THE BROOKINGS INSTITUTION

SMART GRID'S FUTURE:
EVALUATING POLICY OPPORTUNITIES AND CHALLENGES AFTER THE RECOVERY ACT

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P R O C E E D I N G S

MR. WEST: Good morning. I'm Darrell West, vice president of Governance Studies and the director of the Center for Technology Innovation at Brookings, and I'm pleased to welcome you to this conference on "Smart Grid's Future: Evaluating Policy Opportunities and Challenges After the Recovery Act."

The American Recovery and Reinvestment Act of 2009 earmarked $11 million for smart grid technologies in order to modernize and enhance our nation's electric transmission infrastructure. A year later we have come together to ask several questions: What are the most promising benefits? What are the most important obstacles facing the smart grid? And what is the right policy path moving forward to realize the goals of this new technology?

Today we are hosting leading technology experts and energy officials to discuss the smart grid's future. We have panels that focus on consumer views about smart grid technology, benefits that come from access to a new electric infrastructure, concerns that have been raised by consumers as to how the smart grid could develop, and opportunities to use behavioral insights to inform how smart grid technology can operate in practice.

We are going to look at emerging smart grid technologies and new business models related to the smart grid.

This is the start of a series of activities Brookings scholars have underway on the smart grid in conjunction with Brookings Energy Security Initiative, the Center for Technology Innovation will focus on new developments surrounding the smart grid and ways to achieve its full potential.

For opening remarks I am pleased to welcome Aneesh Chopra back to Brookings. Aneesh, as you all know, is the President's chief technology officer. He is an assistant to the President and associate director within the Office of Science and Technology Policy at the White House. In that position he works to advance the President's technology agenda by fostering new ideas and encouraging government wide cooperation.

Now, one little known fact about Aneesh is that yesterday was his birthday and he had planned this nice romantic dinner with his wife and his family. And -- but somehow he'd

gone to Detroit, did an event -- maybe health IT or something -- and got waylaid, had a five hour delay, and missed that dinner. But on behalf of everybody here today, Aneesh, we want to wish you a belated happy birthday and welcome you back to Brookings. (Applause)

MR. CHOPRA: Today is going to be a lot of fun. It's going to be a lot of fun because you will be engaging in a conversation that will help set the playbook on how we think through the issues of the smart grid.

Before we get into the materials for today I want to begin by thanking Darrell for hosting us. It was June 8th when myself, my colleague Phil Weiser, and the Chief Information Officer Vivek Kundra sat here at Brookings, slightly different design, and we highlighted the President's strategy for American innovation. Just as a quick reminder, last September, President Obama traveled to a community college in upstate New York, a community college that was focused on training its students of all ages in the burgeoning clean tech sector, health care sector, and other areas of long-term growth, and it was in that context the President provided the framework for the investments we were making in the Recovery Act. But the policy ambitions we had to ensure that the American economy, while focused on recovery, also had in its design, a strategy for that long-term economic future. And as a reminder, that strategy rested on three key foundational principles.

First, that America is at its best when we invest in the building blocks of innovation. Here, we were particularly interested in our research and development enterprise, as the President's committed to doubling the funding of basic science in this country, in the National Institutes of Standards and Technology, the Natural Science Foundation, and the Office of Basic Science of the Department of Energy.

A commitment to advanced information technology infrastructure or smart infrastructure as we look to build out, and again, on that same spirit, you saw Larry Summers conveying the President's strategy over the next 10 years to double the availability of spectrum for mobile broadband purposes. We believe a key driver of unlocking economic potential as we move towards this mobile broadband revolution.

We also saw, for those of you who've paid attention to the NTIA's recent

announcements of investments in the broadband program, where we invested specifically in a project to connect some of the most advanced assets in this country, research institutions, hospitals, and other anchor institutions, to double those that are connected to what we call ultra high-speed broadband networks with speeds that will range from a gigabit up to 100 gigabits per second.

You also heard in our building blocks of innovation a commitment by this President to strengthen the quality of our workforce and our educational system where he's challenged our country to once again lead the world in the share of our adult population with college degrees by the year 2020.

