposed to corn where there's a lot of focus on how it's being used. But in terms of the importance of our economy, corn is certainly important, but I'd suggest that our future is going to be premised even more on spectrum.

Some people may know what this number is. This is what, if you ask most people in Congress what do you know or think about spectrum, the answer is. Nineteen billion dollars is approximately the amount of money from the recent auction. That, in effect, dominates a lot of congressional thinking about what spectrum is.

The problem is two-fold here. If this is how much money was spent, much of it by well-heeled companies, that means there is an extraordinary demand for access to spectrum. Nonetheless, our public policies are not focused on how to free up more spectrum, meaning lots of people who could do good things with the spectrum don't have the ability to get wireless licenses.

So why does that matter? T-Mobile was the trailer in terms of a company getting out its third generation wireless device. Why were they last? Because

they are spectrum starved.

Now they're actually, in some sense, a maverick company who likes to try and do new things. They have a Wi-Fi dual mode cell phone, for example. They were the first to embrace the Palm. Then I guess it was Handspring but now Palm Treo. But without enough spectrum, they can't bring these disruptive technologies to the market. They can't help prices become lower. They can't help advance competition. Thus, we all as consumers pay a big price by not having more spectrum out there.

In theory, the spectrum is all allocated and assigned. The different colors reflect the different uses. It's probably too small on this map, but you see the top one here that's blue. That's a lot of broadcast spectrum. I'll come back to that.

In practice and, by the way, here, the blue areas are spectrum that's not being used. This was taken in the U.K., a swath of spectrum. Most spectrum is not used at any given time. This was over a 24-hour interval, and the blue means it's not being used at all during that time.

So this is a huge conundrum and a challenge for us. We have lots of spectrum in theory. In practice, lots

of it is not being used.

What do we do about this? How do we get more spectrum out there? Well, the first thing is we have to recognize the principle. This is really important. This needs to be a high priority for policymakers. That is largely unappreciated. Again, the focus is we have wireless spectrum auctions; we get money. That's really only the tip of the iceberg. It's not about that.

It's about getting these new technologies into the marketplace. So we need to get a lot more measurements, monitoring and leasing going on. I agree with Jon 100 percent. The federal government's use has to be much better measured and monitored.

There's an initiative underway which, if it's implemented properly, could have a real impact which is tell government agencies there's a shadow price for your spectrum. It's worth money. You have to value it based on its real money and, if you can't, then you need to let it go. That's enormously important.

Also, for private people who have spectrum licenses, if you're not using it, get that information out there. Force them to justify, why are you holding onto

this license?

A lot of times, it's inertia. Well, we've had a license. It's actually not on our books, right. We're not accounting for it as an asset because we got it for free a long time ago. Whether it be railroads, utilities, what have you, these licenses were allocated in a pre-auctions era where a lot of folks got them and have held onto them since.

I would suggest we need to spur the use of secondary markets, create incentives for people who have licenses to make sure they're being used.

Another big point is we need to make sure we can trade these spectrum licenses from lower value uses to society to higher value uses. An enormous challenge we have as a society is we gave out lots of spectrum when we thought that what we needed to ensure multichannel video programming was UHF TV. In retrospect, that was premised on the view that cable and satellite would not take off. That was premised that people would watch a lot of TV over the air. So there are huge swathes of spectrum dedicated to UHF broadcasting.

I would suggest and many owners of that spectrum

would probably agree that if they could sell that to other, say, wireless broadband like T-Mobile, they would do that. There is a proposal in here to help facilitate that.

Finally, the way the FCC has operated historically is not about ensuring the very best use of spectrum. It's preventing any possibility of interference even if that's on account of really bad receivers, and that ignores that technology has advanced now so that we can manage interference much better than ever before. Yet, the FCC's regime is still premised on preventing the possibility of interference. Again, as I detail, that has to change.

So what if we don't do anything? Well, guess what. Others around the world are. In fact, in 2002, there was an effort by the FCC –- I should say one of several efforts that have happened but the most recent –- to really focus the attention and possibility on spectrum policy reform. That effort essentially has sort of sunset and isn't happening.

Meanwhile Ofcom in Europe has taken off, and they're pushing this aggressively, as are other countries, because they see this as an asset. They want to get the

benefit of this wireless infrastructure. If we don't, it's only going to hurt us internationally in terms of our competitiveness.

I look forward to your questions later.

(Applause)

MR. HUTCHINS: Next at the podium, as our commentator, is a person ideally suited for the job, Blair Levin. Blair currently works at Stifel Nicolaus which is the country's leading independent research firm and serves there as the firm's Principal Telecom Media and Regulatory and Strategy Analyst. It's a mouthful.

Prior to that, he was the Chief of Staff at the Federal Communications Commission during the Clinton Administration which you all remember was a very, very active and productive time there. He played a very important role, generally known as the sixth commissioner. During that time period, the FCC oversaw, with Blair's active involvement, the historic 1996 Telecommunications Reform Act, the first spectrum auctions -- remember that actually didn't begin until early on in the Clinton Administration -- the development of digital TV standards which you're going to see rolling out over the next year

and the commission's internet initiative. Remember, the internet was very, very new not that long ago.

Blair, we're very pleased and fortunate to have you here.

MR. LEVIN: Thank you very much and thanks to the Hamilton Project for sponsoring this conference.

Thanks to Jon and Phil. Their papers are terrific. They ought to be required reading for the transition team of whatever presidential candidate wins as well as, perhaps more importantly, required reading for whatever new FCC commissioners that person appoints -- lots of great insights and ideas.

But I want to raise some questions that come out of my time in government where the question is: Is it in the art of the possible to actually do what you want to do? And also my time as a financial analyst where the question is: Will the policies really lead to opportunities to invest in growth and innovation?

Now Jon's paper fundamentally focuses on infrastructure in rural America. I think that's probably right, though I would note that AT&T quarterly report that came out a few days ago suggested the economic slowdown is

actually affecting broadband subscriptions in a way that may again exacerbate the urban digital divide, and we have to keep an eye on that.

He suggests a combination of spectrum reform and reverse auctions. I'm going to talk about spectrum reform when I talk about Phil's paper, but I want to talk quickly about the auction with lots of tradable pieces.

I think that can have unintended consequences. Secretary Summers mentioned how difficult it is to do two different things. The same thing in spectrum design, the more different pieces you put in, the more complicated it is.

Jon's paper correctly points to the risk of bankruptcy when you have those kinds of tradable obligations. As one who still bears the scars of the great next wave auction, one of the things that I think we should have learned from that is that when you put in, the bankruptcy problem actually creates a risk for an award ratio in auction design that actually can make an auction inefficient, and I worry about tradable obligations that way.

There's also gaming that can be done, short of

bankruptcy, that I think one has to worry about when you put in more pieces in terms of those tradable obligations.

Then, finally, in terms of involving local governments, that's absolutely a great thing to do. But to the extent you make things dependent on the local governments, coordinating different government agencies can slow down a process that we ought to be thinking about how to speed up.

Also, I question the business model for new entrants under the model. There are a couple reasons.

First, we're in a very different stage than we were when we did the first auctions in 1994. It is much more difficult to get a new entrant to get an investable opportunity when a business is mature. In 1994, when we did the first auctions, the wireless voice business was relatively immature in terms of tremendous potential upside. We now have a situation where in both voices and actually in mobile broadband as well, the incumbents either have or had the ability to serve a much higher percentage of the people, narrowing the investable focus.

Secondly, I worry about sufficient scale. The structure that Jon has designed is for local, not national,

but it's not clear that wireless is really going to be ever a local business. I think if you look at how the rural voice companies are reacting to the Alltel-Verizon deal, what you see is they're really struggling to survive.

You could redesign it for a national player, but again I'm not sure that there's a national business. Clearwire's stock, probably the last wireless and broadband new national build, stock is down 70 percent in the last year. I think it's an indication of how Wall Street looks at that opportunity.

But having said that, there are a lot of great ideas in it. Definitely should do reverse auctions as an experiment in selected areas, and I think it's really important we have to shift universal service over time from voice to broadband. There's no question about that, but we ought to do it in an economically efficient way. Reverse auctions might prove to be a very valuable path for that, and so I commend a lot of the ideas in the paper.

Finally, let me note that it could be that the four major wireless companies, particularly the first two, are eventually going to blanket the entire country with 3G and then 4G. This is out a few years, but they have just

gotten the spectrum that really allows them to do that. Unlike in some other places, they really have an incentive to invest in rural America with broadband because they're not competing against their existing providers as much.

If that's true, then the question really will be whether 4G competes with wireline broadband sufficiently to narrow the urban-rural divide, but that's a high-class problem to have. Hopefully, that's the problem we have, but it may be that there are private market solutions down the road because of the new availability of spectrum.

Phil, again, great paper. His focus is on leveraging untapped spectrum which is really, really important. He focuses primarily, though, on secondary markets for privately held spectrum. I absolutely agree that it's important for the government to create essentially a register of deeds, so everyone knows who controls what spectrum.

