

UNITED STATES DEPARTMENT OF COMMERCE

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U.S. ECONOMIC DEVELOPMENT ADMINISTRATION

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NATIONAL ADVISORY COUNCIL ON
INNOVATION AND ENTREPRENEURSHIP (NACIE)

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MEETING

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THURSDAY
AUGUST 24, 2017

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The Advisory Council met in Room
72015, U.S. Department of Commerce, 1401
Constitution Avenue, N.W., Washington, D.C., at
1:30 p.m., Melissa Bradley and Stephen Tang, Co-
Chairs, presiding.

PRESENT

MELISSA BRADLEY, AU Center for Innovation in the
Capital, Co-Chair*
STEPHEN TANG, University City Science Center,
Co-Chair*
REBECCA BAGLEY, University of Pittsburgh*
ESTHER BALDWIN, Intel
HEATHER BOESCH, IDEO
TREY BOWLES III, The Dallas Innovation Alliance;
The Dallas Entrepreneur Center
SCOTT FREDERICK, New Enterprise Associates
RICHARD JOHNSON, Kentucky Science and Technology
Corporation

DAVID KENNEY, Oregon BEST
PRADEEP KHOSLA, University of California, San
Diego
MIKE NEMETH, S3 Planning
ANDREW REAMER, George Washington University
EMILY REICHERT, Greentown Labs
SUE GRIFFITH SMITH, Ivy Tech Community College
WHITNEY SMITH, JPMorgan Chase
TIFFANY STEVENSON, Sephora USA, Inc.*
ERIC TOONE, Duke University

ALSO PRESENT

CRAIG BUERSTATTE, Office of Innovation and
Entrepreneurship; Designated Federal
Official
DAVE BUCHANAN, First Responder Network Authority
(FirstNet)
T.J. KENNEDY, President, First Responder Network
Authority (FirstNet)
CAMILLE NELLANS, First Responder Network
Authority (FirstNet)
PHIL SINGERMAN, Associate Director for

Innovation & Industry Services, National

Institute of Science and Technology (NIST)

JENNIFER SHIEH, Small Business Administration
BRITTANY SICKLER, Small Business Administration
ERIC SMITH, Office of Innovation and

Entrepreneurship, Department of Commerce
JOHN WILLIAMS, Small Business Administration

*via teleconference

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1 P-R-O-C-E-E-D-I-N-G-S

2 1:34 p.m.

3 MR. BUERSTATTE: All right, good
4 afternoon, everyone. You all know who I am,
5 Craig Buerstatte, and for the record, I am the
6 designated federal officer. And we will begin
7 our fourth quarterly meeting today.

8 So welcome. Thanks for coming.
9 Thanks for being flexible in our newish space.
10 The library is under renovation at the moment, so
11 the lovely grand ceilings and the pillars are
12 getting a little love this month. So, we aren't
13 able to meet in there, obviously.

14 But speaking of construction, the
15 library isn't the only thing under construction
16 right now. Steve, I won't put you on the spot.
17 I know you're a little bit under the weather at
18 the moment but Steve had some emergency dental
19 work today, unfortunately. So he literally just
20 got out of the chair. So, a little drugged up.
21 So, I know he's dialed in but thanks for joining
22 us, Steve.

1 And regrettably, we are two for two
2 today. Melissa is stuck in the airport up in New
3 York. And Melissa, I believe we've got you live
4 right now. Correct?

5 CO-CHAIR BRADLEY: I am. How are you
6 all?

7 MR. BUERSTATTE: Great. Do you want
8 to kick things off with some of those remarks?

9 CO-CHAIR BRADLEY: Sure, I'd be happy
10 to. And I'm actually not in New York. I'm in
11 Martha's Vineyard. I was here for a family
12 vacation and I was going to fly back today and
13 then come back tomorrow and drive the family
14 back. But I know it is going to be hard to
15 believe, but I can honestly say I would rather be
16 there with you than be here in Martha's Vineyard,
17 only because I know Craig, and Steve, and myself,
18 and Eric have been having several conversations
19 and I think that all of us have been patient, and
20 are fired up, and ready to go, and I think that
21 we're going to make some progress on this
22 meeting.

1 And so with that, I just want to kind
2 of get us grounded and then pass it off to Steve
3 as well. But as you all know, we've been working
4 on four priorities which, luckily, I am happy to
5 say are beginning to nicely align with where the
6 administration is headed with infrastructure,
7 apprenticeship, manufacturing, and deregulation.
8 And I want to acknowledge our chairs and co-
9 chairs of those committees, who have been working
10 hard over the past couple of months to keep that
11 momentum going.

12 So the good news is is that we're
13 going to have some visitors, and opportunities to
14 interact, and kind of share where we are, which I
15 think nicely aligns with moving forward. And if
16 anything, I see that there is maybe some tweaks
17 and some adjustments but certainly not having to
18 start anything over but, if anything, hopefully
19 ramp up and bring our local expertise and
20 credibility to the table to be able to continue
21 to influence and have some strategic alignment
22 with the administration.

1 I would be remiss in saying that we
2 have lost some folks and I think that that's
3 expected, as we acknowledge the first time we
4 met. This is the first time there has been a
5 transition between administrations. And so it
6 has been slow, and challenging, and rocky. And
7 as someone who has served in two administrations,
8 I've spoken to a couple people offline and they
9 said does it really take this long and I can
10 honestly say it does. It is a patient process.
11 So, I want to reiterate my thanks to everyone for
12 their patience and I want to say that the folks
13 who have transitioned will be missed but we are
14 left with a group of people who certainly have
15 the right experience, the right background, the
16 right, I would say influence to really help us
17 move this agenda forward. And so we respectfully
18 say goodbye to them and hopefully, for many I can
19 personally say, will continue to keep in touch
20 with them and hope that there may be some ways to
21 leverage and still bring their work to the table,
22 even if they're not there. But I am also quite

1 confident in the folks we have sitting around the
2 table, literally and figuratively, that we will
3 be able to now move forward and get some things
4 done.

5 So over the next two days, I want to
6 acknowledge Craig and Eric, who have been
7 stalwart in this process and certainly have been
8 probably the most flexible and nimble folks I've
9 ever met in getting us to this point. And so the
10 next two days have been very purposely developed
11 to be able to get us aligned and in front of
12 folks so they can hear what we do but, more
13 importantly, get us in our groups and really
14 figure out what have we already brainstormed that
15 can be advanced and moved forward and where are
16 some areas that we can continue our great
17 thinking so that we can, indeed, make sure that
18 entrepreneurship remains a priority in this
19 administration's agenda.

20 So, again, I am grateful and thankful
21 to all, particularly because it is summertime and
22 for those of us who have kids, I know they are

1 heading back next week or the week after. So
2 thank you, again, for making the trip there.
3 Thank you for so many of you also for just being
4 honest and reaching out and checking in over
5 time. That is a role that Steven and I take very
6 seriously and so we are always here, regardless,
7 to listen, to share, to be a communicator, or a
8 bridge.

9 And again, I want to extend my thanks
10 to Craig and Eric for their patience. I want to
11 also appreciate Rebecca, who is joining us, whose
12 mom is recovering from surgery as well. Again,
13 we all appreciate family first. So I want to,
14 again, thank everybody for being there.

15 And I do look forward to participating
16 remotely and getting engaged and figuring out how
17 we can get thinked up and get ready to go. So,
18 thank you.

19 MR. BUERSTATTE: Awesome. Thanks,
20 Melissa. So, as she said, highlighted
21 infrastructure, manufacturing, deregulation, and
22 apprenticeships. If we've seen the news this

1 summer, unless you were hiding under a rock,
2 those shouldn't be too much of a surprise.

3 And then she said we've started to
4 dive into a lot of that already but with the
5 guidance that we've gotten over the summer and
6 especially with some of the new initiatives that
7 we'll hear about today, things are, I think,
8 really starting to align nicely in those four
9 verticals. And really, we just want to show how
10 the council can support those efforts and be a
11 part of the administration's new policies and
12 programs.

13 So with that being said, a quick
14 logistics item. Everyone's got their agendas.
15 It's pretty straightforward. Our fourth time
16 around, I think things are pretty clear.

17 Just down the hall and down to the
18 right are both men's and women's restrooms, as
19 well as a drinking fountain. There is a break
20 room on the fifth floor with coffee, soda,
21 snacks, if you need any but we're going to go
22 straight through until about 3:30. We might even

1 beat that target, if things go smoothly.

2 So any questions on the run of show
3 today?

4 All right. First off, and speaking of
5 new initiatives, I think we're pretty lucky to
6 have T.J. Kennedy, the President of FirstNet with
7 us today, not just because he's a really
8 experienced executive but they just announced a
9 \$6.4 billion public-private partnership. So
10 FirstNet's a little busy, to say the least. And
11 I think it's unique because -- you need time to
12 talk with them because as they start to formulate
13 their strategy for this public-private
14 partnership, they're looking for new ideas. How
15 can we build a modern FirstNet ecosystem of first
16 responder applications and technologies? So this
17 is what some of your pre-reading was about.
18 Hopefully, you took a quick glimpse. T.J.'s
19 going to talk about that but just for your
20 awareness, I think T.J.'s got over 30 some years
21 in the first responder business both as a
22 practitioner, paramedic, firefighter, led public

1 service work for Raytheon for a number of years
2 as well. So please take advantage of T.J. while
3 he's here, ask questions and hope that not only
4 his information or his insight will be helpful to
5 us, but also, as always, a two-way dialogue.

6 So, T.J., thanks for coming.

7 MR. KENNEDY: You bet. I'll just give
8 a few highlights and really hope it's a good
9 dialogue and I don't have to talk for too long
10 and I can answer your good questions.

11 But I think the point that Craig made
12 about when I was at Raytheon running the public
13 safety business, one of the things that we all
14 knew then was this entire technology landscape
15 for public safety needed to change. It had been
16 25 years since really we had changed the kind of
17 technology that police officers, firefighters,
18 and paramedics use. And I had been on the
19 technology side about 10 or 15 years by then and
20 it wasn't happening.

21 And public safety went to Capitol Hill
22 and said we need to spur this through a couple of

1 things. One, we need to be able to free up some
2 spectrum. Spectrum is gold. We need to find a
3 way to get public safety the spectrum we need.
4 We also need some funding.

5 And Congress did something they've
6 never done before that I'm aware of in that they
7 gave us some spectrum to sell. They weren't
8 quite sure of the value and said if you do a good
9 job of selling this with the FCC, you can keep up
10 to \$7 billion. Anything else goes to pay down
11 the national debt. Nice seed market, if can pull
12 it off but nobody was quite sure.

13 And they gave us two other assets.
14 And it's important to understand the three of
15 them because this was the strategy we had to
16 figure out to build a business that would make
17 this work. And the second two pieces were
18 actually harder than the first one. So the
19 second piece was we're going to give you 20
20 megahertz of spectrum in the 700 megahertz band,
21 which is really good. I call it Superman
22 Spectrum. It goes long distances. It goes

1 through walls. It leaps tall buildings, all good
2 things. But you need to use it for the next 25
3 years but you also can lease it. If you can
4 figure out an arrangement that has never been
5 done in government before, good luck with that.

6 The third part to that was you can
7 charge user fees to public safety but they can't
8 afford very much. They're not used to paying it.
9 So, you have to really find a good way to do well
10 on the first two points. Long story short, our
11 auctions raised over \$50 billion. We were able
12 to get our \$7 billion down payment, which did two
13 things. It gives us the ability to get into a
14 public-private partnership with cash up-front.
15 The second thing that it did is it allowed
16 everyone else who was a part of this from both
17 sides of the aisle to realize that the rest of
18 that money went to pay down the debt. Everybody
19 was happy. It was a good news story, overall.

20 The second piece to that is it gave us
21 the ability to get into a public-private
22 partnership with the second part, the spectrum

1 that we had that was most important. So we
2 really focused on the strategy of how do we get
3 people to come to the market. We actually went
4 to Wall Street. We held analyst calls. We told
5 people about the time value of the money that we
6 had because you could actually get the spectrum
7 and pay for it over a period of time. So, a lot
8 of different unique ways of looking at this.

9 Long story short, we had a great
10 competition. AT&T won that public-private
11 partnership in March of this year. They
12 committed to invest an additional \$40 billion as
13 part of that. And we now have a public-private
14 partnership that is the largest I am aware of in
15 the U.S. Government and I'm not aware of anyone
16 else either who has one larger.