You heard us speak about the second pillar of the President's strategy for American innovation, the strategy that highlights our commitment to open and competitive markets. That focused specifically in this context around open government and how we can reform the way Washington works to spur more creative and entrepreneurial activities out in the economy.

And last and certainly not least, you had heard the President suggest that there are certain sectors of the economy, certain opportunities in the here and the now that call for an all hands on deck approach where we need breakthroughs, breakthroughs specifically in clean energy and in health care. The President called for those areas in the Strategy for American Innovation, and it was in that context that we announced on June 8th that the White House would be coordinating a steering committee, a policy committee, with particular emphasis on the smart grid. Our intention: to focus on the long-term comprehensive strategy to ensure the effectiveness of our smart grid policies.

Now, that effort is in part what is leading us here today. One of our first and important criteria was to engage with the American people in this conversation. We are here today to further that conversation, not to have speech after speech, but to engage in a meaningful dialogue so that we can ensure we've got the right input as we look to release a policy framework this fall. We're not in the business of meetings to have meetings to have a concept of a meeting to get to somewhere, maybe, wherever. We believe in delivering results. Our mantra is to get

things done in 90 days, to measure progress, and to continuously improve. It is that spirit, that philosophy that governs our work.

That's why the design of today's session is specifically engineered to maximize your participation. Each of the panels, if you will, are really launch pads for an interactive conversation, and you'll see that in the DNA of those sessions as they roll out.

Now, before we dive in, just a couple more minutes and then Darrell and I are going to just address a few questions, but I want to remind all of us that this particular topic, the topic of the smart grid, is something that the President has called for. He has specifically asked for a better, smarter electricity grid. He understands that it's going to take an IT-powered system that will achieve our broader environmental, economic, and energy security goals.

Today's session is tightly focused on an incredibly important aspect of grid policy, and that is the consumer's interface. Now, for the record, we believe that providing consumers with clear, timely, and appropriate information about their energy consumption and electricity pricing, is critical to optimizing the efficiency of the grid. And we come to this session building on a strong foundation of work to date. As Darrell mentioned, the Recovery Act has invested over $4.5 billion, leveraging over $5.5 billion of private sector capital coming in off the sidelines, to get moving on smart grid projects, expected to delivery 10,000 jobs and to serve as a foundation to serve both product and services innovation.

We believe in addition to the investments, our work to build an open, secure, and flexible technical foundation, through open data standards, for information exchange that will ensure that innovations in one corner of the ecosystem can scale with limited, limited friction. We are conducting our policy work in this concept in a manner envisioned by the President's Open Government Directive.

How are we engaging? As many of you know, you've probably visited the NIST's Smart Grid Interoperability Wiki where you can engage on the conversation around data standards. Many of you may have participated in an online forum that we held in our office at the Office of Science and Technology Policy regarding consumer access. The Department of Energy recently requested information and held public hearings to engage further on these topics. And

we are here today, and Darrell, I presume, you're broadcasting, you're webcasting, you're storing it for the future so that all can participate in this dialogue.

We proceed on this manner recognizing the importance of policy decisions to protect consumer privacy and to ensure that we support education at the home with particular emphasis on delivering all benefits, as many benefits as we can, to all consumers, regardless of their technical readiness at home.

So, my charge to you is very simple: Join the discussion throughout the day so we can capture your views as we work in a very collaborative manner to deliver a smart grid policy framework that works for all Americans.

With that I thank you and I look forward to your questions and comments.

(Applause)

MR. WEST: Thank you very much, Aneesh. As you point out, the President does have a very ambitious agenda in the energy area and this area is key to our nation's future. This will be the start of a dialogue and we'll be very interested in hearing the perspective of the various officials and experts during the course of today. And the goal is to help develop a policy framework that will be released down the road in a few months.

So, my first question for you is, just as you're thinking about the smart energy grid, what do you see as the biggest policy challenge? I mean, what are you thinking about what the government needs to be doing at this stage?