In fact, I would go further and say the FCC collects a lot of data it shouldn't. It doesn't collect a lot of data it should. Governor Kaine mentioned measuring results, something that the FCC doesn't do effectively. It really needs to become an information-based agency for the

Information Age, but that's another question. But at a minimum, the register of deeds idea is really important.

They also discuss government spectrum, both Jon and Phil do, and they're right that many have attempted to free federal spectrum and few have succeeded, but I think that that is really worth being much bolder about. They focus on really how to free up private spectrum. I think the political focus ought to be on freeing up government spectrum because I think, politically, it's easier for a variety of reasons.

And, I think that one can even go further than some of the suggestions that are currently coming out of NTIA, though shadow pricing is good. You could even do a secondary auction of all government spectrum which would really force the government to both understand the value of it, but it would allow the private sector to use the currently public spectrum more efficiently.

There is a lot of insight on broadcast spectrum and FCC spectrum culture that we don't have time to chat about. The only thing again, though, is whenever you try to change the rules of spectrum that is held by private parties, you run into both political and legal problems

which is then why I think focusing on untapping the federal spectrum is more important, which leads me to a final thought about the importance of new business models.

I just want to emphasize a point Phil makes in his paper about how spectrum -- and made here –- about spectrum being much more valuable than merely the amount of money it brings into the federal treasury. The FCC ought to really look back and think about what policies they've had that has really driven innovation and economic growth, and there are a lot of different examples. I want to just point to one because I think it illustrates some kind of curious things.

Probably the most significant policy for driving broadband penetration is a policy that had nothing to do with broadband. It was the program access rules of the 1992 Cable Act. That enabled investment in DBS which forced the cable industry to upgrade their networks, gave them an incentive to create something which DBS couldn't do which is two-way broadband, which then forced the phone companies to give up their rather comfortable dial-up monopoly on the internet and then led to another cycle of investment in that.

There are a lot of different lessons that can be drawn by that, but the thing that I just simply want to say is that while government often thinks about problems about how do we level the playing field for competition, in fact, cycles of innovation are driven by asymmetric kinds of innovation. As we think about untapping, whether it be public or private spectrum, we may want to think about asymmetric models because that then forces incumbents to react in ways which really will grow the broadband pie, which in fact is the key to driving the larger economic pie.

Thank you very much.

(Applause)

MR. HUTCHINS: Thank you, Blair. Well done.

Is everybody hooked up? We will get you your microphone here. It's on the back of your chair. We should at least in this panel know how to use the technology.

I want to give a chance for our two authors to respond to some comments if they'd like and then move into discussion.

Jon, you first.

MR. PEHA: Sure. One of your comments is you worried about broadband as a local matter. I have no problem if one provider wanted to go to many places, but I'd argue that in the mobile world it is very important to have a national, at least a large, footprint because otherwise you have to negotiate roaming agreements with everybody. This could be fixed broadband wireless, and there are actually some pretty good models which are local. So I would expect to see both small local players and much larger ones, at least I hope, trying to come into the party.

More fundamentally, you said you liked reverse auctions, but you worried a little about the complexity which is --

MR. LEVIN: Of the tradable obligations.

MR. PEHA: Of the tradable obligations.

MR. LEVIN: Right.

MR. PEHA: A perfectly valid point. Getting all of the details right is going to take some work.

But on the other hand, what I've mostly heard is reverse auctions in a very simple way, with very rigid requirements, and I believe I worry a lot about that. I

think when you define fairly rigid requirements, you often find yourself where only the cable company can bid or only the phone company can bid. An auction with one player does not work very well, and that's happened in a lot of other countries. So I think we have to introduce flexibility.

Whether you think I've got it right or maybe it needs to be adjusted, we can discuss. I'd actually love to see a trial with a flexible approach to get this started.

I think I'll stop there

MR. HUTCHINS: Phil?

MR. WEISER: So I love Blair's comments, very sort of on the money as always. I'd say three things based on them.

The ability of the FCC to be an Information Age agency and not one built to the New Deal is another enormous challenge that Congress did not really wrestle with in the 1996 act, and the agency itself has made gestures at but hasn't really struggled with.

Three things that the FCC has to do in my mind to come to grips with:

Number one is, as Blair said, how do you deal with getting information and sharing it with the public in

an effective fashion? With respect to spectrum, right now if you want to take a spectrum license and try to connect that to Google maps, for example, or have someone get access to it and match up the data, you can't do it.

There's a great paper by Ed Felton out there that talks about the opportunities to use government data more effectively in this fashion and a nice article on her glob by Cynthia Broomfield about how the FCC is the worst communicator in Washington. So that's one thing to be mindful of.

Number two, Blair's other point, the FCC can learn a lot from the Federal Trade Commission, having retrospective about what initiatives they've done that have worked well and what initiatives have not worked so well. There is a lot to learn from that as more of an ongoing reassessment process that isn't part of its DNA.

And the third and, in some sense, the most challenging is can it act as an enforcement agency who determines matters after the fact and not merely tries to prevent bad things from ever happening? If you try to prevent bad things from ever happening, the possibility of bad things like interference in spectrum, you also prevent

a lot of good things from happening. In fact, interference means that someone is using spectrum really well.

Now it turns out you can have after the fact adjudication of spectrum. The FCC has called for that in one matter, the broadband for powerline decision. However, its capability in this regard has yet to be developed. It has, as of present, two ALJS, administrative law judges, but they haven't heard a case in the last several years.

So it is, on my proposal, a somewhat challenging thing to say to the FCC, get good at this thing you're not doing, which is why I say there's a possibility that maybe it could be some other entity who does it. Personally, I think it makes sense to try to build that capacity within the FCC, but I recognize it's something they have yet to do.

MR. HUTCHINS: So while we're going to move on to audience questions in about, I think, five minutes, maybe I'll throw some out in between now and then.

One question for you is you know we have the Universal Service Fund which obviously has some strengths and weaknesses but has done a pretty good job of providing wireline service to rural areas. You talked, Blair, a

little bit about repurposing that toward more broadband. Talk a little bit about why that's not sort of in place and there's a more practical solution to the problem you raise.

MR. PEHA: I mean you may be able to repurpose it to the extent that Universal Service Fund is four funds and you could create a fifth one but a couple of issues about taking the existing fund for rural to telephone.

First of all, it is focused. It is based on the assumption that the infrastructure is there, and the goal is to make sure that the price in rural areas is not much larger than the price in urban areas.

The principal problem with broadband is those places where the infrastructure is not there. In particular, these are systems where the cost to deploy is so much larger than the annual operating cost. You've really got to get over that initial hurdle. This is actually a much easier problem to solve. Finding subsidies for a one-time expense should be a whole lot easier than expenses in perpetuity.

Also, the fund is going bankrupt as it is, and it needs to be changed. So I don't know if tacking more responsibility on something that needs to be overhauled is

quite the best way to go.

MR. HUTCHINS: Blair, do you agree with that?

MR. LEVIN: In part, but I would just offer a couple of observations. First of all, it's not quite going bankrupt because it can always tax at a higher rate.

But more importantly, the reason I say we're inevitably shifting to broadband is because voice as a service is simply going to disappear. I can't tell you it's going to disappear in five years or twenty years, but that is the inevitable trend of technology. And so, to the extent that people in the 1920s, 1930s, 1940s, 1950s needed support for voice service, they're going to need that support for broadband, and it would be silly to be supporting voice.

MR. HUTCHINS: I assume what you mean by that is voice just becomes another data string.

MR. LEVIN: Voice becomes an application.

MR. HUTCHINS: Voice doesn't go away.

MR. LEVIN: Right.

MR. HUTCHINS: It just becomes indistinguishable from other.

MR. LEVIN: Exactly, some kind of VOIP or Skype-

like kind of thing.

But the second thing is we need to shift. We actually do need to shift dollars, I think. Certainly, you're right, it's always much more fun simply to add a fifth program. But there is a certain kind of discipline that comes from saying: Wait a minute. We're going to stop here doing this, and we're going to move on to the future.

I would just note that you know the commission recently put a cap on how much the wireless folks should get. So you can cap it. It may be that it is politically not. You can't quite do it yet because we haven't achieved a political crisis, and usually action follows a political crisis. This is one of the great things about the Hamilton Project. We ought to put the intellectual structure in place.

I think what's great about reverse auctions is a certain kind of economic efficiency. If we start running the experiments, and you and I could throw around about the details, but if we start running experiments, there could be a time in two or three years where you could say: Okay, we're now going to have a five-year plan where over some

period of time, and maybe it's seven or maybe it's three, dollars are going to shift from this fund which is fundamentally voice-centric to this fund which is broadband-centric.

MR. WEISER: Can I make one other point on your service?

The law of unintended consequences and not thinking carefully about these things as you do it is really important. In 1996, there was a change that allowed wireless companies to get access to universal service. The wireless companies that got access to universal service were not necessarily companies serving unserved areas by wireless. They were serving areas that happened to have a subsidized wireline operation which was not necessarily related to the amount of population density.

So when you start your new program, it's really important to think carefully about it and not necessarily just adopt some other legacy model which then leads you down unintentional paths. That's a virtue of Jon's paper, and I just have to underscore the idea of having a front and fixed amount you give someone to build infrastructure and then that's it is a very different model than what's

usually done in universal service.