17 This ensures the sustainability of
18 both building, deploying, maintaining, operating
19 not the 4G LTE market but also 5G and 6G into the
20 future and that's built-in over the 25 years.

21 That's a good start but the really
22 great part of that is we've built a new platform

1 for public safety and the new platform is going
2 from some commercial networks that aren't
3 mission-critical and don't do what they
4 necessarily need to do every day and a land
5 mobile radio system which, in the past, was
6 mission-critical, two-way walkie-talkies, if you
7 think about that. In looking at public safety,
8 so the police officer, the firefighter, the
9 paramedic that would respond to your home if you
10 dialed 911 having the same tools that we all have
11 but creating things on those tools, applications,
12 different services that will allow them to take
13 advantage of the internet of lifesaving things.
14 And they've never had that capability because
15 they've never had a mission-critical broadband
16 network.

17 When we all go on our way every day,
18 we see fire engines, we see ambulances, you see
19 police cars going by you, lights, and sirens,
20 those kinds of things, it is probably the most
21 mobile 5,000,000 to 14,000,000 people we have in
22 this country. Almost everything they do, they do

1 from a vehicle, a motorcycle, a mountain bike, a
2 helicopter, some kind of outdoor vehicle to go do
3 something and they actually haven't been mobile.
4 Their entire technology ecosystem has been
5 client-server based, it's been dispatch-centered
6 based. It's in a police station. And all
7 they've had is a radio to try to get over-the-air
8 communication to deal with that.

9 And so now what we have is that new
10 platform for innovation, which is based on
11 international standards, 3GPP Release 13 is our
12 baseline. So really, going forward with the most
13 modern LTE technology and a guaranteed upgrade
14 path for the next 25 years. So if we look at
15 wireless being around for about the last 25
16 years, that's not a bad path to be on. The other
17 thing is the rest of the world is pretty much
18 copying what we've done and going down the same
19 path. So for those in the technology industry
20 who want to build applications for law
21 enforcement, it's not just us. The U.K. is going
22 down the same path. Sweden, Finland, Germany,

1 others will be going down the same path. Canada
2 is copying us almost exactly what we're doing.
3 And so everyone else in the world is going to
4 want to leverage this new ecosystem.

5 So long story short, what we're trying
6 to do is really try to drive on the entrepreneur
7 side that we're going to have standards, many of
8 which we've already published and more to come,
9 and we want to drive that application interface.
10 We want to drive the fact that there is a fair
11 competition and playing field for everybody to be
12 able to take the old things that would happen for
13 public safety and bring them forward in an
14 application sort of way. Or in the future, it
15 may not even be an app on a device. It might be
16 hands-free. It might be embedded. It might be
17 done in many other different ways.

18 So I could talk about that for
19 probably eight hours. I'll kind of just pause
20 there. And actually, some of you around the room
21 who have been down to Dallas, we are trying to
22 reach out to entrepreneurs and really spend time

1 telling them about this new platform, letting
2 them understand how they get involved with our
3 apps team. We have an apps team in Boulder,
4 Colorado; that's where our technology
5 headquarters is. We actually have a full lab
6 that will have a full production system in
7 Boulder, Colorado and we can bring folks into
8 there and really make sure that they are
9 understanding what we're doing that is different.

10 This network, if you think about it in
11 its simplest way -- and I just pull out my phone
12 because it's easier. Does everyone have a phone
13 on them? Look at your phone and look in the
14 upper left-hand corner of your smart device, if
15 you happen to have one of any sort. And you
16 probably see something like five bars. And you
17 probably see one of the four major U.S. carriers
18 and you probably see the words LTE next to that.

19 Well, mine says five bars, FirstNet,
20 LTE. So our network, our dedicated public safety
21 broadband network is a different network. A lot
22 of the infrastructure might be the same. It

1 might run across fiber and it might run across
2 cell sites and have things at the same location
3 but the reality is, this network has priority
4 today. It will have preemption before the end of
5 the year. It will have a dedicated encrypted
6 core network going across the entire country by
7 March of next year. And it will allow for not
8 just great security and encryption but also the
9 ability to have a public safety applications
10 ecosystem that has yet to be built.

11 And so we get to design this new
12 applications ecosystem for public safety in the
13 U.S. but also you're going to be designing it
14 worldwide. And you can be a part of that.

15 It's a new vertical, a new platform
16 for a lot of companies to look at. And I think
17 what is interesting, and I will pause after this
18 and we can just get into dialogue, but really,
19 when I talk to technology leaders and I talk to
20 CEOs and Board members of key technology
21 companies, look at what you can do with your
22 technology in this particular unique space that

1 will bring your technology to new levels, things
2 that public safety do, they do it much harder,
3 much faster. They drive at faster speeds. They
4 are very difficult wet, hard, nighttime
5 environments, you name it. And if you can make
6 it work for that, you can make it work for the
7 consumer very well.

8 And I will give you one quick
9 anecdotal example. Los Angeles Police Department
10 about two years ago went to the three major car
11 companies in Detroit and said come meet with us
12 to design the next generation in police cars.
13 And all three of them kind of did, kind of
14 didn't. Some showed up better than others. The
15 first one came and went. The second one came in
16 and did okay but didn't really invest. And the
17 third one came and they literally hunkered down
18 for six months and brought in some designers and
19 they listened and they went on ride-alongs and
20 they understood what they did.

21 And at the end of the day, Ford
22 realized that there were about ten technology, I

1 won't say car innovations, technology innovations
2 that needed to be in the next generation police
3 car. So, think of the most obvious: a laptop on
4 a pedestal is in most police cars today. One, we
5 need to get away from laptops; that's one issue.
6 But two, that's a projectile for the airbag to
7 hit you in the forehead, right? Most cars don't
8 come with a laptop on a pedestal in the middle of
9 the front seat. And so we needed to get rid of
10 that.

11 And so Ford said why don't we take a
12 little computer about this big and put it under
13 the hood in the in-car computer and you can use
14 the touchscreen on the backup camera to be your
15 police computer? And that's what people now do
16 and plus, make everything hands-free and you
17 don't need to type anything. So, that was one of
18 the ten inventions, as an example, and many
19 others that were part of that.

20 But if you think about it, the cool
21 thing for Ford wasn't the fact that they built
22 the best new police car that most police officers

1 in the U.S. are more likely to buy the SUV
2 version, the car version because of that but
3 seven of those ten inventions are going into
4 every new Ford car next year because of what they
5 did with one police department, LAPD.

6 And so that investment and a little
7 bit of time in solving a public safety problem
8 created a business solution for the rest of the
9 world because Ford's not just selling that in the
10 U.S., they are selling it around the world.

11 So, that's a bit of my pitch about why
12 it matters in the public safety marketplace, even
13 if you're not there today and why I think it's
14 really good for business and I think our public-
15 private approach to it is also very unique.

16 So, with that --

17 MEMBER JOHNSON: I have two questions.

18 MR. KENNEDY: Sure.

19 MEMBER JOHNSON: The first one is what
20 are your coverage goals and a cost to the U.S.;
21 how many towers do you need; and how long will
22 that take to build out?

1 MR. KENNEDY: That was a bunch of
2 questions but I'll --

3 MEMBER JOHNSON: Those are all
4 related.

5 MR. KENNEDY: Yes, they are related.
6 They are related.

7 MEMBER JOHNSON: And then I have one
8 more.

9 MR. KENNEDY: Okay. So on that one,
10 we did a very different approach to coverage
11 because coverage is really unique and it's not as
12 easy as just a percentage. I can talk about
13 percentages in a minute.

14 We went out and we asked all 50 states
15 in the five territories and the District of
16 Columbia what is the public safety coverage you
17 need. That is a different question than what
18 we've been answering for the last 30 years, which
19 is where is the population that can afford a cell
20 site.

21 So we went out and said where do you
22 have 911 calls; where do you have police

1 responses? And almost every one of them, 55 out
2 of 56 gave us a timely response and we eventually
3 got the last one. And so we took all that data
4 and we put it into a portal that went out to all
5 the bidders that literally said here's the
6 coverage objectives, objectives instead of a
7 requirement, for everybody who was bidding. And
8 everybody bid how far they would go.

9 And so we have 56 state and
10 territorial plans that have been presented to all
11 the states. They went out on June 19th and
12 that's what governors are reviewing and they have
13 a deadline to opt in by the end of December.

14 Right now, we have 15 states that have
15 early opted in. They don't even have to start
16 until September and more will be coming over the
17 next week.

18 So, on coverage, it's different for
19 every state. It's not a nationwide coverage.

20 MEMBER JOHNSON: All right, I'll talk
21 to my head of Homeland Security.

22 MR. KENNEDY: Okay.

1 MEMBER JOHNSON: The second question
2 is how is this different than the Next Generation
3 First Responder Apex Program?

4 MR. KENNEDY: The Next Gen DHS Science
5 and Technology Program?

6 MEMBER JOHNSON: Yes.

7 MR. KENNEDY: Right. So they're
8 looking at individual inventions and looking five
9 to ten years out. We're building the backbone
10 network that everything will ride on, including
11 probably any invention they would come up with,
12 number one.

13 Number two is we're driving innovation
14 just in the open competitive marketplace. We
15 have \$300 million dedicated to R&D over the next
16 five years, totally separate from anything DHS is
17 doing and that \$300 million is going to be heavy
18 on both challenges and grants. We just released
19 the first \$38 million worth of grants this year,
20 went to a lot of research and other universities
21 and technology companies.

22 MEMBER BOESCH: This is, I think a

1 question related to that. So, I'm Heather. I
2 work at a design company.

3 MR. KENNEDY: Hi, Heather.

4 MEMBER BOESCH: So we work with lots
5 of companies that have new technology that are
6 trying to find product markets in the world. And
7 like we run Tim Hackett's Greenfield Lab. So I
8 can understand on the Board side. But like I,
9 for example, right now I'm working with a small
10 business that has kind of an automotive machine,
11 learning a machine solution that's looking for
12 security applications.

13 So like how does someone like that
14 kind of get involved or what resources are for
15 them if they want to start considering this in
16 the market?

17 MR. KENNEDY: Sure. So, a couple of
18 things. One, on our website, if you go to
19 firstnet.gov/business, forward slash business, we
20 have a way for those kind of companies to link
21 directly to my Chief Technology Officer Team, our
22 CTO shop out in Boulder. They can literally put

1 in a request to either talk about what they're
2 doing, learn about standards, other things that
3 they need to have and those requests are all
4 responded to within 24 to 48 hours. So,
5 literally, they can reach out to them.

6 Our website is also a good place to
7 go, showing what we're doing and where publishing
8 standards and other key things are.

9 And we help forums every year. A good
10 example is every June we have a big forum with
11 our partners NIST, who are part of the Department
12 of Commerce as well for our Public Safety
13 Communications Research Lab and that's all about
14 really trying to drive the new technology. And
15 other folks like Science and Technology at DHS
16 all come to that, even though it's hosted. And
17 most of that has been really focused for the last
18 five years on what's going to happen on the
19 FirstNet network.

20 MEMBER BOESCH: So how can we talk to
21 people about like the potential market size
22 opportunity? Because like Ford is perfectly

1 happy to invest in a car that will sell
2 technologies that can happen later --

3 MR. KENNEDY: Sure.

4 MEMBER BOESCH: -- but if I've got a
5 cash flow problem, I can't. So, how do I sell
6 this to them?

7 MR. KENNEDY: That's a great question.
8 I think one, you have to look at the current
9 marketplace. This is a valid question and when I
10 ran the Raytheon public safety business I had
11 make my quarters, too. So, I understand it.

12 Today, you have companies, very large
13 ones, which I don't want to get into individual
14 names but who make \$8 billion a year selling
15 radios to public safety. The reality is the
16 future is going to be on devices that look
17 different than that. So you have the fact that
18 police, fire, and EMS agencies today are spending
19 somewhere \$10 and \$14 billion a year on
20 technology but like I said, most of it has gone
21 to the fire station or to the police station.
22 It's going into a dispatch center. It hasn't

1 gone mobile.