MR. CHOPRA: Well, one of the most important challenges, as Pat and George will allude to as we move forward in the discussion, is that this is not a one policy to rule them all. In other words, there are many players, many voices, and many policy and governance frameworks -- at the local level, at the state regulatory levels -- so probably one of the interesting questions that will come up is how do we service the needs of all the stakeholders that are all interested and engaged with their own perspectives to achieve the results that we anticipate.

It is probably not that hard for a bunch of smart folks to sit around the room to think of the technical architecture to make this work, and, in fact, there's very healthy conversation and very fast-moving action in this regard. There are going to be debates on the

mechanics of certain aspects of this, and there are going to be some debates on the economic value and the projected anticipated results. We don't know.

You and I today, Darrell, live in a world where we get a rearview mirror approach to our energy usage. We get a bill at the end of the month. We might say, oh, if only I knew it was going to be this high, I would have maybe changed my behavior, but you don't really know exactly what you would have changed because you didn't really have the kind of real intelligence. But as people look to the homes that are going to see the value today -- in fact, there are 3,000 homes in Massachusetts, I believe, this summer, that will be one of our first examples of the Recovery Act in motion, that are going to have access to, literally -- I wouldn't say it's real time, but near real time, like every six seconds or so, they're going to get the data point. Looking at a data stream of every six seconds, you know, I don't know what I'm going to do there, but there's an opportunity for innovation.

So, I think the innovation cycle is exciting. I think the technical side is exciting. The complexity of all the stakeholders is going to be the one that will be the most intriguing and we're going to have that conversation, I think, throughout the day.

MR. WEST: You rightfully point out, there are many voices that need to be represented in this discussion, and certainly at the federal level there are a number of agencies and departments that are active. In terms of state government, we have the state public utility commissions. What do you see should be the division of labor between federal and state government as they are developing policies in this area?

MR. CHOPRA: Well, the whole purpose of listening and the purpose of this process today and the engagement we're doing is to have that conversation. If I were to presuppose the answer up front, I think many of you might say, geez, why are you having all this conversation? This is a very important topic, one we want to get right. We don't come with any preconceived notions about exactly how this should work. There are obviously some broad themes about how we can, at least, at a very minimum, engage in a collaborative manner to surface best practices, what works, and what may not work, but the specific lines and how everything should operate, we don't come to this with preconceived notions. And I think that is

the spirit of the forum today. And again, you'll hear from those who are charged with getting this right, to be more nuanced, as to that conversation.

MR. WEST: Okay. We'd like to open the floor to questions and comments from you. We have people with microphones, so if you can raise your hand and if you have a question just give us your name and your organization and -- we have a question over here.

MR. SNYDER: Jim Snyder from (inaudible). The smart grid is certainly not a new idea. I recall working on Capitol Hill in the late '90s and the utility industry wanted to protect the 25 megahertz that they had, and they argued, oh, we're -- let us have it, we'll use it for this smart grid. Broadband over power line, smart grid was an argument. How do you prevent -- I mean, how do you know that this time it's different? What we see with these type of infrastructure companies all the time is they offer these blue sky scenarios, like the telephone industry in late '80s on fiber. They got literally tens of billions of dollars of government subsidies and they didn't deliver it. Now, they are delivering now, 10 years later they began to deliver it, but often they use these type of grand visions to get all sorts of benefits, and then they don't deliver until it's really in their own economic self interest to do it. Maybe it is this time, I don't know, but how do we prevent this long-term pattern of you're offered these great blue sky things and then the goods aren't delivered until really it's in their economic self interest to do so? Maybe that time is now. I don't know.

MR. CHOPRA: Well, you're -- I appreciate the question, and let me begin by saying in part, and I don't mean this to be in a way self-serving, the whole reason the President thought to add an advisor in the mix of his senior advisor group that's focused on technology, is to give greater emphasis at these seams. If you think about it, we have experts in health care policy and yesterday we released a rule that looked at how technology should affect the health care sector. At that seam there may be some opportunities for challenge, as you know, like in energy, in health, in education, you name the seam, we have experts in a domain that at the intersection of technology there may be some challenges, presumptions about what should work and what shouldn't work and how to make sure that we've got the right focus.