MR. HUTCHINS: Interesting.

Phil, you talk in your paper a little bit about buffer spectrum, I think is the term that's used.

MR. WEISER: Guard bands.

MR. HUTCHINS: Guard bands, and you think that sounds like an unusually conservative policy in your view on the part of the FCC to keeping things apart. So I wonder if you could talk, expand a little bit more on that.

How much guard band or buffer spectrum is there?

What kind of real risk is there of interference?

How would we experience that as consumers if we took that risk?

Why is the FCC not prepared to take the risk, et cetera?

Because it sounds like there's a lot of issues.

MR. WEISER: I think you've asked at least three questions there.

MR. HUTCHINS: Right.

MR. WEISER: When you apply it to the complexity, it actually multiplies. So I'll try not to take up too much time.

MR. HUTCHINS: Okay.

MR. WEISER: Guard bands are used in most and many cases as an interference mitigation strategy. They're often used by the FCC to put on top of the parties, superimpose. The parties could, in theory, use their own guard bands for their own spectrum, but many times the FCC says we're going to build it into the mix. That's particularly true in TV broadcasting. There's a lot of guard band spectrum used there.

One of the parts of the proposal I outline is if you can get companies to say I'm going to give up my UHF spectrum and let it go to other uses and you have enough people putting that UHF spectrum into the till, you can then take those guard bands and readjust that equation and get a lot more bang for your buck -- in effect, taking these licenses and tapping them differently.

In other contexts, you can simply give parties the ability to have more flexibility than they have today and say, listen, if you use up the guard band and then some, that is you create interference for someone else, you're going to have to pay the price and adjust your behavior.

The FCC's ability, again, to act quickly enough is something that has yet to be built or tested. The reason the FCC hasn't made the move that you ask is because their DNA has been not to do that, and obviously parties whose spectrum could be interfered with don't want them to do that.

So I would say it's not totally an accident for the first victim of a spectrum regime that would allow after the fact complaints are ham radio operators, not the most politically powerful group. However, the principle being established in that context, which I think is there being done reasonably well, is that you can have people on notice of potential interference who then have to monitor for it and have to quickly address it if anything problematic should happen.

My sense is these devices are getting better and better interference mitigation. Thus, if this is done soundly, I think it would happen, exactly, over time.

MR. HUTCHINS: We learn to live with it.

MR. WEISER: There it is, exactly. You learn to live with it, and people make adjustments, and most wouldn't notice that much. Given a lot of people are used

to some forms of suboptimal cell phone or wireless reception, they'll manage.

MR. HUTCHINS: Blair, a lot of this gets to, I think, something you were alluding to when you used a phrase which is new to me but I'm now going to adopt, which is I think you said the FCC's spectrum culture. Is that it?

MR. LEVIN: I think I have to give Phil credit for that.

MR. HUTCHINS: Is that true?

But having been inside the FCC, can you share a little bit with us, some insight into what you mean by that and as a result of which the impediments to these sorts of reform are.

MR. LEVIN: Well, Machiavelli wrote something which is really very relevant to the FCC, which is things change because the people who are hurt by the change are usually very well organized and know exactly what their interests are. The people who benefit from the change don't really know that you have that.

So when you talk about a change in spectrum policy, which is one reason why I think if one wants to be

disruptive in terms of spectrum, look at the federal government spectrum because it's a little bit easier to do.

But the people who currently have the spectrum, such as the broadcasters, are very well organized, very well entrenched. They know the FCC very well. They know what their interests are very well. So, in the white spaces, they are very tough about any interference that causes them any pain whatsoever. Even though it's not their spectrum, it should not be countenanced, and they have a lot of members of Congress with whom they're very friendly.

The thousands of potential entrepreneurs who might benefit from reform in white spaces, they're focused on other things because it's a theoretical opportunity rather than a specific opportunity, and they're not organized. And so, that just makes it difficult at the FCC to do various things.

MR. HUTCHINS: Get these changes made.

MR. WEISER: If I could jump in at three points there, the first is there's a whole branch of economic analysis called public choice theory dedicated to the principle that Blair just said. However, they would never

have predicted airline deregulation which did exactly what Blair said. The sort of diffuse unorganized interests, consumers, got a benefit that the airline folks would not have necessarily foreseen coming. It can happen.

Number two is with spectrum, if you want to understand how this works, there's a great paper by Jim Snider of the New American Foundation called the Art of Spectrum Lobbying that talks at just how this happens because people don't understand how it works, and thus they're able to get away with it.

The third which is the broadcasters case study, low power FM, there was an effort to allocate more FM broadcast opportunities. What happened is the broadcasters found a way to say there are some possible scenarios where we could have some interference. They took those scenarios, took that to Congress and actually overturned an FCC initiative.

So you do need to come up with frameworks that can at least work in political reality. I've tried in the framework I've suggested to come up with a way broadcasters will be willing to go along with this because I think shoving it down their throats isn't going to happen.

MR. PEHA: Blair is right, that it is particularly hard when it is the incumbent versus the company that is not yet born, but often and in some of Phil's examples it is not. Often, there are two adjacent license holders that are adjacent in frequency or adjacent in geography. To the extent that we can facilitate their negotiating with each other about the interference that they can cause each other rather than doing it indirectly through a regulatory process, the faster this will go and the more it will work for both.

MR. HUTCHINS: Questions from the floor. We're going to use a location-based technology for this which is your own voice.

In the back here.

QUESTIONER: Thank you. Rod Colarina of the Asian American Chamber.

The question relates to convenience and competitiveness. I was curious as to do you feel that American consumers have enough of a vehicle to voice their convenience preferences towards the industry?

Then from a competitiveness perspective, it might be interesting, Glenn, to hear your perspective on how the

U.S. takes lessons from places like Scandinavia or Singapore as to the adoption of broadband or wireless or the like.

MR. HUTCHINS: Anybody want to answer?

MR. LEVIN: The first question about whether or not the American consumer has enough, it's really a glass half full, half empty. Certainly, if you look at it from the perspective of where I was when I got to the FCC in 1993, it's just utterly fantastic. Right. But then if you look, as you suggest, to other countries, maybe not so much.

I don't know. I don't know if I can provide any greater insight.

As to other countries, it is curious. I do think that one of the things that's interesting about broadband policies and all kinds of policies like line-sharing, a lot of companies adopted what we did in the 1996 act, but the United States didn't, part of the reason why Japan and some other countries have leads on us.

Broadband really should be thought of, the number that people always use is penetration, but in fact there are three really critical dynamics. One is penetration

levels. A second is speeds. The third is the value proposition. That is to say how much you're paying for a particular speed. In all three dimensions, we've lost a certain kind of leadership, and part of that relates to policies that were adopted but not entirely due to those policies.

But I think particularly when it comes to spectrum, Ofcom has done a lot of things that we ought to be doing and hopefully that we will learn from.

MR. HUTCHINS: On the competitiveness issue, and this is sort of a long discussion, so I'll just make a philosophical comment.

I think you have to get to a question of to what extent you're going to open your networks. Right. A lot of what you're talking about in terms of Singapore, for instance, is doing some very interesting things with dividing networks and service providers because let me give you an example.

Right now, approximately 25 percent of the iPhones that have been bought in the United States have not been registered with AT&T. Right. Why? Because they're being hacked and run on somebody else's network even though

that network doesn't want them on it. To the extent that you obviously have to give the network providers a return on capital in order to encourage them to invest, with that said, the greater extent that people's devices and content and services kind of run over networks, the more competitive you are, and that's a big question.

MR. WEISER: Let me add another point which I think pushes back something Blair said earlier. Blair's focus was on the big wireless companies and what the opportunities are there. Wi-Fi, as a standard, came out of nowhere. It wasn't planned by anyone.

My premise is get more spectrum out there with access to innovators and entrepreneurs, and we don't know what's going to happen. We don't know how it's going to be used. We want that experimentation, and that will give us an international competitive advantage. If we don't do that here and other countries do that, they're going to get those advantages.

So we have to be careful because we have still a very powerful technology industry here, but we can't take it for granted. These rules about how we have broadband, how we have spectrum are going to make a difference for the

next five or ten years going forward.

MR. HUTCHINS: A question, another question? Antoine, right here.

QUESTIONER: Antoine van Agtmael.

I have a philosophical question and two very quick practical questions. The philosophical question is how did the U.S. lose out on the wireless revolution or why, and is the iPhone helping us regain a bit of that ground? That's one.

The second very practical question is for the uninitiated in spectrum, who are the big unutilized spectrum hawkers? You mentioned the big broadcasters and unnamed government agencies. Is this mostly DoD or what is it?

The final question, very quickly, is WiMAX in rural areas, is it significant or not?

MR. HUTCHINS: Only a Brookings trustee gets to ask three questions.

MR. WEISER: I can try on the first two a little bit.

The first question, I don't think the U.S. did miss out in the wireless revolution. There are a lot of

great companies here who developed a lot of phenomenal wireless technologies. Qualcomm, of course, comes to mind. There is wireless TV viewing. Qualcomm has a service they've deployed. Some would say we're close to where anyone is around the world in terms of the development.