2 So you have this revolution of mobile
3 coming. And if you think about it, if we all
4 think back to our first iPhone ten years ago, and
5 when you first pulled that up instead of a
6 Blackberry that I carried for the eight years or
7 whatever it was before that, you didn't quite
8 know exactly everything it was going to do. And
9 today we trust it to do banking. And so the same
10 network that is a partner of ours who is building
11 a public safety grade network also handled my
12 banking when I go to my banking app and go
13 through there.

14 So what are all the apps for
15 lifesaving things? So if we think of a
16 firefighter going into a burning building, we're
17 talking about IoT on their airpack that is going
18 to tell you how much air is in that pack and do
19 they have 22 minutes left to live or 25 minutes
20 left to live. That three minutes matters.

21 It's also going to tell us the heart
22 rate of that firefighter. It's also going to

1 tell us the level of humidity. It's going to
2 tell us what's going on inside and outside of
3 their fire turnout gear. It's going to give them
4 a heads-up display in the future because they go
5 into dark buildings. I used to do it. You can't
6 see your hand in front of your face. So, you
7 need to know go ten feet, turn right. If you can
8 do that, in addition to running your hand against
9 the wall, it's pretty darn helpful, especially if
10 you know where somebody is down because we're
11 able to realize that.

12 So, all of these things are things
13 where it's going. In the marketplace, the money
14 is there to invest but it has to be done in a 4G
15 LTE broadband applications environment for the
16 next few years. And that may change into 5G and
17 other things that we're going to. But the
18 reality is, we now have a standardized
19 environment. And instead of selling to one
20 police department, there are 18,000 police
21 departments in this country. With the FirstNet
22 network, they can sell to all 18,000 by putting

1 it in the FirstNet app store.

2 There are 60,000 total public safety
3 agencies in the U.S. from two people to 56,000
4 people that are part of those departments. And
5 today, everybody sells to them one at a time.

6 And even if you go to the City of New
7 York, you are going to go meet with the fire
8 department and then you are going to go across
9 and meet with the police department. They are
10 not even in the same borough in where you need to
11 go. You go to Brooklyn for one and lower
12 Manhattan for the other.

13 And so the reality is all of them will
14 have an ability across the country to be on this
15 one platform. So for those who are inventing
16 things, for those who are bringing products to
17 market, one set of standards, one network, one
18 app store you can bring it to to get access to
19 all of them. I think that is the biggest draw.

20 MEMBER JOHNSON: So along those lines,
21 what if I had a company that had a bridge
22 technology that was available now within this

1 group, would FirstNet consider working with them?

2 MR. KENNEDY: You mean a bridge
3 between the old technology and the new
4 technology?

5 MEMBER JOHNSON: No, I mean something
6 that is available right now that can be
7 implemented but at much lower bandwidth during
8 disasters.

9 MR. KENNEDY: So, I mean one, that can
10 all happen. We're trying to get folks that are
11 going to be on the FirstNet broadband network.
12 We're not against anything that's going to go out
13 on any commercial network today. It's just not
14 going to have that priority.

15 MEMBER JOHNSON: It's different. It's
16 a UHF network. So it already exists.

17 MR. KENNEDY: Yes, all good things.
18 And I think VHS would be more like -- we're not
19 going to invest in that but we think it's a good
20 thing. We would encourage it, absolutely.

21 MEMBER JOHNSON: Yes, I'm just talking
22 we would have something you can offer today.

1 So, back to Heather talking about cash
2 flow for the startups.

3 MR. KENNEDY: Yes. No, I mean the
4 reality is, people can be on the network today.
5 The 15 states who have opted in are able to sign
6 up for services, provide services today. So,
7 they can also apply applications today.

8 You have a question down here?

9 MEMBER FREDERICK: Yes. Is the app
10 store up now? Do you have any examples of that?

11 MR. KENNEDY: It's going to be up
12 September 30th, we'll have the initial app store
13 stood up. There is still a lot to be done on
14 what other standards. And one of the things that
15 our app required was following open standards.
16 And that may not sound like a lot but if you
17 think about it, that's been part of the issue in
18 public safety. We haven't always followed open
19 standards. And so we're going to be required to
20 follow open standards. And that's obvious for
21 3GPP but you can think of the many other parts,
22 if it's computer-aided dispatch, if it's mapping.

1 You know there are lots of other areas that
2 public safety and the public uses that I think
3 will drive from that app store. And really our
4 team is very focused on those standards that will
5 drive that going forward.

6 MEMBER FREDERICK: Now the open
7 standards in this network, prioritized network,
8 make a ton of sense. I'm just from the venture
9 capital world.

10 MR. KENNEDY: Sure.

11 MEMBER FREDERICK: I've seen a lot of
12 app stores get stood up and then --

13 MR. KENNEDY: Nobody goes to them.

14 MEMBER FREDERICK: -- your buyer is
15 not used to buying from an app store. It doesn't
16 matter that it's there. They're never going to
17 log in and get to it.

18 MR. KENNEDY: Sure.

19 MEMBER FREDERICK: So it doesn't
20 necessarily solve the --

21 MR. KENNEDY: So at the agency level,
22 and I know exactly what you're talking about, one

1 of the things is we're going to see that a lot of
2 these will be agency purchases, which is
3 different than you and I just going to the app
4 store tomorrow, although there will be that as
5 well. And so agencies, and they'll be able to
6 push, they'll be able to have mobility
7 management.

8 One of the first things we're putting
9 up in the app store is mobility management for
10 this network. So, if you're a large thousand-
11 person police department, you could easily say
12 well, I want to add a certain mapping tool. I
13 want to add a certain computer-aided tool that is
14 going to all of my officers. It all gets pushed
15 out. It's all managed centrally by the
16 department. So, that's how agencies like to
17 work.

18 And at the same point, there's a
19 million volunteer firefighters in this country
20 who are going to be single device users. We also
21 want to be able to service them. They are more
22 likely to buy it from a public safety certified

1 app store.

2 MEMBER FREDERICK: And are there need
3 or kind of almost a priority list. You know like
4 the apps you mentioned, oxygen sensors, things
5 like that, obvious once you said it; wouldn't
6 have been obvious to me like that's what should
7 be done.

8 MR. KENNEDY: Sure.

9 MEMBER FREDERICK: So one, is there a
10 way that these needs requirements get posted out
11 to the public so that they can try to invent
12 against it?

13 MR. KENNEDY: That's exactly where
14 we're going. I'll admit we're not done yet. One
15 of the things we've done just in the last three
16 months is we've gone and met with major law
17 enforcement at the mid- and big-level agencies
18 and said if you could have any kind of app, what
19 would it be. And we've done this as a market
20 research effort. We're going to publish all that
21 and we're going to publish it publicly on our
22 website, Firsnet.gov. And literally, we'll brag

1 about it. We'll put it out there so you guys
2 know it's posted. We've done the same thing with
3 the fire chiefs.

4 And our goal was to drive the
5 innovation and literally to have -- you're not
6 wasting your time. And eventually, we'd like to
7 get it down to you know out of these top ten, can
8 you rank from one to ten what's important to you
9 that you're missing today?

10 And we're doing this at every
11 engagement we go to. Dave Buchanan, who is with
12 me in the back, who is going to spend some time
13 with you this afternoon, he knows. How often do
14 I beef this up?

15 MR. BUCHANAN: Three times a day.

16 MR. KENNEDY: Three times a day. So,
17 our job should be to give away the market
18 research so that you have the ability to know
19 what's most important to police, fire, and EMS,
20 and we're going to do it.

21 MEMBER FREDERICK: That's great.

22 And then who decides what apps are

1 appropriate for the network? Because the whole
2 idea with prioritized network is incredibly
3 powerful. And something like an oxygen sensor,
4 you know that's a slam-dunk within the four
5 corners. But I mean I can make some stretched
6 arguments on like banking apps and things like
7 that. Who draws the line?

8 MR. KENNEDY: So good or bad, our Act,
9 the law that created FirstNet was an act of
10 Congress, which is a very big deal, and in that
11 Act it drew the line. So it drew the line on
12 what was public safety.

13 And actually, they used two
14 definitions. They used a Homeland Security Act
15 definition and a Telecom Act definition. And the
16 Venn diagram covers both.

17 But the long story short is the
18 primary users are your police officers,
19 firefighters, paramedics and then also include
20 the dispatch community, which are known as public
21 safety communicators today, and also the
22 emergency managers.

1 So, if you have a hurricane headed
2 towards Texas today, those emergency managers
3 should do that. They are a part of it. So,
4 that's the primary. A very obvious group that's
5 there.

6 There is the ability for what we call
7 extended users. And so I'll give you an example
8 of that to go to your point. If you're a
9 snowplow driver in Park City, Utah, where I was a
10 firefighter many years ago, and we would get a
11 heart attack call at 3:00 in the morning and it
12 snowed 22 inches since last night, sometimes hard
13 to get the fire engine there, right? So we would
14 reach out to our public works folks to say we
15 have a heart attack at this address; let's plow;
16 and let's get there. And we would get there.

17 Of course in that situation, that plow
18 driver would be really helpful for the fire
19 engine to get there. They could be an extended
20 user who could be given priority in those unique
21 circumstances.

22 Also remember, you have to have an

1 overload situation before that priority is
2 needed. So day in and day out, it may not be an
3 issue for public works. Hurricane going on in a
4 southern state against the Gulf Coast, yes,
5 you're going to need that. Does that make sense?

6 MEMBER FREDERICK: Yes. No, it makes
7 a lot of sense.

8 MEMBER REAMER: What questions do you
9 have for this advisory council?

10 MR. KENNEDY: Well one, and actually
11 I think it just got hit on a little bit down
12 there: What else can we do besides publishing
13 standards and publishing our market research for
14 what police, fire, and EMS want to help you drive
15 that innovation, to help you drive people to be
16 willing to invest in the technology that will go
17 on this new platform we call FirstNet but, around
18 the world, public safety broadband? What else
19 would you want us to do? What would help you?

20 Go ahead.

21 MEMBER BOESCH: So, because I'm in
22 Cambridge, we have a lot of these events that

1 happen, like all the challenges and hackathons
2 and things that come around.

3 So, the other weekend, I was judging
4 one that was with MD5 and the Advanced Functional
5 Fabrics of America. Everybody has got
6 communications with the fabrics, right?

7 So I want to encourage like are there
8 ways that we can start to combine these
9 ecosystems into one? Because everyone is
10 stretched really thin and haven't had individual
11 talent and grants, where ultimately we'll
12 bringing these things together is where it's
13 going to be most important.

14 So I was thinking how do we hook into
15 the kind of existing networks that are working in
16 these areas locally, rather than having
17 standalone events. Because it is always like I
18 constantly get calls from people where they are
19 like can you get everybody to come to our like
20 BioSuit thing.

21 MR. KENNEDY: No, that's a great point
22 and I think when it comes down to you know let's

1 say safety fabrics or other technology and other
2 internet of lifesaving whatever, we should try to
3 pair up so that we're not putting too much stress
4 on the local infrastructure to do that.

5 That's a great suggestion. Yes, we'll
6 do that.

7 MEMBER BOESCH: I'm happy to tell you
8 what those things are.

9 MR. BUERSTATTE: Heather, real quick,
10 that reminds me. Camille and I did a similar
11 kind of pilot event in Austin, Texas. Camille,
12 you want to talk about that one at all? All
13 right, just kind of some of the lessons learned
14 and highlights.

15 MS. NELLANS: Sure. Just essentially
16 getting developers together, along with Craig's
17 group, EAs normal office down in Austin,
18 FirstNet. Who else was there? Oh, Dallas
19 Innovation Alliance, Austin Technology Incubator,
20 basically just bringing people together and we
21 have a group very small, it's about seven to ten
22 of us and we have this kind of dialogue on the

1 developers who were actually three developers
2 that are already in the public safety realm. So
3 Mobility, which is a police department app in
4 over 100 cities in the U.S., HAAS Alert, which is
5 a communication system in cars to alert drivers
6 there is an emergency vehicle coming through.

7 We should really sit down and talk
8 about barriers to entry, things that we should do
9 to increase access to the marketplace, and how we
10 can amplify this great opportunity.

11 MR. BUERSTATTE: And it was really
12 well received and I just wanted to offer the
13 anecdote because I think it's exactly what you
14 mentioned, at a smaller scale level but I walked
15 away with clear validation that this is an
16 important conversation to have. But the question
17 of how to elevate it at a macro scale. What
18 partnerships, what organizations?