So, the portfolio the President has handed me in making sure that we deliver the

results that he's expecting, to be held accountable for making sure that the policies are designed to deliver what we are expecting and to be vigilant about all the policy levers that we have to get there. Now, some of them are investment decisions, why the Recovery Act has given us an opportunity not only to make investments, but to hold folks accountable and to measure what works and what doesn't so that gives us an immediate relationship. There are regulatory levers, the standards process is really a collaborative spirit, but nevertheless, it's a chance to bring the parties together so there's a policy lever in that regard. And then there's the convening and the leadership this President has asked us to bring across stakeholders so that even if we don't have an immediate -- as Darrell referenced earlier, what is the relationship with the federal and state -- even if we don't have a formal legal clarifying view, we are engaged every day with stakeholders to sort of convene and share ideas so that as many folks in the system can be focused on what works and what doesn't and therefore move the industry -- move this sector in a manner that achieves the results that we all anticipate.

So, my meandering answer to your simple question was to simply say, leadership and accountability, I believe, are going to be key elements in why the smart grid will deliver on the promise that many of us anticipate and hope to see in the months and years ahead.

MR. WEST: Right here. Up front.

MS. WERTHEIM: Aneesh, I'm really impressed with what you're saying. I'm Mitzi Wertheim. I'm with the Naval Postgraduate School. I'm a social anthropologist by training, but I've worked in the IT world for the last 33 years.

This morning I heard something on C-SPAN, it must have been, because I listen to that all the time, about how people are discouraged by the way they think government is -- it's just not responsive. And then last week I was at a meeting which was about regulations and there was a fellow from New Orleans who runs a maritime business. He was pointing out the problems that corporations have or businesses have in having to go through so many different regulations which come from different segments of the government and they don't talk to one another.

So, part of my question is, how do you get your vision of having people meet at the seams down at the lower levels where they -- when they come up with regulations they don't end up creating different ones, or they can have a single one, but cover all of the components?

This is a real change of behavior in government.

MR. CHOPRA: Number one, so, I can tell you both prospectively and retrospectively how this is working. Prospectively, that's exactly why we've named Pat and George to be the co chairs of this White House led process for the policy framework, the reason you're here today, and it's not just the two of them. We have basically a dozen actors in the ecosystem who are at the table, while they all have their mission responsibilities; we are coordinating and surfacing those issues. In fact, we think more will be surfaced as we go through this engagement period.

So, I don't want to say, have faith, but I'm saying we've structured this precisely. Now, many of you who follow the inside baseball know there's already an inner agency process, the Smart Grid IP Task Force, so there exists already interagency cooperation and a lot of that is operational and it is really about making sure that the left hand knows what the right hand's doing, not really to balance the policy challenges.

So, the White House coordination function that is at the heart of my job description, is to make sure that the policy challenges, intentions, are coordinated in full support of the day-to-day activity.

Now, you may look at me and say, well, that all sounds well and good, but do you deliver on the goods? Yesterday we delivered on the goods for health IT. We published the rules on meaningful use and that, I believe, is an example of inner agency coordination and collaboration. You have the Department of Defense, the Veterans Administration, the Centers for Medicare and Medicaid Services, the Office of the National Coordinator for Health IT, all with their perspectives on what the health IT program should look like and that from day one was very much managed in a process that had White House equity.

So, we have a national coordinator for health IT and he's an operational lead and he's a thought leader, Dr. David Blumenthal at HHS, but he also chairs a White House health IT

task force where I have the honor of serving as one of the vice chairs, to make sure that we've got all the equities.

And just to give you an example, you know, for those of you that are trying to -- okay, this all sounds like policy talk, what does that mean in reality? You know, the standards discussion in part of the rule that came out yesterday, you know, you have like ten people showing up at the meetings, the representatives from the industry and like a few other folks -- rarely do doctors, nurses, people that are in -- patients -- you know, they don't fly out to Washington to come to a meeting to engage on the issues that matter to them. So, you know, I said, that's crazy. We're going to have to take this conversation outside of Washington and connect.