So that said, we haven't made our lives easier because as of 2000, I guess before the recent auctions, the U.S. wireless industry had about half the total amount of spectrum that the wireless industry had in Europe. We certainly made our lives a little harder with those allocation decisions.

Why did that happen? Because we allocated wireless spectrum before other countries did. We, in a sense, got punished for going first because we made some decisions that if we knew more later, we wouldn't have made.

The federal government, I'm not quite as, I guess, insensitive or unappreciative of their needs. I think there are some legitimate needs we've averted to and we can't be too quick to just dismiss, oh, the federal government is a spectrum hog.

The DoD does use spectrum in creative ways that

they do need some secrecy about, and that creates some sensitivities. The radar and people have heard about AWACS planes, that's wireless spectrum.

The FAA has, I think, as good a reason as anyone to say we can't afford any interference because that could mean planes could crash.

So the federal government has very legitimate needs for spectrum, and they also have lots of spectrum that's not being used all that effectively because they haven't valued it. That's an enormous challenge, how to get the public sector to value something which is worth real money and valued by the private sector.

MR. PEHA: As to WiMAX, I think the answer is yes. Ironically, WiMAX internationally is going to be in the developing countries that don't have a fixed wired infrastructure. I think that probably its biggest use in the United States, particularly since the largest companies are going to be using a different standard, is going to be in rural areas.

MR. LEVIN: I think it can have an effect. It's going to help as they coalesce around a single standard which has been a problem. That will drive costs down and

production up, and that hasn't quite happened.

Certainly, the technology, if the worst happens and they implode because they can't agree, something like WiMAX will work. It's the right form of the technology.

As for the biggest user of spectrum, I wish I knew exactly which agency had how much spectrum for the federal government. I don't know where to find it. If anyone does, let me know.

But I mean, anecdotally, I know of specific examples of people or organizations that need spectrum in one narrow part of the country and they have nationwide licenses, for example. It's easy to find anecdotes of problems, but what we need is a systematic study. If they were under a thousandth of the pressure that the FCC was under to free up spectrum, which they would be once we knew what was going on, then progress would be rapid. Exceptions for intelligence and defense, I agree.

MR. HUTCHINS: We have time for one last question right here.

QUESTIONER: Hi. I'm Dick Mudge from Delcan Corporation. I think it's great to have a panel on telecommunications infrastructure, and I say that as

someone who comes from the dirt-pushing side of infrastructure.

I'd like to ask you what interaction do you see between physical infrastructure and what lessons learned there may be for telecommunications?

Let me mention a couple of possibilities. One is on the transportation side, the vehicle side, there should be very good customers for mobile broadband. Another example is transportation agencies are among the largest real estate owners in the country. Much of that has power and fiber back haul. Is that a potential interaction?

MR. WEISER: A couple things, first is federal, state and local governments can learn something about infrastructure by thinking about telecom as infrastructure. They shouldn't think of it as a piggybank. All too often, they hear rights of way and they think, oh, that's easy cash for us. They don't think that's economic development. So they need to be more proactive: We want your towers. We want your fiber.

They need to say: We have fiber. We want to be able to lease it to you to help provide this infrastructure that in some cases can substitute for physical

infrastructure and make life easier.

The convergence you suggest is a rich area of where you get the integration of the two. It comes to mind because of crash notifications by OnStar and the like. There are lots of these technologies that wireless broadband or even wireless at lower bit rates can enable, and I think we're going to see more and more of that.

MR. PEHA: I would just note my understanding is China is building like about 20 cities to serve 20 million people or something like that. In the infrastructure that they're building -- these are the people who are moving from the rural areas in the next 10 years -- the transportation, the electrical and the telecommunications infrastructure is all being built simultaneously. It's going to far surpass anything that we're going to do. It creates an enormous competition issue for us.

MR. LEVIN: I agree that convergence is important. There is fiber sitting idle. Particularly rural areas, sometimes power supplies are key. If you have a power supply there for something else that you can now use for telecom, that may make the difference in making that deployment cheap.

But also being a large customer, I actually did a study for one city that was looking at deploying a municipal Wi-Fi system. It turns out that that particular city didn't have obvious uses of it, but lots of other cities that have been very successful have been so because their school bus fleet, their snowplows, their parking meters all could be integrated with the communications system. The savings, in effect, paid for a large amount of investment.

MR. HUTCHINS: Thank you. On behalf of the Hamilton Project and Brookings, I'd like to thank Phil and Jon and Blair for sharing their time and expertise with us today. Well done.

(Recess)

MR. ELMENDORF: Put on their microphone, make themselves comfortable. We're very lucky to have as a moderator for this panel, Nancy Cordes. Nancy is the Transportation and Consumer Safety Correspondent for CBS News and she will -- I will just turn this over to her right now and we'll get started. Thank you.

MS. CORDES: Thanks, Doug. Thanks everyone for joining us for this very important panel today. As many of

you many know, next week marks the one year anniversary of the Minneapolis bridge collapse which opened a lot of American's eyes to the crumbling state of the nation's infrastructure -- its aging bridges and roads, its overburdened and antiquated aviation system and the shortage of funds to fix the problems that do have a very real impact on commerce in this country. The American Society of Civil Engineers estimates that $1.6 trillion is needed over the next five years just to bring the nation's infrastructure to good condition. Their most recent infrastructure report card gave the nation's aviation system a D. The roads in this country received a D as well, and bridges somehow managed to eek out a C. Our panelists today have developed some very innovative solutions to this pair of entrenched problems -- dilapidated infrastructure and a severe lack of financing to fix it -- so I'm very pleased to be introducing them today. The first panelist we'll be hearing from is Jason Bordoff. He is Policy Director of the Hamilton Project, which as you know, is an economic policy initiative housed here at the Brookings Institution committed to promoting more broadly shared prosperity. Mr. Bordoff has written on

a broad range of economic policy matters, particularly income security and inequality, tax policy and climate change. He previously served as Special Assistant to Deputy Secretary Stuart E. Eizenstat at the U.S. Treasury Department and worked as a consultant for McKinsey & Company in New York. The next panelist is David Lewis. He is Senior Vice President with HDR where he serves as the firm's Chief Economist and Director for Economics and Financial Services. He served previously as President and CEO of HLB Decision Economics, prior to which he was a principal economist of the U.S. Congressional Budget Office. His 1999 book, Policy and Planning as Public Choice: Mass Transit in the U.S., is a quantitative accounting of the benefits of public transportation in relation to mobility, congestion management and economic development. And then we'll be hearing from Dorothy Robyn, who is a principal at the Brattle Group. She has more than 20 years of experience analyzing, implementing and working to reform government regulatory and economic policy. She specializes in rigorous economic analysis of controversial and often complex public policy issues that relate to competition in aviation, telecommunications and other

network industries and she'll be taking on the FAA today -- definitely a complex subject. And then we'll be hearing from our discussant, Ron Blackwell. He is the Chief Economist at the AFL-CIO. He coordinates the economic agenda of the AFL-CIO and represents the Federation on corporate and economic issues affecting American workers and their unions. Thanks so much to all of you for being here. We're looking forward to questions afterwards, but right now, I'll bring up Mr. Bordoff.

MR. BORDOFF: I can just -- I'll get going while this booting up I guess. And I should start by saying that this paper was coauthored with Pascal Noel, Research Analyst of the Hamilton Project, who's standing next to me coincidentally. I want to actually start by asking for a show of hands. How many of you are more likely to eat a little bit more when you go to an all you can eat buffet than when you order ala carte off a menu? Right. Of course, most of us are. It's not surprising. You've already paid for it, so why not eat a little bit more. And that's true for most things in life. You can imagine that if prepaid for gasoline in the beginning of the year for as much gas as we needed, people would drive more. That

sounds a little crazy, but it's not too far off from how auto insurance is priced today. For the most part, two people of the same risk profiles of the same age, the same driving record, the same geographic location, etc., are going to pay roughly similar premiums even if one drives 5,000 miles a year and the other drives 50,000 miles a year, even though the likelihood of being involved in an accident increases the more you drive. And it's true that some firms offer small discounts if you drive below a very low mileage threshold, but even those are based on self reported, unverified estimates of miles driven, so understandably insurance firms don't rely on them too much. Now this all you can drive method of pricing auto insurance has two harmful consequences. First, it induces an inefficiently high level of driving because drivers don't face the full insurance costs of each extra mile that they drive. Since you can't save money on insurance by driving less, people drive a little bit more than they otherwise would, just as you eat a little bit more at an all you can eat buffet than you otherwise would. And all these extra miles driven have significant costs on society -- more accidents, more congestion, more oil dependence, more