19 MR. KENNEDY: One other thing we are
20 doing, and we'll go to that, is we also, when it
21 comes to CES, Consumer Electronics Show, we also
22 have paired with them and we're holding events.

1 I think we have half a day scheduled next January
2 there as well. And the same thing; we're trying
3 not to get people to go to a different place to
4 see you know an entire new vertical of
5 technology. And some of the same companies we
6 all know have pieces that do public safety and
7 then do home IoT, or do public safety and build
8 televisions, or do public safety and build smart
9 devices.

10 And so it's trying to get to where
11 people are at so it's also easier; you don't have
12 to go somewhere else to be able to talk about it
13 and see it and have discussions on it.

14 I think here and then --

15 MEMBER KHOSLA: Several questions.
16 About six or seven years, Vint Cerf and I led a
17 group at NIST. We were both part of the same
18 committee, which basically argued that instead of
19 making it point-to-point network, which is the
20 way it was before, we had a lot of public groups
21 coming and talking to us. We argued for an LTE.

22 At that time, I remember the argument

1 against an LTE by the users was it is not 100
2 percent failsafe. And they wanted us to convince
3 them. How would you make it 100 percent
4 failsafe. So that's the question. And I'm glad
5 you went with LTE because that is the right thing
6 to do.

7 MR. KENNEDY: Thank you. A couple of
8 things. I mean one, the original way they went
9 about it back then is that they did the opposite
10 of what we did this time is we didn't want to
11 make the same mistake twice. They actually put
12 out all these requirements, 10,000 requirements
13 for 100 percent failsafe for a network. We put
14 out 10 megahertz of spectrum back then and nobody
15 bid and it failed. It was called the D block
16 back then.

17 Anyway, all good efforts, great things
18 that were done but when we flipped it around said
19 we have these 16 public safety objectives, we
20 need to have a secure network. And obviously, we
21 can get all into the details of what does that
22 mean but we said how far can you go and still

1 make this a sustainable public safety partnership
2 world? Instead of saying we're going to cover
3 100 percent of the geography, we said let's cover
4 all the public safety priorities and objectives
5 and, therefore, it's sustainable but, at the same
6 point, going further than we go today.

7 So, it was flipping it around into an
8 objectives-based partnership, rather than a
9 requirements-based contract and so that
10 partnership would have that ability to get
11 different, varying ways to address the problem.

12 The other thing is I think LTE has
13 become very robust in the last seven years.
14 You've got the ability to prioritize video,
15 voice, and data. You have the ability to do
16 things we haven't done before. And then you're
17 also seeing in-building has changed a lot. A lot
18 of the public safety issues have been in-building
19 in the past. And so having that ability, in this
20 case, to even have a network partner who has a
21 lot of in-building solves a lot of that. Because
22 even in the radio world, going back to land

1 mobile radio, when you get in buildings, it was
2 often very tough. You know the basement of this
3 building, for instance. So now when we have a
4 lot of infrastructure that's built into larger
5 buildings, in addition to the outside, it's
6 helped make that a lot more failsafe.

7 MEMBER KHOSLA: So a quick follow-up.
8 What's your business model? How does it work?
9 Twenty years from now?

10 MR. KENNEDY: Yes, so well, long-term
11 what it works is that the spectrum obviously has
12 a lot of value.

13 MEMBER KHOSLA: Right.

14 MR. KENNEDY: And that's additive to
15 that.

16 The second thing, though, is that the
17 public safety user base, you know if you put
18 60,000 agencies on one network, all of a sudden
19 you have people all investing in technology. So
20 just like the idea question, if you could have
21 one inventor come up with a great idea but they
22 can sell it to 60,000 agencies, that 99 cents or

1 a couple -- all of a sudden, that becomes very
2 viable. If you're trying to do that and you have
3 to go out and meet with each department one-off
4 to do that, it's very hard to do.

5 So, it was flipping it around to one
6 platform and have everything run on a standards-
7 based platform where it's much cheaper to build
8 things to be on there but, at the same point,
9 it's standardized. So that's really the biggest
10 change to the model.

11 MEMBER KENNEY: A lot of solutions,
12 especially when they're new, are dependent on
13 proprietary hardware and software combination
14 kind of thing. So starting an app doesn't work
15 if it doesn't talk to anything. And dispersed
16 oxygen sensors and some of the big companies will
17 develop a sensor and the interface and the app.
18 And to just have an app store, it doesn't help
19 them unless they have a way, through you, to also
20 deploy the whole solution. And over time,
21 standards get developed and then it becomes
22 interchangeable.

1 I'm just wondering if you have a
2 response for a company that wants to address the
3 hardware piece as well.

4 MR. KENNEDY: We do. And so one thing
5 is it's almost a little easier because our
6 partner happens to be a bigger telecom player
7 that is going off telecom standards for most
8 hardware, most wireless hardware today. They
9 also have a testing regime and we have a
10 certification regime. So it has the ability that
11 testing is very standard for a device to get on
12 the network. And they've published that to
13 anybody who wants to get a device that's on the
14 network.

15 And so when it comes to those sensors,
16 whether it's IoT, it's a smart phone, it's a WiFi
17 hotspot, MiFi, whatever it happens to be, those
18 kinds of things, the reality is those standards
19 are published for what gets on the network today.
20 And then our standards related to, as well as the
21 software development kit and the standard pieces
22 for priority and preemption, some of the unique

1 features that will be allowed on this network
2 will also all be published.

3 MEMBER KENNEY: Do you help actually
4 sell to 18,000 fire departments the sensor piece
5 as well?

6 MR. KENNEDY: So as an example, I mean
7 we, as FirstNet, won't necessarily be the sales
8 people doing that but our partner might and they
9 certainly would be interested in doing that, I
10 would imagine, as well as they have a number of
11 partners. So they have a number of teammates and
12 others who are into services on the network,
13 devices on the network, and other pieces. And
14 they have an ecosystem of stores and other things
15 to do that with. So that's all there. I don't
16 want to necessarily do it for them in our role
17 but the reality is I think there are many ways
18 for a small company to get into that ecosystem
19 and license it, or have other ways to get it out
20 there.

21 MEMBER KENNEY: So the last question
22 is when you're collecting the what ten apps would

1 you want, how specific are the requirements you
2 get? And just, again, IoT companies are looking
3 at a lot of different fields; should I be in
4 agriculture; should I be in mobility; should I be
5 in emergency services. You know each have a
6 niche and they are trying to figure out is this
7 particularly a good opportunity for firefighters.
8 Would we be providing enough in detail about what
9 does the sensor need to do. There has to be an
10 oxygen sensor that needs to be able to put this
11 many data to this level of granularity, and this
12 frequency of data collection, all of that. Is
13 that part of the requirements gathering you are
14 doing?

15 MR. KENNEDY: It is. And the question
16 I flip around is how much do you want. And I've
17 gotten both answers. Like some is don't be so
18 specific that it only allows one solution. Two,
19 don't be so high that we don't understand what
20 the performance requirements are going to be to
21 be able to build the product to really be
22 production ready.

1 So, I also would look to you guys to
2 give us a little bit of feedback on that, too.
3 Does that make sense?

4 MEMBER KENNEY: Yes.

5 MEMBER REICHERT: Can I suggest a
6 different framing, which is what are the problems
7 versus --

8 MR. KENNEDY: Yes.

9 MEMBER REICHERT: -- we need an app to
10 do X. So let the entrepreneurs come up with a
11 way to solve the problem.

12 MR. KENNEDY: Agreed. And actually,
13 that is the biggest thing. We are asking what is
14 the problem you are trying to solve, number one.
15 And when we ask them if you could have any kind
16 of app, what would it be, it is not for the
17 technical solution at all at the operational
18 level. It's for if I didn't have to did this to
19 solve this problem, that's what I need. And then
20 we'll have technical folks try to flesh that out
21 only to the point of giving enough data to let
22 the entrepreneurs find about how to get there.

1 We don't want to design how to get there. We're
2 not going to design any apps. FirstNet's goal is
3 not to be out building the apps. Our job is to
4 really be sharing that data so that the
5 entrepreneurs can build those apps. Does that
6 make sense?

7 MEMBER NEMETH: Can you talk more
8 about maybe creating the ecosystem of the early
9 adopters of the technology? Because like the
10 oxygen sensor example reminds me of like here I
11 am launching my first release of my new oxygen
12 sensor app. Well, who is going to be the first
13 person to use that one and give it the one star
14 rating that it didn't work and I ran out of air?

15 Like it reminds me of some other
16 critical failure marketplaces that are tough for
17 entrepreneurs, aerospace, military. Like how do
18 you get the early dockers?

19 MR. KENNEDY: No, great question. And
20 two thing. One, I am going to pick on the air
21 sensor for a minute. So, firefighters, this is
22 one of those weird little things, they just

1 breathe room air, the same room air that we
2 breathe. So I won't say oxygen. It sounds like
3 a little thing but it's important for them. So
4 in case anybody's listening out there on the
5 phone.

6 The main thing, though, is I would
7 start with the non-mission critical, like non-
8 life-threatening first but it's mapping,
9 something that we all use today and public safety
10 uses today. Do you think mapping matters if
11 you're driving 100 plus miles an hour to a call?
12 And that might be a slightly different mapping
13 application than what you all need to use every
14 day.

15 What if you could turn all the lights
16 green? Well, the maps get different, right, and
17 there are devices today that allow fire engines
18 to turn all the lights green. There are traffic
19 operations centers that do that today. So, it's
20 a different environment.

21 So mapping, you know it may not be the
22 air that you breathe as part of that but it is a

1 really critical thing for first responders. The
2 other thing is there is some in technology that
3 do it well. Uber doesn't do mapping too bad. I
4 mean Google doesn't do mapping too bad. There
5 are different people who are out there. So,
6 we're looking for different things. There are
7 also ones who do it horrible and you end up six
8 blocks from where you need to be or you go down a
9 road that has been closed for six months. So
10 what I'm saying is all these things matter. And
11 a good example, too, is public safety often
12 invests a lot in mapping. And if you go to the
13 building department of a city, amazing mapping in
14 the building department. Is that always at the
15 fingertips of the person driving the fire engine
16 to the scene? Not necessarily.

17 And another thing is sometimes you
18 need mapping and current traffic conditions on
19 the right side of the road. Anybody ever been in
20 a big city and seen a fire engine on the wrong
21 side of the wrong? Okay, if you go to New York
22 or even downtown D.C., if the right side is

1 blocked, guess what? We drive over the median
2 to the left side and go down the other side. So,
3 it's also important to know both directions of
4 traffic, not just the one you're supposed to be
5 on.

6 So these are things that you may not
7 think about but they're also there. So I think
8 that I agree. You know critical lifesaving
9 features sometimes take more investment to get
10 there. But like Heather's idea, I mean the
11 reality is reflective clothing is something
12 that's a big deal to public safety but also
13 knowing, for instance, headlights hitting
14 reflective clothing at night for an officer
15 standing in the middle of the highway, there
16 might be something that's safety-related but, at
17 the same point, they also have to have their
18 ability to look around and be safe. Do you know
19 what I'm saying?

20 MEMBER NEMETH: Yes, but are there any
21 departments that are sort of like or --

22 MR. KENNEDY: Leading the way? Yes.

1 MEMBER NEMETH: -- is there an
2 opportunity to say like hey, you want to launch
3 an app on the FirstNet network, the following six
4 departments get it and they are our playground.

5 MR. KENNEDY: Yes, so our team, we
6 have 50 people spread across the country right
7 now that are our outreach and consultation with
8 public safety. And they can help give people
9 advice. And I don't want to give out individual
10 agencies on here but I even have a huge
11 northeastern big city that they're one of the
12 first ones going with IOT Centers on Airpack
13 because they want to lead the way. And it's
14 actually what you wouldn't think of. You would
15 say well, this is a big old-fashioned fire
16 department but you know what? They know it's
17 going to save lives so they want to do it.

18 At the same point, sometimes your mid-
19 sized departments are the most innovative because
20 they don't have all the bureaucracy of the bigger
21 departments and have to get through 16 approvals.
22 They also let that fire captain, battalion chief,

1 or that police captain who has a great idea run
2 with it. And so the mid-sized department,
3 especially in law enforcement, are often very,
4 very inventive. And they all are. I don't want
5 to downplay anybody but we're more than happy to
6 and Dave and his team was here today, they can
7 give advice to anybody looking to get into the --
8 you know who right now is on the leading edge and
9 the early adopters to make that happen. And we
10 have them.