So, we had testimony and a physician who didn't know government lobbying from a hole in the wall said, let me tell you my story. I'm a doctor in Virginia. I have a patient moving to Arizona. The patient has chosen a doctor who happens to have the same software that I do, and she's asked if I can send electronically, as opposed to fax, her records so that the doctor would have it when she moved. He says, okay, sounds like an honest and simple idea. Go to the computer system, where's the button that says, send to colleague? It doesn't exist. How do I do it? He had to export the patient's record, attach it to unsecure e-mail -- as he's providing testimony the audience is gasping, you can't do that -- sends it over the public Internet, doctor opens it up, imports the file, it works. And he says in testimony, I don't know what you all are going to do with all this money and all this stuff. Can't you just make it simple so that I can send my patient's record to a colleague? And I said, amen, Doctor. Thank you for that testimony, that's exactly what we want to hear.

And on March 11th, we launched the nationwide Health Information Network Direct Project, little to no marginal government costs, just an open wiki, the public could be involved, everybody shows up, and we said, you have 90 days, Google, Microsoft, hospital systems, you know, 50, 60, 80 people -- 90 days. Come back with technical specs, and they did. On June 30, they released version 1.0 of the technical specs, voluntary, consensus driven, safe, secure e-mailing for doctors to communicate with their colleagues. Simple. Easy. Collaborative.

Now these are technical specs. You can visit the wiki and you all can comment if you like it or not. So, retrospectively, we've done it in health IT. Prospectively we will deliver it in the smart grid. That is our commitment, that's why we're here.

MR. WEST: Okay, I think we have time for one more question.

MR. CHOPRA: Sorry, I won't go so long on the next one. I'll rapid fire.

MR. MAJORIS: My name is Mike Majoris. I'm with an economic consulting firm here in town. You opened the discussion talking about an $11 billion federal investment in smart grid --

MR. CHOPRA: He did. Four and a half billion.

MR. MAJORIS: There's a discrepancy. My question is who's going to pay for the rest? Is there a policy about who pays for the rest? Is it Wall Street or Main Street?

MR. CHOPRA: Boy, I love that question. In fact, that's a great conversation to have throughout the day. But first principles, what -- so, let me tell you my philosophy. I see major distinctions between nouns and verbs. Call me weird. Nouns are where we get stuck -- the thing, the smart grid. It is a box. A set of boxes with a cost. And we presume the cost, the box, the structure, and now we have the argument, Main Street-, Wall Street-financed, whatever.

You're presuming the noun and how to move the noun. I do not presume the noun. I focus on the verb. What do you want? What is it that we're trying to achieve? What is the policy objective? That is what we're talking about today. Is it providing the consumer near real time access? Well, what does that mean? What are the options? That may be a little box, it may be a big box, it may be a set of things that don't involve a box.

Whatever the circumstances are, focus on the verbs. If we can achieve a policy framework on verbs and we understand what the means in the circumstances, we provide sufficient room for innovation and we have -- then all of the sudden your debate about who pays is really about what is the product innovation and service innovation cycle, and hopefully that cycle points to the initial concern about costs starts to go down, value starts to go up, your economists are going to say, oh, this is a no-brainer, and then all of the sudden the ecosystem figures it out.

If we start with nouns, I think we lose. We're focused on starting with verbs and that, I think, is going to be where you're going to engage on the conversation.

MR. WEST: Okay. I'm sure over the course of today we will come back to both of those questions: who pays and nouns versus verbs. And we'll let you know what the audience comes up with on each of these fronts.

But I want to thank Aneesh for taking the time after his five hour travel delay yesterday to join us. So, thank you and we will bring up some other people.

MR. CHOPRA: One last thing, the travel -- for purpose of yesterday. It was exciting. We did announce, again, in the President's commitment to entrepreneurship and innovation, we announced that people like Steve Case and Jerry Yang are going to be serving as advisors to the administration on promoting entrepreneurship and innovation relevant in the context of what I'm saying to you today. We want to focus on entrepreneurial activity, new thinking, new approaches, and so it was a painful travel delay, but worth it in the spirit of the announcement we made.

Thank you. (Applause)