pollution, more carbon emissions. And second, the current method of pricing auto insurance in this lump sum fashion is inequitable, because low mileage drivers tend to subsidize insurance costs for high mileage drivers and we know that low income people drive fewer miles on average. So in response, we propose a fairly simply reform -- pay as you drive auto insurance. Rather than paying for auto insurance in a lump sum amount per year, people would pay for auto insurance per mile driven. Your premium might be 5 cents per mile, 10 cents per mile, 15 cents per mile. These prices would still be risk adjusted, so a 25 year old that lives in an urban area with a sports record and a DUI record is going to pay a higher per mile premium than a middle aged person with a safe car and a spotless driving record. Now pricing auto insurance in this way creates an incentive for people to reduce driving, because they dare the marginal insurance costs of each extra mile that they drive and the effect can be substantial. So in the paper, we take what's known about how responsive people are to higher driving costs, and based on that, we estimate that pricing auto insurance per mile driven would reduce vehicle miles traveled nationwide by about eight percent. That

would mean a two percent reduction in carbon emissions. It would mean a bit more than a four percent reduction in our nation's oil consumption. And to put that in perspective, it would take about a dollar increase in the gas tax to achieve a similar reduction in vehicle miles traveled. And these estimates are roughly consistent with both real world experience -- the limited that there is with this kind of pricing -- and also with various empirical estimates that exist. We then estimate the social benefits of an eight percent reduction in vehicle miles traveled, again drawing on various studies that try to put costs and show the economic costs of all the things I just mentioned. What's the economic cost of congestion accidents, oil dependence, carbon emissions, etc.? And we estimate the net social benefit of pricing auto insurance per mile driven and getting that eight percent reduction would be between $50 and $60 billion per year. Now that may be good for individual -- that may be good for society, but what does it mean for individual drivers? As far as we know, ours is the first study to try to estimate the distributional impact of pay as you drive auto insurance pricing and we find that it would be quite a progressive reform.

Currently, a minority of drivers are responsible for the majority of miles traveled. You can see here that 20 percent of drivers do 45 percent of all the driving. As a result, low mileage drivers subsidize insurance costs for high mileage drivers and, here's the important part, most people are low mileage drivers. And we estimate in the paper that nearly two-thirds of households would save money on auto insurance if we were to do pay as you drive pricing and the average savings for those households would be about $270 per vehicle. Let me say that again -- two-thirds of households would save money and the average savings per household would be $270 per vehicle. Because low income people tend to drive fewer miles on average, they benefit the most. If you look at the bars here in this figure, every household income group making less than $52,500 would save money on average. And then if you look at the line, rather than the bars, you'll see that their savings make up a far greater share of their incomes, whereas the losses for people with higher incomes are virtually insignificant as a share of their incomes. Now to be clear, this doesn't mean people with high incomes lose on average. Again, even at high incomes, a minority of drivers do most of the

driving. And so, in every income category, we see that a majority of drivers are better off with pay as you drive pricing. So if pay as you drive is such a good idea, why hasn't it happened yet? The key barrier we think is probably monitoring costs. It's difficult and can be expensive to figure out how many miles every car is driving. One way to do that is with a physical inspection of odometers -- maybe when you bring your car in for its emissions or safety inspection. Increasingly, technology is going to be able to do this for us with a GPS-type device in cars that records miles traveled and can transmit that data wirelessly to insurance companies. The problem is it's costly to put these devices in cars, and while the social benefits of pay as you drive are quite large, the private benefits to any individual insurance firm, we think, are likely to be quite small. Second, insurance regulations in various states pose barriers to offering this kind of insurance and the paper talks a little more detail about what those are. And then there are some other issues that people have raised that may be barriers, although we explain in the paper why we think those probably are not that significant. In response to these

barriers, we propose three policy reforms. First, states should take the necessary steps to make sure that their insurance regulations permit this kind of pricing and to the extent they fail to do so, the Federal Government can create incentives to encourage states to do that. Second, the Department of Transportation, currently through its value pricing pilot program, has a small pot of money to give funds to do things like congestion pricing, pay as you drive pricing and we propose that be increased a little bit with money for pay as you drive pricing to help give a booster shot to it and develop some real world learning about how this kind of insurance might be priced. And then third, and most importantly, is to address the market failure that I just talked about surrounding monitoring costs -- namely that the social benefits justify the monitoring costs, but the private benefits may not. And so we propose the Government help offset some of the costs of putting telematic devices in cars for the first few vehicles to sign up for this kind of pricing. Specifically, we propose a $100 tax credit for each mileage based policy that an insurance company writes, to be phased out once two percent of the nation's vehicle fleet is

operating under per mile pricing. We think that small number should be enough to get the ball rolling, because over time the first few people to sign up for this kind of pricing are likely to be low mileage drivers. That means those remaining in the traditional auto insurance risk pool are going to see their premiums go up a little bit. A few more people are going to realize that per mile pricing makes sense for them, and over time a virtuous cycle can develop where most people, we think, start to switch to per mile pricing of auto insurance. In conclusion, I would just say I think the time may be ripe for an idea like pay as you drive pricing. At a time of record high gas prices, politicians are proposing myriad policies to try to bring down driving costs for Americans -- most of which would do very little in the short term to actually reduce driving costs for people. And to the extent gas prices did come down, we might lose some of the benefits we've seen of people driving less, taking mass transit, buying more fuel efficient cars. With pay as you drive, you can have both. We can lower the cost of driving for the majority of Americans -- two-thirds of households -- while also creating an incentive for people to reduce driving, and

thus getting the benefit of reduced congestion, reduced carbon emissions, reduced oil consumption, etc. So, in that respect, we think pay as you drive is truly a win-win. Thank you very much.

MR. LEWIS: Show of hands, how many people would eat more at the buffet if there was no price attached to it at all? That's what I'm here to talk about. Congestion is indeed a national economic burden. It ranks in terms of its monetary equivalent value with some of our more well-articulated and advertised problems such as diabetes, COPD and other health problems. It's fundamentally a result of delay, but it is also and even more fundamentally a problem of diminished travel time reliability and predictability, but not only for automobile users, but for truckers as well, which creates both lost productivity -- particularly important in adjusting time economy -- and lost time at home with family, as we build cushions into our daily lives in order to avoid being late. But those cushions mean less time with family and friends. We incur higher vehicle operating costs, environmental -- including greenhouse gas emissions are greater as a result of gridlock -- and accident costs rise as well, including lives, more injuries

and property damage. Just to put a few numbers, a few quantitative adjectives into the mix, in 2005, studies indicate that the peak period traveler in the United States spent on average almost 40 hours stuck in traffic because of congestion. The peak period traveler consumed an additional 26 gallons of fuel and the value of delay and fuel costs amounted to about $700, $710 per peak period traveler in that year. Rolling it all up and most of us believe that this is sharply understated, but that the economy lost in that one year, 2005, in the area of $78 billion due to losses in just fuel and time and that doesn't count the environmental and safety costs. The number of urban areas where the peak traveler incurs more than 40 hours of delay was about -- was one -- Los Angeles in 1982. In was more than 60 in 2005 and by some estimates, another 11 urbanized areas could reach Los Angeles conditions by 2030 if nothing is done to abate current trends. So what is congestion pricing? Well congestion comes from under pricing. Travelers, all of us, certainly consider our private costs when we take to the roads -- the costs that we're going to take in time and the money costs of our fuel and our insurance -- and we size up

those costs in relation to the benefits of the trip we're planning. But we don't take into account the costs we impose on others and on the economy -- what economists call the external costs -- which can be anywhere from 25 to 55 or 60 percent, as much again as in relation to private costs. So congestion prices are tolls that vary by time of day to reflect those external costs to present us with those costs. So we take those into account when we size up the costs and benefits of whether or not to take the trip at that time of day, by that mode and on that route. The result of congestion pricing, according to a consensus of studies, is that they would and do improve roadway efficiency and performance, reduce transportation investment requirements, help direct infrastructure resources to sound transportation investments -- including both roads and public transportation investments -- and they create the revenues needed to help finance those investments and to help finance the means by which to diminish the inevitable burden that congestion pricing can place on low income and disadvantaged groups. So, a framework for national reform -- we certainly have a lot of momentum building in this country with respect to

congestion pricing. The Federal Government has been a leader in the field with its value pricing program, its urban partnerships program, something called the interstate pilot program which allows states to apply to impose tolls on existing interstate roads. But there are political and cultural barriers that remain. Anyone who followed the saga of Mr. Bloomberg's plan for congestion pricing in New York, knows that political barriers can get very -- can inevitably get in the way. So what can be done to help overcome those barriers and institutionalize the role of congestion pricing? Well, there are a number of things. I think it's fundamentally a partnership between federal and state and local governments and I point out just certain elements of those of my proposal here. One is a federal incentive program through either differential federal matching for projects, where if we get away from federal matches in the next round of reauthorization and go closer to infrastructure banking type of approaches, differential loan mechanisms that would reward states and localities that engaged or employed congestion pricing. We need to remove remaining federal restrictions on tolling, including ubiquitous restrictions on tolling existing interstate

highways. And states need to remove their restrictions -- many, in some cases, restrictions on any form of tolling at all. As part of that, DOT and, as I'll mention in a few moments, the IRS need to provide some guidelines and some regulatory framing. The incentive formula that would create the incentives I described earlier would need to be created as would a relationship of the program to statewide planning. Project eligibility attributes would need to be established. A framework for technological interoperability, so you're not stuck with different technologies required to use congestion priced roads in different parts of the country and mitigation guidelines. Now, what about the costs and benefits of a congestion pricing program? We know that the economic benefits would exceed its costs, would exceed the costs. But we also know that poor households are likely to bear a disproportionate financial burden of congestion pricing. The good news is the toll revenues from ubiquitous tolling across all roads -- not just new capacity -- would provide sufficient revenue to compensate the largest of these losses through means such as monetary compensation, lump sum transfers through the tax system, and through recycling of the