11 And to some degree, one of the things
12 we're doing is we're doing what are called IPAs
13 or interdepartmental agreements to take some of
14 those early leaders and bring them into FirstNet
15 so that they work with us for six months to make
16 sure we stay on that front edge and then send
17 them back into the field to bring back the
18 FirstNet knowledge for exactly that reason.

19 MEMBER BOWLES: Is there an education
20 process by which you're taking these agencies and
21 educating them on the fact that they're going to
22 have change their budgeting process and they're

1 going to have to allocate -- either reallocate
2 funds or allocate new funds and currently --
3 because I think to Scott's point, one of the
4 things is getting in there and showing that
5 people would actually have the knowledge to buy
6 it and two, where is the money coming from.

7 MR. KENNEDY: No.

8 MEMBER BOWLES: And how are you
9 addressing that?

10 MR. KENNEDY: We are. I mean we're
11 addressing it right now. We're seeing the first
12 wave, which is buying services on our network
13 because that's a change for people. There hasn't
14 been a nationwide public safety network available
15 in the past. So, that's a different buying
16 behavior than just go to the major carriers and
17 get a bid. So if you think of a lot of cities
18 and counties, that's the way they would.

19 The same thing is going -- we're
20 already seeing this when it comes to mobility
21 things because the way that people typically
22 purchase that is not big agency-wide.

1 And so we are. I would say we haven't
2 figured it all out yet but we're continuing to
3 try to find ways to make that simpler.

4 The other thing is the major state and
5 local, which is 90 percent of public safety in
6 this country, purchasing organizations and
7 there's a bunch, are working with us to get
8 things on their purchasing contracts that allowed
9 this to happen.

10 So, I'll just give you a couple of
11 examples, if you've heard these in the government
12 space, but WSCA, the Western States Contracting
13 Alliance, NASPO is the National Association of
14 State Purchasing Officers. These groups all have
15 contract vehicles, like GSA, if you think about
16 it at a federal level, but they are more
17 regional- and local-based. The Western Fire
18 Chiefs Association has a contracting vehicle.
19 And so they try to get this stuff on those
20 vehicles because the agencies already can buy off
21 of it. And so the same thing would go for the
22 devices, the technology, the services that are on

1 there for the bigger purchasers, definitely
2 trying to change it.

3 But to your point I think the days of
4 always going out for RFP in the contracting sort
5 of way doesn't work if you're selling an app.
6 So, it is getting purchasing officers to come
7 into 2017 and do it differently and we're trying
8 help push that as well.

9 MR. BUERSTATTE: So real quick, I
10 notice, given the four of you online, this is a
11 really active Q and A right now but Melissa,
12 Rebecca, Tiffany, or Steve, any questions on the
13 line?

14 If not, no big deal, we'll -- go
15 ahead.

16 CO-CHAIR BRADLEY: Sorry. This is
17 Melissa. First, I just want to say thank you for
18 joining us. This was very helpful.

19 Are there any specific things, I know
20 you're still getting acclimated in kind of our
21 role, but are any specific things, based on the
22 conversation, that you need from us or you would

1 like us to do, as you all continue to think about
2 implementation?

3 MR. KENNEDY: No, I mean I think we
4 hit on some of that earlier. I think the biggest
5 thing is just knowing what's best. I think you
6 know Emily's comment about you know describe the
7 problem that you're having that you want solved
8 is a really good point and we always have to
9 remind ourselves of this because you jump right
10 to the app. But that insight is so important, as
11 we kind of go through this.

12 And I think it's also interesting that
13 what we might think is a technological solution,
14 let's say, it might be a hardware solution.
15 There might be another way of going around it and
16 I think it's really important that we come out
17 with what those problems are that police
18 officers, fire fighters, paramedics need, and
19 really have the forum -- and this is what I'm
20 looking for to Melissa's question: What are the
21 forums? I got Heather's idea; let's combine them
22 and not have another forum but what are the

1 forums we should be leveraging? And then what
2 would you want us to bring? Is it just bring the
3 problems we have? Is it bring the problems plus
4 the grants or challenge money to go with that?
5 Is it the problems but access to the market and
6 the timing of buying? Is it bring the problem
7 and the contracting vehicles that you would go to
8 to sell your product? Do you know what I mean?
9 Like which of those pieces resonates most with
10 all of you?

11 MEMBER KHOSLA: Can I make a comment?

12 MR. KENNEDY: Sure.

13 MEMBER KHOSLA: So I think a resource
14 you could use very effectively are these
15 undergrads and grads from across the whole
16 country. So I can imagine, if you're in San
17 Diego, like opening up UC San Diego and -- I'm
18 serious now. These are good kids, creative kids
19 that are looking for good ideas, good
20 opportunities. And this would open them up to
21 working the real world on a real problem that
22 helps the country and society.

1 MR. KENNEDY: No, I agree. And I got
2 my MBA at Hopkins and we leveraged a lot of
3 computer science students and others.

4 MEMBER KHOSLA: Right.

5 MR. KENNEDY: And it's amazing if you
6 talk about public safety, and I did this on
7 something that I was doing, it's amazing how they
8 love the fact it's a great mission plus it's
9 technology. And those two together --

10 MEMBER KHOSLA: So if you have
11 somebody in San Diego, I'm happy to access UC San
12 Diego.

13 MR. KENNEDY: Great. We'll reach out
14 to you. I've got your card. Thank you very
15 much.

16 And if others want to give me their
17 card, I'm happy to do that, too. We'll share
18 with the team and get it out there.

19 MR. BUERSTATTE: Yes, we will have
20 time to dig deeper soon. Please keep it short so
21 we can enough time for our next subject,
22 manufacturing.

1 But yes, Whitney, please.

2 MEMBER W. SMITH: Just in response to
3 your forum question, you probably know that there
4 are major initiatives locally around securing
5 cities and building resiliency. So, I work at JP
6 Morgan Chase. We have something that generally
7 we are now working on securing global cities.
8 Rockefeller has funded a hundred resiliency
9 officers across the globe in cities. They are
10 trying to bring together not only the innovators
11 and the finance folks, and the police, et cetera
12 across stakeholder groups to solve a number of
13 issues. I feel like if you got the word out and
14 maybe --

15 MR. KENNEDY: I've met with the
16 director of the Rockefeller Resilient Cities up
17 in Manhattan.

18 MEMBER W. SMITH: Okay.

19 MR. KENNEDY: So we're definitely
20 trying to leverage those kind of groups to get
21 the word out. We're doing a number of smart city
22 initiatives and there is everybody from --

1 MEMBER W. SMITH: If you want to meet
2 with the director of Security Global Cities at JP
3 Morgan Chase, I'm happy to do that.

4 MR. KENNEDY: Okay, that would be
5 great. We'll accept that for sure.

6 Any other questions?

7 MEMBER BALDWIN: I'd be interested in
8 knowing -- you know we applied innovations where
9 you get a fast result and higher ROI. So I would
10 be interested in knowing what's been done to
11 identify what already exists that's almost
12 meeting the needs. I mean oxygen sensing is not
13 a new technology.

14 MR. KENNEDY: No.

15 MEMBER BALDWIN: But what already
16 exists that's close where that could be adapted
17 to between usage and a needs use problem solving,
18 instead of inviting entrepreneurs to go up and
19 reinvent the wheel or start from scratch.

20 MR. KENNEDY: Sure. No, that's a
21 great point. One of the questions we've been
22 asking that's along those lines and maybe we

1 should expand it -- and my team I can see taking
2 fast notes back there -- is we have asked are you
3 using a tool today that's just a common tool but
4 you're using it because it's close enough.

5 So a good example, there's an EKG
6 heart center monitor that cardiologists are
7 sending patients home if they have A Fib and they
8 use it at home. Well, there's EMTs and
9 paramedics out there using it because it's close
10 enough. It's not public safety, necessarily,
11 ready but the reality is it's just a few
12 modifications to that tool could take it to the
13 next level, exactly what you're saying.

14 And so we were looking at those things
15 that where people are using common off-the-shelf
16 technology apps, others today, sensors, or
17 sensors in this phone to do things, and what are
18 they doing so that we can just take it to another
19 step, push it further or talk to those companies
20 and see if they'll go there.

21 So, I think we're doing it a little
22 bit but I think we should expand that even more.

1 That's a good point. It's really good.

2 MR. BUERSTATTE: All right. Thanks,
3 T. J.

4 MR. KENNEDY: Sure.

5 MR. BUERSTATTE: That was awesome.
6 That was a real lively discussion. You can tell
7 the team is interested and we'll have some time
8 to dive in deeper later.

9 MR. KENNEDY: Great.

10 MR. BUERSTATTE: Thank you.

11 MR. KENNEDY: Thank you.

12 MR. BUERSTATTE: As we know, we've
13 been touching on manufacturing for some time now
14 and I think, thank you, Emily and Sue, for kind
15 of leading that workgroup. And over time there
16 has been a natural progression to kind of three
17 categories of ideas when thinking about
18 manufacturing. One is capital and I think Emily
19 I think maybe not coined the term but frequently
20 uses patient capital and how hardware and
21 manufacturing is more focused on patient capital
22 needs. Two, the talent, and we've had the

1 workforce discussion many times now talking about
2 apprenticeships. And again, in the news we've
3 heard all about the priorities coming down from
4 this administration. And number three, just
5 thinking about better ways to commercialize what
6 we have, whether it's in the federal labs,
7 universities, and how can we get that hardware
8 out into the market.

9 So I just wanted to provide that as a
10 small refresher of kind of where we've been. And
11 today, we're lucky to have Phil Singerman with
12 us.

13 Quick survey: Who knows Phil here?
14 Okay. Okay, not as many as I thought.

15 MR. SINGERMAN: I used to be a famous
16 person but not anymore.

17 MR. BUERSTATTE: So Phil's been
18 working with us in this --

19 MR. SINGERMAN: I gave away money when
20 I was famous.

21 MR. BUERSTATTE: That's right -- for
22 35 years now, is it, in tech-based economic

1 development, formerly in early years with Ben
2 Franklin Technology Partners, Maryland PEPCO, and
3 even with EDA before his time over at NIST. So,
4 Phil really knows this space.

5 In front of you, you should have two
6 presentations around NIST's MEP, Manufacturing
7 Extension Partnership Program, as well as
8 Manufacturing USA. Feel free to pull those out.

9 And Phil, lucky to have you. Thanks
10 for coming.

11 MR. SINGERMAN: Thank you.

12 So first of all, Craig, thanks. And
13 thanks to Dennis Alvord for inviting me. Dennis
14 is traveling to the Galapagos today. So he's not
15 able to call in, I don't think.

16 And I want to recognize Steve Tang.
17 Steve's on the phone?

18 MR. BUERSTATTE: Yes.

19 MR. SINGERMAN: So, as Craig
20 mentioned, I've spent most of my career on your
21 side of the table, working for state and local,
22 and nonprofit organizations in tech-based

1 economic development.

2 I've had two stints at Commerce. In
3 the '90s I was the head of the Economic
4 Development Administration, Assistant Secretary.
5 And for the past few years, I've been back at
6 NIST as the Associate Director for Innovation in
7 Industry Studies.

8 You met with one of my colleagues, I
9 believe, earlier this year, Carroll Thomas, who
10 is the head of the Manufacturing Extension
11 Partnership Program. And today I'm pleased to be
12 joined by my colleague, Mike Molnar, who's the
13 head of the Advanced Manufacturing National
14 Program Office.

15 So what I thought I would like to do,
16 what might be useful is share with you a little
17 status of the Advanced Manufacturing Program,
18 particularly at NIST, although they are also
19 multi-departmental.

20 Mike and I will be with you in the
21 breakout session later, so we'll be able to
22 explore some of these issues that you've raised,

1 in terms of capital, talent, and
2 commercialization in greater detail.

3 I think there is a great opportunity
4 for this body to provide guidance to the
5 administration in Policies and Programs. And at
6 the end of my preliminary remarks, I'm going to
7 suggest some specific venues for doing that. So
8 you have that to look forward to.

9 So sort of background in terms of
10 concepts, I think the major conceptual
11 breakthrough in the prior administration was the
12 recognition that manufacturing is key to our
13 national innovation ecosystem and that without a
14 strong manufacturing base, we are unable to
15 maintain our leadership in technology development
16 and implementation. And that led to a variety of
17 programs to advance that concept, including the
18 Manufacturing USA Innovation Institutes.

19 And this administration has also
20 recognized the importance of manufacturing,
21 linking back to trade and to employment, in a way
22 that I don't think the prior administration made

1 that connection as explicitly. And this is,
2 perhaps, symbolized by the creation of the Office
3 of Manufacturing and Trade Policy -- Trade and
4 Manufacturing Policy. It's a White House office.
5 It's headed by an economist, Peter Navarro. Dr.
6 Navarro and Secretary Ross wrote a paper in the
7 fall on the incoming administration's, or the
8 forthcoming administration's economic policy. I
9 think that's a valuable piece to review because
10 many of the concepts that were laid out there
11 provide a framework for what the administration
12 and certainly the Department is doing.

13 And Peter's been in the paper and
14 spoken publicly about that. So I would refer you
15 to that.

16 Let me take a minute to talk a little
17 bit about NIST. How many people are familiar
18 with the National Institute of Standards and
19 Technology? Excellent. And if you want to
20 really know about it, talk to Pradeep, who is on
21 our Visiting Committee and a leader on that
22 Board.

1 So just let me remind you that NIST is
2 our National Metrology Institute. It is a
3 billion dollar research institute. As you know,
4 precise measurements are fundamental to worldwide
5 industrial standards and NIST is the world leader
6 in measurement science. We have had four Nobel
7 Prize winners in physics in the last 20 years.

8 If you've been on a DOE campus or any
9 major university research institution, you would
10 feel right at home at NIST. We have two major
11 sites, one in suburban Maryland, one in Boulder,
12 Colorado. The site in Maryland has over 500
13 acres, 60 buildings, 3.2 million square feet of
14 laboratory and support space; 3,500 federal
15 scientists and technicians; and an equal number
16 of non-federal guest researchers who come for a
17 day, a month, a year.

18 NIST's research budget is
19 approximately \$700 million and this year NIST is
20 spending about \$160 million in the laboratory
21 programs in smart manufacturing, advanced
22 materials, nano manufacturing, biomanufacturing.

1 So, it is a major research enterprise.

2 In addition, NIST has extramural
3 programs supporting and funding companies and
4 universities. That falls within my directorate
5 and those are the two programs that I would like
6 to turn to.

7 I'm not going to take you through all
8 of the slides but I just want to highlight --

9 MR. BUERSTATTE: Yes, these are the
10 same presentations that should have been in your
11 pre-reading, too. So hopefully, they will look a
12 little familiar.

13 MR. SINGERMAN: Right. So for those
14 of you -- how many of you are familiar with MEP,
15 the Manufacturing Extension Partnership? Well,
16 let me just bring you up to date because the
17 program has gone through significant reform and
18 reinvigoration in the last five years. It's a
19 national network with technical assistance
20 centers in every state. The program is \$130
21 million federal, matched by at least that amount
22 by non-federal sources. So, it's about a \$300

1 million program, which funds 1,300 technical
2 staff. The centers are run by non-federal
3 agencies, universities, some state governments,
4 mostly nonprofit organizations that are set up
5 specifically to work with manufacturing, small
6 manufacturing firms. This is a major sector of
7 our economy.

8 There are approximately 290,000 small
9 manufacturing facilities that's under 500
10 employees. That's about 99 percent of all
11 manufacturing facilities, represents
12 approximately two-thirds of all of the standard
13 counted manufacturing employees. So that's about
14 eight million employees in those facilities.

15 And the MEP program you can think
16 about as kind of a national nonprofit franchise
17 of McKinsey services for the small manufacturing
18 sector. So, it's a technical consulting
19 business, if you will, which requires a business-
20 like approach because the centers have to raise
21 cost-share to support the funding. So it's
22 basically a reimbursable program. We pay a

1 dollar for every two dollars that are expended by
2 the center. So this requires the centers' staff
3 to be very tightly aligned with the needs of the
4 small manufacturing community and to service
5 those in collaboration and coordination with
6 local partners, universities, state economic
7 development organizations, and so forth.

8 Let's see what's useful here to know.
9 So we serve in excess of 8,000 firms a year.
10 These are firms that pay for the services. It's
11 not a free program. It's analogous in its reach
12 for the Small Business Development Center
13 Program, which some of you may be aware of but we
14 have to charge for the services in order to both
15 meet the financial requirements and also meet our
16 public policy objectives.

17 Significant impacts, what I think
18 distinguishes this program from others that I've
19 been familiar with is that it has a very
20 rigorous, as you would expect at NIST,
21 measurement approach to its impacts. So every
22 quarter, Fors Marsh, which is an independent

1 surveying company, surveys clients that have been
2 served within the last year, so this is
3 independent of the centers, and looks at the
4 impacts in terms of job creation and retention,
5 cost savings, investments, new products. And the
6 results are in the billions of dollars and the
7 tens of thousands of employees. And I think that
8 is interesting.

9 I want to make a point about that.
10 Although there are significant job impacts from
11 the program, the program is basically a
12 productivity and competitiveness program, helping
13 small firms be more competitive in the
14 marketplace and particularly in the international
15 marketplace.

16 The program is modest-sized, as I
17 mentioned, compared to our competitor nations.
18 So Canada spends twice as much money as we do on
19 a similar program and every major, major
20 manufacturing country in Europe, Canada, Far
21 East, has a similar program, has similar programs
22 but typically funded in orders of magnitude

1 greater.

2 The program has a lot of stability.
3 So some of the directors of these centers have
4 been in place for decades. Most of the -- many
5 of the staff, if not most of the staff, are
6 former manufacturing executives and personnel who
7 bring their expertise to bear in a consulting
8 environment to work with firms that they worked
9 with in the past.

10 So that's kind of the basics of the
11 program. I want to make a point, and it's the
12 very last slide in your slide deck, that goes
13 through the question of workforce.

14 Is anyone here familiar with
15 Manufacturing Day? So for those who are not,
16 this is now in its I think its fifth year, and it
17 is basically bring your daughter and son to the
18 factory floor. That's the concept. It was
19 actually started by some colleagues of mine at
20 MEP and the Fabricators and Manufacturers
21 Association that's located in the Chicago area
22 and it's really blossomed and gone viral. It's

1 not a public program. It's been embraced by the
2 private sector and the National Association of
3 Manufacturers have taken it over this year. And
4 it's going to be a signature initiative of that
5 organization.

6 It's been widely successful.
7 Thousands of firms have opened up their plant
8 floors for tours for high school students and
9 middle students, their parents, and their
10 teachers. It is intended to really transform the
11 image of manufacturing for young people before
12 they decide on their academic careers.

13 It's been embraced by elected
14 officials -- a couple of years ago, I sat next to
15 the Governor of Oklahoma for Manufacturing Month
16 in Oklahoma -- and mayors, congressmen, senators.
17 It's not just Manufacturing Day. Many states
18 have Manufacturing Month.

19 So there's a website,
20 manufacturingday.com. This is an interesting
21 network. If you're interested in workforce
22 issues and want to get connected to those in the

1 private sector and the educational sector in your
2 communities that are working in this space and
3 have demonstrated an interest, I would recommend
4 that you look it up and get connected. It's easy
5 access, easy entry, and people come away with
6 great -- very powerful, positive feelings.

7 The Discovery Channel was a major
8 sponsor two years ago. I'm not sure if they're a
9 sponsor this year but there's been a lot of free
10 publicity for those participants in the program.

11 So, that's Manufacturing Day. That's
12 MEP.

13 So now let me briefly talk about
14 Manufacturing USA, the Innovation Institutes.
15 Can I see a show of hands? Does anybody know
16 anything about these? Okay, you're marketing is
17 working.

18 So this was a major initiative of the
19 prior administration which has been embraced by
20 this administration. And I'll share with you
21 some of the numbers but, basically, there is
22 funding for this program -- the funding for this

1 program is secure through the various agencies
2 into the future. In fact, the President sent a
3 congratulatory note to the Regenerative Medicine
4 Innovation Institute on its grand opening at the
5 end of July in New Hampshire.

6 Dean Kamen, who many of you may know
7 that name, the inventor of many things, including
8 the Segways, I think. So, he is the Chair of the
9 Board of the Regenerative Medicine Innovation
10 Institute in New Hampshire.

11 This program came out of a several-
12 year process of policy development that was led
13 by an analogous body to this, the President's
14 Council of Advisors of Science and Technology,
15 the PCAST. And the concept that was developed --
16 and Mike's shop was very heavily involved as, if
17 you will, the secretariat of this process. And
18 the concept that was developed was that there was
19 a market failure in the applied manufacturing
20 technology space. There had been an
21 underinvestment in manufacturing technology in
22 contrast, for example, to our major investment in

1 medical technology and, on the DoD side, in
2 electronic technology. But in manufacturing
3 technology, we had fallen. We had not invested
4 proportionately.

5 Mike's shop tried to do a survey a few
6 years ago and we came up with, across the
7 government, single digit billions in investment
8 and manufacturing technology generously defined.
9 And that really put us at a disadvantage with our
10 international competitors. And so this program
11 was designed as a response to that problem and,
12 obviously, to the outsourcing of -- outsourcing
13 is the wrong word.

14 MEMBER BALDWIN: Offshoring?

15 MR. SINGERMAN: I'm sorry?

16 MEMBER BALDWIN: Offshoring?

17 MR. SINGERMAN: Well, it's more than
18 offshoring. Well, offshoring is part of it, too.
19 But no, we lost a lot of our basic manufacturing
20 over the last 20 or 30 years to low-labor
21 countries. And what we learned, to our dismay,
22 was that R&D follows it. You all know this. In

1 the early stages of R&D, you need to be aligned
2 with a shop floor to develop new products and new
3 processes. And if the shops are in Asia, then
4 the R&D is going to follow that. And that's
5 what's happening in major sectors. And Mike has
6 various slides that painfully display this.

7 So this program was intended to be a
8 response to that. And in order to get it
9 jumpstarted, at a time when there was, as there
10 is now, a conflict between the Congress and the
11 President, it was decided to fund the program
12 with current authorities through existing
13 agencies and appropriations.

14 And so DoD and DOE were tasked and
15 asked to conduct competitive solicitations in
16 sectors where they had a mission-driven
17 responsibility to stand up these Innovation
18 Institutes.

19 So they went through competitive
20 solicitations. The model was that in order to
21 attract private sector interest and engagement,
22 there would be a minimum investment, a federal

1 seed investment, a one-time capital infusion of
2 at least \$70 million, which would have to be
3 matched by at least that amount by the non-
4 federal sector, industry, state governments, and
5 other parties. And so that was kind of the
6 genesis of the program.

7 Just about five years ago in 2012 the
8 first Institute in Additive Manufacturing was
9 established in Youngstown, Pennsylvania. And
10 subsequently, there have been a total of eight
11 institutes that have been funded by the
12 Department of Defense, five institutes by the
13 Department of Energy, and most recently one
14 institute by the Department of Commerce.

15 The Department of Commerce and, in
16 particular, NIST has two specific roles in this
17 program. One, to coordinate the activities of
18 the institutes, working in partnership with our
19 sister agencies on a robust interagency basis and
20 with the institutes themselves. Those of you who
21 are familiar with the NSF National Nanotechnology
22 Initiative of 15-20 years ago, this is analogous

1 to that; a government-wide effort to focus on a
2 particular area of technical challenge.

3 In 2014, in part as a result of the
4 success, the early success and the promise of the
5 program, and its strong conceptual design,
6 Congress passed legislation creating the program
7 or creating the network of the program,
8 authorizing this to oversee the network function
9 and authorizing NIST to stand up its own
10 institutes.

11 We received funding in 2016. And in
12 2017 we announced one institute in biotechnology
13 that is headquartered at a nonprofit at the
14 University of Delaware.

15 As I mentioned earlier, the institutes
16 are generally -- certainly the agency is funded
17 through the life of their activity. The notion
18 -- so some of you may be familiar with the
19 Fraunhofer Institutes in Germany. We're not
20 allowed to say that we copied the Fraunhofers but
21 we really did. So many of us had it in mind.
22 The key difference is the intention here was

1 these institutes would become self-sustaining
2 after the initial infusion of federal money;
3 whereas, the Fraunhofers continue to receive
4 ongoing federal, and regional, and actual
5 European Union funding, as well as private sector
6 funding.