infrastructure of the congestion pricing revenues through infrastructure investment -- both in roads and in public transit. The line, the upward sloping line, shows the effect of ubiquitous tolling program nationwide on congested interstates and freeways -- it's the increase in expenditure on tolls by income. So as we get wealthier, we travel more, so the line goes up. But the bars show what that looks like as a proportion of income and that shows that there is a regressivity -- that poorer individuals who would spend $400 or $500 a year on tolls under this program, would spend more as a proportion of their income than would higher income households. And that is one of the reasons that I think poses a political and cultural barrier at the state and local level. And part of the proposal in my paper is to develop -- the Federal Government would develop for states and localities to implement something I call the Progressive Refundable Mobility Tax Credit. And this is a refundable tax credit modeled on the EITC that would provide a sliding scale of refundable tax lump sum transfers to those for whom tolls have the most egregious effect and thereby both mitigate social harm, which is an important fundamental thing to do

from a policy perspective, and in addition to help create a valve, a political valve to help states and localities achieve consensus in the application of congestion pricing. Thank you very much.

MS. ROBYN: Thank you. I'm going to talk a little bit about the air traffic control system, which is run by the Federal Aviation Administration, which is an agency of the Department of Transportation. The FAA operates the air traffic control system. It also regulates the air traffic control system. The air traffic control system is an underperformer as things that the Federal Government does is concerned. You experience it in the form of delays. Delays are costly -- not by the scale of road pricing, but I estimate that flight delays last year cost passengers and consumers $12 to $14 billion and that leaves a lot of things uncounted. Another sign, a less visible sign of the underperformance of the air traffic control system is technology. We were talking earlier about the FCC or the FAA does use a fair amount of very choice spectrum. They use if very inefficiently because all communication between controllers and pilots is over analog voice radio. This is 50 year old technology. There is no e-mail, no instant

messaging. Hard to believe, but all communication between pilots and controllers is over voice radio. President Clinton and Vice President Gore used to hold up -- in events on reinventing the FAA -- would hold up a big vacuum tube that was still being used in some of the decades old FAA technology. The FAA was the single largest purchaser of vacuum tubes up until the mid 1990s and they had to buy them in Poland and Romania because they were no longer made in the United States. Dave Barry, as he so often does, captured this aspect of the FAA in a column that he wrote several years ago. He said a recent audit of the FAA showed that, among other problems, air traffic controllers are relying on outdated maps that showed giant serpents in the ocean and refer to North America as New Spain. The FAA so-called Nationwide Radar System is, in fact, a man named Murray standing on the roof of a Wal-Mart in central Kansas with a walkie-talkie and a pair of binoculars. And the FAA's emergency backup aviation communication system has become increasingly unreliable because, in the words of the audit report, most of the pigeons are dead. That's a bit of an overstatement, but you get the idea. For all of these reasons, the FAA has been -- the air traffic control

system has been a target of economists and other Government reinventors for a long time, for several decades. And the view of the typical economist is that the problems -- delays, the old technology, the rising unit costs of providing air traffic services -- are a predictable result of the way we provide it. That air traffic control, the air traffic control system is in effect a business. It is a monopoly, but it is a 24/7 capital intensive, high-tech service business and we are running it out of a command and control regulatory agency -- the FAA -- which is micromanaged by the Congress and which is subject to all the constraints of the Federal budget process. It would be a little bit like if the FCC had run the telephone system at a point where AT&T was a monopoly. It's a little bit -- it's the mismatch -- there is a fundamental mismatch between the nature of the activity and the agency carrying it out. There is also -- and economists have led with the efficiency issue, but they've always said and by the way there is this conflict of interest issue because the FAA both regulates and operates the system and that creates a potential conflict of interest. Normally we like to have the regulator operating at arms length. Now, the Clinton

Administration tried early on to spin off the air traffic control system from the FAA as a Government corporation -- U.S. Air Traffic Services, Inc., USATS. We had support from the air traffic controllers. It was a proposal worked out at length with debate by Larry Sommers, Joe Stiglets -- a lot of people. It was dead on arrival on Capital Hill. Since then, several dozen countries have done pretty much what we proposed in order to get the advantages of operating their air traffic control system outside of the traditional government bureaucracy -- typically as a government corporation. But, the politics of trying to do that are simply the hurdles are too great and one indication of that is that the Bush Administration has not even tried to do that. What the Bush Administration has tried to do is to change the way the system is financed, which is also problematic. It's financed through excise taxes on passengers, cargo and fuel and they bear only a tenuous relationship to the cost of the system. So, the Bush Administration has proposed to move from excise taxes to cost based user charges on the actual users -- the airlines and the private aircraft operators. And their major argument for doing that was that the revenue coming

in from the excise taxes was going down as airlines went to smaller and smaller aircraft, made more and more use of regional jets. You have fewer passengers on board each plane. It costs the system the same to handle a regional jet as it does a 747, but you're getting less from an individual plane. The Bush proposal -- a very good proposal -- was also dead on arrival because of opposition from general aviation -- both business and recreational aviation. So, the politics have been -- on this issue -- have been deadlocked for quite a while. What do I have to contribute? I make two proposals that I hope can push the debate forward a little bit. The first, and this will disappoint some people in the room, but I don't recommend corporatization of the air traffic control system -- moving it out of the government bureaucracy. I propose moving the air traffic system out of the FAA, into a separate modal administration in DOT -- creating a new modal administration in DOT to run the air traffic operation and to be regulated at arms length by the FAA. The major thing that accomplishes is to deal with the conflict of interest issue. It may not be the most important issue, but it's a legitimate issue that you've got the operator and the

regulator in the same agency and as we move to a next generation air traffic control system, this becomes more of a problem because you're constantly making trade offs between capacity and the efficiency of the system. You want that to be done in a transparent way. It's hard to have that sort of transparency when they're both in the same agency. I think creating a separate modal administration would also lend mission clarity to both this new organization and the FAA and there has been a lot of talk about this recently. Congress is upset because the FAA has been -- the FAA regulators have been too cozy with industry. The FAA does these two fundamentally different things. They regulate and they operate. And there is a real lack of clarity about what the mission actually is and separating the two organizations would be a step toward providing greater clarity. The second thing, I recommend exactly what the Bush Administration proposed -- going to cost based user fees as a way to send market signals. But I think what I'd try to contribute to the debate here is to highlight the efficiency benefits of that. The debate remarkably over user fees -- and it was a very heated debate with the FAA pushing for user fees and the airlines

supporting it as a way to shift more cost to business jets which seriously underpay -- so there was an equity dimension and the FAA was focused on providing enough revenue. Nobody talked about efficiency. The efficiency implications of the current system are profound. It is a lot of what David and Jason talked about. It's sort of the all you can eat bar. The airlines don't pay directly for use of the system, so at that margin they don't face the cost. Big planes contribute more than small planes which creates an incentive for the use of smaller planes and that's been a major contributor to delays. The FAA, as the provider of the service, does not get the kind of valuable feedback with excise taxes that a service provider needs and that they get from prices. Going to cost based prices would do that. So those are my two contributions to the debate. I would say in closing that if you ask the average member of Congress how do we fix the problem of delays, the problem of the air traffic control system they would say the Next Gen, the Next Generation satellite-based system. I would argue investing in Next Gen is not going to have very much payoff until we fix the more fundamental problems with the governance structure in the financing and

hopefully I've provided a way to move the ball forward.

Thank you.

(Applause)

MS. CORDES: Thanks to all three of our panelists and now Ron we're eager to hear your first glance thoughts.

MR. BLACKWELL: Thank you and I'd like to begin by thanking or congratulating Brookings and the Hamilton Project for convening a meeting on this very important subject at a very critical time and to Doug and Karen for inviting me to be here to participate and share the views of the AFL-CIO and the American Labor Movement. And to my colleagues which for writing these papers on a wide array of topics, challenging my expertise in each and every one of them and allowing me to talk to them.

Unlike the commenter in the first panel I'm not nearly as an expert in each of your areas as he was. So I wanted to make some opening remarks connecting what I've learned from reading these papers with what I heard in this morning's session and then draw out some of the themes that weren't apparent or haven't been made apparent today.

I don't get a chance everyday to associate myself so enthusiastically with the views of Larry Summers on

every subject. I wish I did because I view him as one of the great economists of our generation or his generation and not just in the United States but in the world. But we've had our differences time to time on issue to issue. But I want to enthusiastically endorse, whether he welcomes it or not, the presentation that he gave about our current economic situation in both the long and short-term implications and role of infrastructure in that.

He mentions, I think his leadership on getting the first Stimulus Package in motion I thought was instrumental and likewise I hope that his views this morning will help us move infrastructure and get a second chance at stimulus.