7 If you turn to slide 5 in your
8 package, it's a map. And I think this is an
9 interesting slide. This portrays the institutes
10 that have been created and their technical areas
11 of focus.

12 This program has legs. After the
13 initial awards, there has been a gravitational
14 pull of companies and universities to join the
15 institutes. So these institutes all have very
16 strong membership programs, as well as focus on
17 their research and development activities, cost-
18 sharing with industry. They function, in a
19 sense, as mini NSFs. So they fund collaborative
20 R&D projects in particular areas but they have a
21 nonprofit governance structure. They have very
22 broadly based technical committees that oversee

1 and drive the program.

2 I sit on the, as I mentioned, the
3 Fabrics Center in Cambridge at MIT. I sit on the
4 Board of Advisors. It's a national program and
5 has connections across the country, with means
6 across the country. States are very engaged. In
7 Philadelphia, the Drexel University, which is a
8 neighbor of the Science Center, is one of the key
9 sites for fabric development that is associated
10 with the Fabric Institute. And that's an example
11 of the kind of connection.

12 I want to make two points about the
13 institutes. If you turn to slide -- bear with me
14 -- slide 14, formation of regional clusters. So
15 this is a page that comes from an independent
16 study that was conducted by Deloitte. It's a
17 fabulous, comprehensive report. All of the
18 material that I'm referring to and other
19 documents are on manufacturingUSA.com, that's our
20 website, also manufacturing.gov. So two websites
21 that get you through -- this has been a very
22 transparent process and the information is widely

1 available through the website.

2 So if you are interested in finding
3 out more about this program, I would refer you to
4 those websites and, of course, to us.

5 The point I want to make about this
6 slide is that there is a dual function for these
7 institutes. One is that they are supposed to be
8 National Centers of Excellence that are
9 internationally competitive. Secondly, they are
10 also intended to build regional innovation
11 clusters. And so there is, obviously, a dual
12 function. And interestingly, even though these
13 are national centers, they have had very strong
14 regional and local impacts. And that's an
15 interesting model for programs of this sort.

16 The other point I'd like to make has
17 to do with workforce again. And if you turn to
18 slide -- sorry -- nope, you'll have to back up.
19 Sorry -- 12.

20 So, not surprisingly, as these
21 institutes have reached out to their corporate
22 sponsors and asked what do you need, they say we

1 need workers who are trained in these emerging
2 technologies.

3 So although this is part of the
4 legislative requirement, it was really not part
5 of the business plans or a major thrust of the
6 business plans at these institutes. These
7 institutes have to raise dollars to support their
8 activities and they have to build a
9 sustainability model that will sustain them after
10 the federal funding ends. And so they have,
11 naturally, been gravitating, in my opinion,
12 towards sources of capital, which is corporate
13 sponsors in membership and R&D projects that can
14 be collaboratively funded. But workforce is
15 forcing its way onto the agenda and these
16 institutes have now prided themselves on the
17 workforce activities that they've been able to
18 stand up in coordination with local
19 organizations. And this has also become a major
20 focus of activity of our network systems. The
21 most, I would say, active inter-institute work
22 stream has been on workforce development, and

1 education and training.

2 So for those of you who are interested
3 in the connection between technological
4 development an associated workforce activity, I
5 think this is an area to watch.

6 So let me -- I promised that I would
7 give you some tips on how to effect
8 administration policy. So I do not represent
9 NIST in these remarks or the Secretary of
10 Commerce.

11 So we are going through a transition,
12 a governmental transition, Presidential
13 transition. Transitions are always slower than
14 we expect, even from one party, the same party,
15 even from one President to a Vice President,
16 people of the same administration. This
17 transition has been a little slower but I think
18 quantitatively maybe not qualitatively or
19 qualitatively and maybe not quantitatively. But
20 I was reflecting about what would be useful to
21 share. I think the dynamics, particularly at
22 Commerce in the appropriations process that is

1 working with Congress, are remarkably similar to
2 the past. And by that I mean there is always a
3 tension between administrations and Congresses,
4 the legislative branch.

5 Under the prior administration, there
6 were major increases in programs proposed by the
7 administration and Congress, typically, did not
8 go along. In this administration, there have
9 been major decreases that have been proposed and
10 Congress has not gone along. And so there is --
11 you know in my experience, Congress deals in the
12 appropriation process incrementally. Each year,
13 you start with the base. You don't start with
14 zero base budgeting. You start with last year's
15 budget and you increase some things by a little
16 bit and you decrease some things by a little bit.
17 And if you have a big infusion of capital from
18 some other source, then you're able to launch
19 some initiatives but we haven't seen that.

20 And in fact, both EDA, and MEP, and
21 MBDA Commerce programs are all funded -- fully
22 funded in the fiscal '71 budget and well-funded

1 in the Senate mark that actually the
2 Appropriations Committee, headed by Thad Cochran
3 from Mississippi and the subcommittee by Richard
4 Shelby of Alabama. So, that's kind of true to
5 form in terms of past practice.

6 There's another similarity that struck
7 me and that is the prior administration used
8 Executive Orders and Presidential Memoranda to
9 govern in the context that it found itself, as is
10 this administration. And so you've seen many of
11 those come out of the administration. That's one
12 of the opportunities because that is one of the
13 places where policy is being developed.

14 Earlier this year, the Commerce was
15 tasked by the President to look at a study of
16 deregulating -- deregulation for manufacturing
17 facility construction and streamlining processes.
18 So the Department went through a major review and
19 a major request for information, which elicited
20 nearly 200 responses. The report is not out yet
21 but I believe the responses are still online.
22 They were online during the time of the report on

1 regulations.gov. So there is a lot of rich data
2 from peers like you, as to the impact of federal
3 regulations on manufacturing facility site.

4 And that process was very influential
5 in the recommendations that have been drafted by
6 the Department and by the administration. So we
7 were very involved in that. NIST was really kind
8 of the technical support for that. I didn't know
9 what to expect at the end of it but I think the
10 data drove the result.

11 There is a recent Presidential
12 Executive Order that's looking at the DoD's
13 defense industrial base and supply chain. And
14 this is important both intrinsically -- it's an
15 important issue -- but also because the
16 Department of Defense, under any scenario, is
17 slated to get a large surge of dollars. And for
18 those of you who are interested in DoD's programs
19 across the Board, everybody is touched by them.
20 So for those of you who are interested in that
21 type of activity, I would encourage you to maybe
22 do a group of alerts so that when the Department

1 of Defense issues some statements or asks for
2 comment, that you are prepared to do that.

3 So that's one area. I think in an era
4 of activity driven by Presidential Memoranda and
5 Executive Orders, in contrast to Congressional
6 legislation, new program development, which I
7 don't think we'll see a lot of, that's an area
8 where I think people should pay attention.

9 In terms of substantive areas, there
10 are two issues that we're particularly interested
11 in, which perhaps I hope we can talk about later.
12 One is kind of the need to kind of restore our
13 supply chains. Because as we outsource our major
14 corporate manufacturing facilities, the supply
15 chains which are global, in any case, gravitated
16 there. And now we find that when companies are
17 returning to the United States, they ask about
18 two things: first, about talented and available
19 workforce; and secondly, about qualified
20 suppliers. That's also been a market that we
21 have underinvested in our supply, in our small
22 manufacturing supply chain tiers 2 through 6 that

1 existed in all industrial sectors.

2 And so it's not clear what the federal
3 role should be because most programs, most
4 federal programs -- EDA, MEP, MBDA -- work on a
5 company-by-company basis. They are either
6 geographically or regionally oriented. But
7 supply chains span the nation. They cross-cut
8 geographies. They're global. So we need to
9 think about how to effectively engage in that
10 space. What is the role for the public sector,
11 if any, and how can that -- what tools are needed
12 in order to advance them?

13 The other area that, of course, is
14 very important and salient these days is
15 cybersecurity, which is a major problem of
16 course. NIST has an important technical role in
17 that through our cybersecurity framework, which
18 serves as the basis for civilian cybersecurity
19 standards. The Baldrige National Quality Award
20 Program has also developed a strategy document
21 for companies to assess their cybersecurity
22 weaknesses. And MEP has developed, is working to

1 develop a special program for small
2 manufacturers, particularly those that are in the
3 DoD supply chain, which will, by the end of the
4 year, have a requirement to meet cybersecurity
5 standards. And as you can well imagine, small
6 firms neither have the capacity nor the resources
7 to meet the cybersecurity challenge. So, this is
8 a major issue that I think has not fully emerged
9 in the national debate but I think it's very
10 important and one that we would benefit from your
11 knowledge.

12 And I guess my final thought, having
13 again been on your side of the table most of my
14 career but now on this side, is the importance of
15 the role of the states in economic development
16 activities and aligning the state economic
17 development strategies and your regional economic
18 development strategies with the mission-oriented
19 strategies of the federal agencies so they cross-
20 cut. And all too often, those things are not
21 aligned or they don't intersect in a positive
22 way.

1 EDA had a program called Investing in
2 Manufacturing Community Partnership, IMCP, which
3 was really kind of a recognition program of best
4 practices in regional efforts to advance
5 manufacturing ecosystems. No money was involved
6 from EDA but communities took advantage of the
7 opportunity to get nationally recognized by a
8 federal process and by their peers.

9 In that way there was an alignment, a
10 multi-agency review process. So an alignment to
11 federal agency goals with regional economic
12 strategies.

13 Final point. In terms of
14 manufacturing, in terms of all of these programs
15 that I've mentioned, the states are not at the
16 table. Governors are not represented in this
17 space. To some degree, governors speak about
18 workforce and they all have workforce programs
19 but the governors, as a collectivity, do not
20 speak with any sort of resonance at the federal
21 level in terms of workforce or in terms of
22 manufacturing policy. Yet, the states are often

1 looked to or expected to provide matching funds
2 for many of these programs.

3 I make this pitch to every group that
4 I have an opportunity to speak to. I think there
5 is a real -- and the states, of course, are part
6 of our constitutional network so they have a
7 connection in many programs, transportation and
8 health, for example, to carry out federal
9 policies and receive significant funding to do
10 so. I think the states and their subunits can
11 also play a major role in advancing these
12 policies.

13 So, that's another, I think,
14 opportunity for this body and for you as
15 individual organizations to engage within the
16 federal policy development process.

17 MR. BUERSTATTE: That was great.
18 We're a little tight on time.

19 MR. SINGERMAN: Sorry.

20 MR. BUERSTATTE: But I'm going to
21 squeeze some room out of the next portion --

22 MR. SINGERMAN: Did I run over? No,

1 I didn't.

2 MR. BUERSTATTE: -- so we can have
3 some time for Q and A to Phil. That was such a
4 great number of insights, I didn't want to stop
5 you.

6 So, some questions for Phil?

7 MEMBER JOHNSON: Phil, real quick.

8 MR. SINGERMAN: Yes, sir.

9 MEMBER JOHNSON: You said that for
10 small manufacturers NIST MEP had an outline with
11 what requirements small manufacturers are going
12 to have to meet with cybersecurity.

13 MR. SINGERMAN: Yes, we're developing
14 that.

15 MEMBER JOHNSON: So it's not done yet?

16 MR. SINGERMAN: I'll find out the
17 status. I just got an update on it today.

18 MEMBER JOHNSON: Okay, thank you very
19 much.

20 MR. SINGERMAN: But there's been a lot
21 of outreach working with the Procurement
22 Technical Assistance Centers, the PTACs. So,

1 they're the ones that have direct connection with
2 your DoD contractors and suppliers.

3 MEMBER JOHNSON: Yes, I run the PTAC
4 and I'm not aware of any.

5 MR. SINGERMAN: Okay so then --

6 MEMBER JOHNSON: But we also are
7 receiving an Office of Economic Adjustment --

8 MR. SINGERMAN: Right.

9 MEMBER JOHNSON: -- grant to implement
10 just that.

11 MR. SINGERMAN: Terrific.

12 MEMBER JOHNSON: So any help --

13 MR. SINGERMAN: Well, we're very
14 connected with that program so we should talk
15 offline.

16 MEMBER BALDWIN: So Baldrige has that
17 already?

18 MR. SINGERMAN: So Baldrige does have
19 that. Baldrige has -- I forget what they call
20 it. So NIST has the cybersecurity framework and
21 Baldrige has, they take -- if you're familiar
22 with the Baldrige program, it is a very detailed

1 program for how you assess your quality. And so
2 they've created a special document on
3 cybersecurity.