He mentioned the double blow in manufacturing. We've lost 3.8 million jobs since it peaked in 1998. We're losing tens of thousands of very good jobs in construction, he says, in very disproportionate impact on people with less than a college education which I'll remind you is most of the people in our country. And he recognizes that this is not a typical recession. That we are going to need a different stimulus in all likelihood given that this one is based on the deflation of an asset market and it takes a

long time to recover from that. It's not like simply turning the interest rate around hoping it bounces back.

So and I'd say, I want to remind you how painful this is for American workers. I don't know what the NBER will decide when this recession started, but as far as American workers are concerned it started. We've lost jobs every month this year, over half million net overall. I promise you when the numbers come out next week it's going to continue and it's going to get a lot worse before it gets better.

But it's especially painful for American workers because at the peak of this last recovery from the recession in 2001, median family income was still below what it was in the peak of the last recovery for the first time in American history. And this comes at the end of a generation long stagnation of wages and rising economic insecurity. It is very painful out there and it's too difficult for too many people to make a living right now and it's not surprising to me the statistic he showed that Americans, only 20 percent of Americans contrasted with 80 percent of the Chinese are happy about the direction in which their country is moving.

So in the short run we have an urgent problem. We think infrastructure can play a role. If we're going to spend the money anyway for other reasons, why not spend it now and get the increase in employment and the improvement of people's working conditions and shorten, and make this recovery more shallow.

There's two other economic purposes here. One, we have to find a motor for growth in the United States other than debt finance, consumer spending. We can't continue to borrow five percent of our GDP every year from the poorest countries in the world to finance our excess consumption in the United States. We're not even using this borrowing to invest in our country's future. We can't depend on asset inflation, either in equities in the 1990s or in housing post-2000 to motor this economy. And I think if there is spending attached to the long-term needs that we have to restore our infrastructure, that's a very important role to put it under more sustainable basis. But the current growth strategy is not sustainable from another point of view and that is that although we have the world's most competitive companies in the United States, we do not have a nationally competitive economy. That is we can't

borrow continuously five percent of our GDP.

Either we find a way to produce more of the value equivalent of what we consume or we'll be forced, one way or another, to consume less. Since that's not a very important progress we have to find a way to make this country competitive. I would suggest that that means we have to have a world class workforce in this country, education and training is critical for that. We have to have a world class infrastructure in this country in order to be able to have a hope of maintaining our living standards in an increasingly globalized economy. I'm running out of money here and I'm not even connected here.

We heard from Governor Kaine, a very important lesson. You saw he has thought deeply about these kinds of infrastructure his state needs and about the priorities of that infrastructure, over time and intermodally. And he's thought about the cost of that as well as how to finance it. One of the weaknesses of the Hamilton Project, in my view, is that these questions have been kind of put aside to focus on two other questions themselves important. One being how do we increase the efficiency of the infrastructure we have? And secondly, how do we improve

the process for making investment decisions?

I would say that, I would hope in a further iteration in Hamilton's pursuit of this you have to have something to say about those key questions at the national level. Bob Rubin asked him the question, Okay you thought about this as a state, what is the national implications of that? That's really not his job and he didn't do it, but the question is who in the United States is supposed to be doing that? Who is thinking about those questions the way he's thinking about them for the State of Virginia. The answer is nobody. And that's the most compelling reason I believe there is for a national infrastructure strategy.

The two questions that the strategy does look at, also I would offer the observation, I have no evidence for it, but I believe if you were to study the efficiency gains from increasing the efficiency of our utilization of infrastructure and compared that to the efficiency losses and potential gains of having some way to prioritize our infrastructure needs at a national level across modes and across opportunities, you'd find that the absence of our ability to evaluate these options for our infrastructure would swamp the potential gains from the efficiency of the

use of infrastructure.

The sub-optimizing that goes on because most of infrastructure spending is at the state and local level and nobody is paying attention to what its national implications are means that despite however efficient our states are, and I was much impressed by what I heard this morning about Virginia, but despite that for the Nation as a whole we're losing an enormous amount of effectiveness and efficiency in our system. And there too, I think the Hamilton Project needs some work because though you recognize who we got to allocate these decisions among different areas of our federal responsibility, whose going to do that? How is it going to be done?

There was a criticism of the National Investment bank, maybe appropriate, but at least they're proposing a central place where the infrastructure needs of the country can be surveyed and where different opportunities intermodally can be investigated. But I'm not saying that when we dive into just the efficiency of our use, I'll just make the final point.

To its great credit the strategy paper and each of the papers on this panel were very sensitive to the need

to consider both efficiency gains and equity issues. And I noticed that, you know, with regard to two of our papers on aviation and on insurance, efficiency things lined up with equity things. But in the case of programs about congestion pricing, clearly as you recognize we're going to have to deal with the equity issue alongside dealing with the efficiency issue.

This is very important and not just for these issues, of course, but I would make the following observation from bitter experience and I have many scars to show. We see the changes for efficiency in many areas of our public policy and we get promises of compensation for the people who pay disproportionately for these gains in efficiency, but the compensation rarely comes. So one of the things I noticed in particular about yours, I give you great credit for raising it. You make give the states the option about how they share the gains, the efficiency gains between compensating people for this. Do we really want to leave it that open or do we not need to find a way to meld very closely efficiency considerations and equity considerations when they're not integrally integrated?

I'll stop there, thank you very much.

(Applause)

MS. CORDES: So in the time we have left I've got a lot of questions and I'm sure you have questions too and I think I'll just kick it off with a question to Jason regarding your proposal. While it stands to reason that the lowest income Americans do drive less than others, it seems to me that there is a huge swath of Americans who drive long distances precisely because they live far from where they work in order to save money and now find themselves not just burdened by higher gas prices, but with a program like this, how do you keep it from being punitive on them?

MR. BORDOFF: That's a really important question. That's one we talk about in the paper because the concern that people who have long commutes or live in rural areas are going to be disadvantaged by this policy. And what we show is that, again, we're talking about on average there are obviously going to be winners and losers, but on average low-income people do drive less. And we also break out the benefits that I've talked about, that two-thirds of households that we predict would save money with pay-as-you-drive pricing. We then break that out for urban

households and also for rural households and we find the number to be about the same for both urban and rural households and the reason, again, is because the premiums are risk adjusted.

So if you live in an urban region and you're driving less you're going to pay a higher per mile premium and if you're in a rural area you're going to be paying a lower per mile premium. So the question isn't do you drive a lot, it's do you drive a lot relative to the people like you in your risk profile? And since geography and where you live is a key factor in your profile, the question is do you drive more than the average person in your rural area?

So again, we think, I mean I think the data shows this will be a progressive reform. Low-income people would end up better off and it wouldn't adversely impact people in rural areas. The ratio, the share of that gain would be about the same regardless of where you live.

MS. CORDES: Got it. David. In regards to congestion pricing, where do you see it being used? Because it seems like it would work well in a city like London or New York where they have very robust mass transit

systems as alternative to people who don't want to pay the congestion pricing, but in smaller cities where those options aren't as readily available how would that work?

MR. LEWIS: Well, first of all I think that a significant majority of the congestion problem, as a series of Brookings studies indicated, released in June. The problems are particularly manifested in the top 98 larger metropolitan areas. So it's those metropolitan areas, those very areas where there is public transportation or potential to build more public transportation options on a platform of existing services that the problem exists and we need to focus attention first.

In medium-sized cities, there are some medium-sized cities which do suffer material congestion problems and yet as you quite rightly point out don't present a public transit alternative. It's precisely for that reason that congestion pricing can help reveal what the true market demand for public transportation is by presenting people with the true cost of congestion in those cities their demand for transit will become apparent and there's a chicken and the egg issue or a timing issue, when do we put the transit in place in those places as so as to capture

that demand and meet it. But that's an operational issue with fairly straightforward investment staging solutions that are available.

So I think that overall, and finally in the medium-sized cities where the problem is more roads, not more transit. The congestion price can reveal where those additional interchanges and lanes are most needed and provide the revenues to provide them. Not in situations where transit isn't necessarily the appropriate response.

MS. CORDES: Dorothy when it comes to your proposal, you mention the other proposals that were sort of really big picture proposals that have been killed and yours is also a big shift. It requires moving an entire trunk of operations of out of one agency and putting it into the DOT. Why do you think that would succeed where these other big picture proposals have failed?

MS. ROBYN: It's already in the DOT.

MS. CORDES: Right.

MS. ROBYN: It would move from the FAA, which is one agency into its own modal administration. And I think actually it would be organizationally fairly straightforward because in 2000 president Clinton issued an

executive order for the FAA to in effect hive-off the Air Traffic Control System within the FAA as a semi-autonomous organization. A lot of effort has gone into that. It's actually, I think, been quite successful. It just doesn't go far enough.

So I think it would be reasonably straightforward organizationally to move it. It all should be moved physically. But the key thing is, I think politically this could be a winner. I think the opposition to moving this system outside of the traditional government agency as a government corporation, public/private partnership. The opposition comes from members of Congress who want to maintain control. And frankly now, air traffic controllers who did support our proposal in the mid-90s, but no longer support a concept of a government corporation.

I think here you are not taking it out, I'm not proposing to take it outside of government. I would leave it inside of DOT and I think it's, I mean, I'm eager to talk to Ron about this, but I think it's conceivable that controllers would see this as beneficial. I think it would benefit controllers. You've got 15,000 very dedicated controllers who are working in a system that is not

functioning nearly as well as it could be and that makes their life harder.

MS. CORDES: Well, their conflict with the FAA is legendary.

MS. ROBYN: Yes.

MS. CORDES: And long-lasting.

MS. ROBYN: Yes. Right.

MS. CORDES: Do you have any questions Ron?

MR. BLACKWELL: Yes. The question I didn't get to ask each of them is these are meritorious suggestions in very tightly focused areas. And right now because we have no institution where you could take these things and they could be vetted and made a part of a larger strategy, the only way to move something is either at a regulatory level perhaps or going finding a Congressman from each Party in each House to kind of champion something and hope for the best. It seems to me that's very hard going for proposals that are as closely targeted as you are. I just wondered if you had reflections on what kind of institution do we need to bring these kind of proposals to so they can be vetted and made part of a larger program to make our infrastructure more effective? I mean, if you have

thoughts of that kind.

MS. CORDES: Anyone what to start?

MR. LEWIS: I'll dive in first. I'm a little bit more optimistic in my starting point. I think at the federal level a great deal of planning influence has been generated through planning requirements by the Federal Highway Administration, the Federal Transit Administration, and other modal administrations that impose planning requirements and standards and guidelines certainly for safety, but also for congestion management and other safety management and so on, on states that would be recipients of federal money. There are strings attached and that's had, environmental standards is the one I was struggling to find, coming from both DOT and EPA.

And those standards had enormous unifying, not perfect by any means, but unifying effect on the behaviors of the state and local level. To go further than that and centralize and regulate planning requirements, land use requirements, and environmental requirements. My sense is that that might be a elegant solution but I'm not so sure, I'm not convinced at all that it would be consistent with the federal nature of the transportation and land use

systems that we have in the United States. We're fundamentally 50 solitudes within a corporate framework called the U.S. Constitution. And I think we have to basically live with that and try to forge complex, less elegant, less uniform partnerships.

I think a federal banking act could help unify things a little bit more if the modal administrations were to give way to a more centralized system. But I certainly don't think that we should take away the flexibility from states and localities to respond to their individual needs within a broadly coordinated framework. And I think we've seen the ability of the federal government to coordinate such a framework quite effectively through the various authorizations and transportation bills over the years.

MR. BORDOFF: I would just very quickly note that for as pay-as-you-drive auto insurance, insurance is obviously is very heavily regulated at the state level and most of the movement we've seen toward these kinds of pricing policies have been at states. Texas did something a few years ago, there's a bill pending in the California State Legislature, and a rulemaking process underway with the Department of Insurance right now to look at pay-as-

you-drive pricing and we have been in touch with a few other states that are interested in this. Much more at the federal level, so that's probably where action would have to happen though. As we talk about it in the paper, I think the federal government can offer both carrots and sticks to make that happen.

MS. CORDES: Any questions from the audience. Yes.

MR. REPLOGLE: I'm Michael Replogle, Transportation Director for Environmental Defense Fund. The Center for American Progress a couple of months ago issued a report recommending that the next president issue an executive order calling for all major federal decisions to take into account the impact of those decisions on climate change, impact of climate change on those decisions. A lot of the strategies that you've discussed and recommended in your reports would help move towards reducing greenhouse gas emissions.

Do you think it would be useful to have such a Presidential Executive Order to foster a more quick consideration and action on your recommendations, both at the federal level and by state and local actors who are

taking decisions that are implicated in federal transportation policy in decision-making?

MS. CORDES: Who wants to take that one?

MS. ROBYN: I think maybe, I'm not sure about the executive order. I think the politics, having the environmental groups on board. I've heard your wonderful presentation at TRB on the benefits of transportation pricing and you focused on road pricing but the same goes for aviation. Flight delays, just to throw out my own, by my own calculation the fuel burned during delays in 2000, I forget how many, 18 million tons, million or billion tons of carbon dioxide, but equivalent to the carbon emissions of two and a half million automobiles. That's just during delays.

Having the environmental community as a voice for changing that is I think, in the end more important than any executive order, but I think both are good.

MR. LEWIS: I don't know if an executive order is the right way to go. I'm not an expert in the dynamics of leadership to dare render an opinion, but I do think this. I think there is a political or rather a cultural barrier to congestion pricing particularly on existing roads.

There's a sense in America that mobility is a free good. Free roads was initiated in the 30s and 40s and promoted and institutionalized in the 50s. And we now see the idea of congestion pricing culturally as a double tax. Where, of course, it isn't.

Having said that there are those, such as Governor Kaine who has taken steps towards the implementation of some congestion pricing in Northern Virginia and Mayor Bloomberg's initiative. There's been leadership at the local level. But I do think there is a potential role for a federal leadership push to change the culture of mobility and to change the culture of mobility as a free good or congestion as a free good. So as to give, I hate the expression, but so as to give political cover but more political with a intellectual credibility to the local level to say, look this is what we're going to do. This is the way forward and here's why.

I don't know that an executive order is the place to initiate that kind of a leadership play and I don't think that alone would be sufficient and I certainly don't think that we should nationalize transportation policy or environmental policy. But I do think there's a role for a

high level, for the highest or supreme level of government, the federal government to create a leadership push to step up to enable state and local elected officials to step up to the plate in relation to cultural change in relation to mobility as a free commodity.

MS. CORDES: I wish we had time for a lot more questions, but I think we only have time for one more and then the rest of you can tackle our panelists afterwards. Yes, sir.

MR. BOOTHE: Jeff Boothe, Holland and Knight, Chair of the New Starts Working Group the Community Streetcar Coalition. My question is for you David and that goes to the issue, it's really a two part question.

First of all one of the issues with tolling is in effect inefficient at a level and since it encourages sprawl and so how do you address the issue of encouraging folks to move further out at a time where that contributes to greenhouse gas emissions, vehicle miles traveled, what-have-you. How do we respond to that?

And then secondly, one of the issues with congestion pricing is the fact that you can't use what you don't have. If you don't have a robust transit system that

gives you a real choice and be able to have a choice everyday as to how you get to work therefore you're stuck with paying the toll as opposed to having the alternative in using transit as your alternative. So how do you respond to those two concerns?

MR. LEWIS: Taking them in reverse order. In my paper I talk about the need for a very determined framework for employing revenues derived from congestion pricing to recycle into investment in public transit facilities. We're talking about revenues from the ubiquitous framework of congestion pricing on all interstates and freeways in the United States with moderate to high congestion, raising at least $100 to $115 billion a year.

As I said earlier that is if we can take 25 percent of that and use it to finance a refundable mobility tax credit so as to provide cash lump sum transfers to the poorest of the poor who are hardest hit, that still leaves more than $80 billion for capital investment that would include public transportation investments. Now the order in which you do things matters. The transit has to be there so as to enable people to exercise their vote with their feet, if you will. And that I regard is less of a

strategic problem as a budgetary timing and scheduling problem. I think we crack that problem.

So I think you're right. The transit has to be there, not just from a fairness and equity point of view but because I think the demand would be there. It would be a market shift. I think congestion pricing would reveal what the right balance between transit and roadway infrastructure is in this country using good old fashioned market mechanisms to help reveal where the demands are, what people want.

To your first point I don't buy that congestion, that tolls necessarily encourage sprawl. I think that people will seek to reduce the distance between their home and their workplace. To some extent that will manifest itself in a concentration or densification of land uses. It might not be people all moving into traditional central cities, it might not eliminate the suburban lifestyle, but it might help concentrate jobs and residences in higher density land uses so that we get people, instead of commuting from suburb to suburb, from Price George's County to Silver Spring will choose to live in Prince George's County and work in Prince George's County as well and

Silver Spring and Bethesda and Anacostia and so it goes.

So I don't entirely agree that we have, that congestion pricing would promote lower density living if that's what we mean by sprawl.

MS. CORDES: Well this has been fascinating, I have to think long and hard about which proposal I want to do a story on first. But thank you to all of our panelists and to you for coming and of course to Bob Rubin and the Hamilton Project.

MR. RUBIN: Well, first a hand to our panel.

Let me wind up by saying what I said at the beginning which is welcome, which is welcome. I want to make one comment though. I thought Ron's comments were, all of these comments were very interesting but Ron said something that really struck me. As Larry said in the opening comments we face an exceedingly difficult situation with respect to the short-term outlook for our economy and for the long-term with all of our strengths we obviously face enormous challenges as Ron said if we're going to have a competitive economy. Somehow or other, we all working together have to find a way to get our political system to have the serious purpose that you all had by coming here

today because if we don't have serious purpose economic policy we're simply not going to move forward and I think you're right Ron. We're at a critical juncture in our economy, both for the short-term and the long-term and that's something all of us can try to further as we go forward.

With that I thank you all for being here. September 23rd will be the next Hamilton Project event and that will be on a subject called Housing, a not low-profile event today.

Thank you all very much. So long.

(Applause)

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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