4 So I'll double-check to make sure
5 that's available.

6 MEMBER REAMER: Two unrelated
7 questions on MEP. What's the -- how big is the
8 universe of small manufacturers? You say the
9 system works with 8,000. I'm curious how big the
10 universe is, how big the potential pool is.

11 MR. SINGERMAN: So the potential pool,
12 if you look at just small manufacturing, I used
13 the number 290,000 small manufacturing
14 facilities. So some of those facilities are
15 owned by large corporations. Another metric is
16 there are about 250,000 small manufacturing firms
17 under 500 employees and mostly privately owned.
18 So, that's our universe. And I'm sorry I don't
19 have the percentages with me but 80 percent of
20 those are under 20 employees. So, they're very
21 small.

22 So the real sweet spot for our program

1 are those firms in the 100 to 250 plus employees
2 because they have capacity and the resources to
3 innovate. And that's our marketplace.

4 MEMBER REAMER: The second question
5 has to do --

6 MR. SINGERMAN: Is that responsive?

7 MEMBER REAMER: Yes, thank you.

8 MR. SINGERMAN: So we have very
9 significant penetration in those sectors. We
10 have penetration in some of the like 250 to 400
11 we serve 30 percent of the marketplace over a
12 two- to three-year period. That's a very
13 profound penetration. Obviously, in the one to
14 20, which are a couple of hundred thousand firms,
15 you know we serve 5,000. It's a very small
16 percentage. But in those firms that are the
17 target market, we have a high penetration.

18 MEMBER REAMER: Great. On
19 Manufacturing USA you were saying how this
20 administration is supportive of this effort.

21 MR. SINGERMAN: Right.

22 MEMBER REAMER: In terms of the budget

1 request for the institutes for FY18 and '19,
2 there is no significant decrease in the budget
3 requests?

4 MR. SINGERMAN: So DoD is fully funded
5 through the life of their various institutes.
6 Remember, the institute is a TAP in terms of
7 years and dollars.

8 DOE was not but the Senate has fully
9 funded them, in accordance with whatever
10 parameters they have. So I think some of them
11 are fully funded. Others are funded into their
12 third or fourth year and the Commerce Institute
13 is funded for next year.

14 MEMBER REAMER: So how would you
15 characterize individual Senators and Members of
16 the House, their understanding of and
17 appreciation for Manufacturing USA?

18 MR. SINGERMAN: I couldn't begin to --
19 sorry. I wouldn't dare to characterize it.

20 MEMBER JOHNSON: So with the very
21 small manufacturers, the areas to entry, as I
22 see, are having a D-U-N-S Number in the fees

1 charge. Have you ever thought about having some
2 sort of program to get them sort of hooked and
3 then, when they get to a certain size, then start
4 paying the fees?

5 MR. SINGERMAN: Well, right. So you
6 know, as I mentioned, first of all, this is a
7 very -- it's a big country, a lot of variations.
8 So we allow a great deal of flexibility in the
9 operation of the MEP standards. And so what
10 works in South Dakota doesn't work in South
11 Carolina or Southern California. So, there's a
12 lot of variation. They all do some of the same
13 things but they are very different sizes because
14 the funding is proportional to the density of the
15 manufacturers, number of manufacturers in the
16 region.

17 So they are businesses. So, they do
18 free assessments. They do small projects --
19 \$5,000 and for more robust clients, they'll have
20 multiyear projects in the hundreds of thousands
21 of dollars. So, there is -- and it varies. We
22 don't dictate how they do it. We have certain

1 standards that they have to meet.

2 But if you work at all with our MEP
3 Centers in Kentucky --

4 MEMBER JOHNSON: Yes, I do. I use
5 sites -- I came to Kentucky on a NIST E Card but
6 Scott Broden (phonetic) but he's not very
7 adventurous; not really a visionary.

8 MR. SINGERMAN: I've got 51 children
9 that I've lost touch with.

10 MEMBER KENNEY: To follow-up on Rick's
11 question, quickly, and Emily's organization and
12 mine both -- sorry, Craig -- both work with our
13 local MEPS. And in our case, we have carved out
14 some of our funding. We mostly fund R&D projects
15 with startups but we've carved out some
16 specifically for startups to work our MEP, where
17 we subsidize the company's cost. And our MEP got
18 a grant to subsidize part of it as well. So the
19 company still has some skin in the game but it's
20 only about a third of the normal expense of the
21 project. We've done a couple of those
22 successfully, one is a design of manufacturing

1 for a company, basically designing their first
2 post-prototype product going to manufacturing and
3 another case, designing the layout for a new
4 manufacturing facility. These are like nine-
5 person or fewer employee kind of companies.

6 MEMBER REICHERT: That's really
7 interesting to me that you figured out a way to
8 do that because the problem -- we work quite
9 closely with Mass MEP. I'm based in the Boston
10 area. And an issue for us has been that the MEP
11 is not incentivized to work with startups because
12 it doesn't match their metrics.

13 MR. SINGERMAN: That's right.

14 MEMBER REICHERT: And so I mean I'd
15 love to see some innovation around how do we
16 incentivize the MEP, which has amazing
17 capabilities, expertise, that would really help
18 early stage businesses but the metrics don't
19 allow them to do that.

20 MR. SINGERMAN: That's correct because
21 they have to raise a cost-share. But there is a
22 very interesting -- I don't know. Heather, are

1 you from Boston?

2 MEMBER BOESCH: Uh-huh.

3 MR. SINGERMAN: So, did you mention
4 Greentown Labs in your earlier remarks?

5 MEMBER BOESCH: Yes, she runs
6 Greentown.

7 MR. SINGERMAN: You run Greentown.
8 Okay. Did we meet when I visited you?

9 MEMBER REICHERT: Obviously.

10 MR. SINGERMAN: So well you know there
11 is a program that you had with SBA and state
12 funding, right?

13 MEMBER REICHERT: Yes, we did.

14 MR. SINGERMAN: So this was to connect
15 startup companies that had a manufacturing
16 prototype need with existing manufacturers who
17 could supply that need. I'm sorry, they go to
18 the venture capitalist and they say well, you've
19 got to go to China; there's nobody around.

20 So the SBA funded a program, I think
21 the state funded it, to basically embed an MEP
22 person to work in this space. And low and

1 behold, there were suppliers galore and the
2 contractors in the Boston area that could do a
3 lot of work that these startups wanted to have
4 done.

5 Did I get that right?

6 MEMBER REICHERT: That's pretty much
7 correct.

8 MR. SINGERMAN: And so but the key
9 there was money. The key was an extra special
10 source of funding that allowed -- so we didn't
11 charge for that. I don't think we charged.

12 MEMBER REICHERT: No, you didn't
13 charge for that but it's hard for the person to
14 do that work because they can't get credit for
15 it.

16 MR. SINGERMAN: I see, okay.

17 MEMBER REICHERT: That's the issue.

18 MEMBER REAMER: Hey, Emily you
19 designed that program and you developed the term
20 patient capital, too. Amazing.

21 MEMBER REICHERT: I could see credit
22 for the first one but not the second one.

1 MEMBER REAMER: Wrong term. Wrong
2 term.

3 MEMBER BALDWIN: So you mentioned the
4 Manufacturing Day.

5 MR. SINGERMAN: Yes.

6 MEMBER BALDWIN: You know I work for
7 a manufacturing company and we heavily support
8 Engineering Day -- Engineers Day.

9 MR. SINGERMAN: When is Engineers Day?

10 MEMBER KENNEY: Every day.

11 MEMBER BALDWIN: And so I'm wondering
12 if there is any level of collaboration been
13 thought about because parents want their kids to
14 go to college; they want them to become
15 engineers.

16 MR. SINGERMAN: Right.

17 MEMBER BALDWIN: And now we have
18 Manufacturing Day. How do we bring those two
19 messages together? Because we have a lot of
20 Ph.Ds. in our manufacturing world.

21 MR. SINGERMAN: So go ahead and do it.
22 Where are you located? Where is your -- you're

1 everywhere.

2 MEMBER BALDWIN: Our headquarters is
3 in San Jose but I'm in Oregon. But it's more how
4 do you bring the programs together?

5 MR. SINGERMAN: So, as I said, this
6 has gone by -- talk to NAM. This has always been
7 a private sector-led initiative. It was
8 stimulated with some thinking from the public
9 sector.

10 MEMBER S. SMITH: And SME is part of
11 that NAM.

12 MEMBER W. SMITH: So, in addition to
13 Manufacturing Day, which is great exposure, it's
14 great to get particularly young people aware of
15 manufacturing jobs and what facility we have.

16 I thought there was a big push in the
17 last several years to get MEPS to do more
18 consulting with small- and medium-sized
19 businesses on their talent needs because, of
20 course, as you said, that's one of the big
21 barriers to growth.

22 But I've been maybe not on the ground

1 enough to conclude that the capacity-building
2 among the MEPS to really do that in a meaningful
3 way has been underwhelming. So what could the
4 Department do or what could we do to build the
5 capacity of MEPS to really get into the game?

6 And I want to just say one other
7 thing. I see you want to respond to me.

8 Four of our pillars are manufacturing
9 -- two of our pillars are manufacturing
10 apprenticeship. Thinking about could the MEPS be
11 a vehicle -- and apprenticeship works for some
12 and not others. So that's just one talent model.
13 There are a lot of other talent development
14 models.

15 MR. SINGERMAN: So where are you from?

16 MEMBER W. SMITH: I work at JP Morgan
17 Chase. I'm based in Chicago. I work with IMEC,
18 which I think is one of the better ones.

19 MR. SINGERMAN: Yes. So, we have --

20 MEMBER STEVENSON: This is Tiffany.
21 I'm calling in remotely, trying to merge in. On
22 Whitney's question, I think my question building

1 on that is are there topics within the advanced
2 technical space so when you look at some of these
3 categories that you think we could be seeding
4 also from an education perspective? Are there
5 some that maybe cut across or could be sort of
6 the new core curriculum that we maybe we focus on
7 or are they all weighted equally?

8 MR. SINGERMAN: So there are some MEP
9 centers that have been very forward-leaning in
10 terms of workforce development activities but we
11 have been reluctant, as a system, to move in that
12 direction. And the reason is we have a positive
13 reputation because we're very specialized in what
14 we do and we're not viewed generally as
15 competitors with lots of others. The reason the
16 program has been around for 30 years because with
17 the Kinseys of the world, this is not their
18 marketplace. There's a void.

19 But the workforce space is very
20 crowded and competitive. And when some of our
21 MEP centers have tried to engage in that space,
22 there's been a lot of push back -- I'm not being

1 critical -- understandably because there are
2 community colleges and state universities.
3 Everybody is in the workforce game. And the
4 question is is there room for a new entry.

5 So, I don't think that this is an MEP
6 capacity issue. I think this is a federal issue
7 that requires a higher level of collaboration
8 between the Department of Commerce, to the extent
9 that there's a role for Commerce, the Department
10 of Labor, and the Department of Education. We
11 spend an enormous amount of money on workforce
12 training and education and I think there is a
13 widespread feeling that the public sector
14 investments in this are not efficient and
15 effective because we're not training people for
16 -- I mean we have all this money, all these
17 institutions but all of the companies are
18 complaining they can't get qualified workers. So
19 there's a real mismatch.

20 So, I think this is a great issue for
21 this body but I don't think this is an MEP issue.

22 MEMBER REICHERT: We have a great

1 model in Massachusetts, actually where the MEP
2 has been involved in workforce development,
3 MACWIC, that they set up and they have involved
4 the community colleges and actually have run out
5 of people to train. They have been so successful
6 --

7 MEMBER W. SMITH: So I don't even know
8 that model but I was going to say the value add
9 is that the MEPs are talking to manufacturing.

10 MR. SINGERMAN: Yes, absolutely.

11 MEMBER W. SMITH: They hear what
12 technologies are. So they have metal working
13 companies that need however many positions in the
14 C&D, whatever. Then they go to the community
15 college on delivery.

16 MR. SINGERMAN: Right, that's in our
17 legislation. We're required to do that, which is
18 a positive thing.

19 What's different in Massachusetts is
20 the state has designated the MEP as a service
21 provider for education and funds them, much to
22 the consternation of some of the community

1 colleges and other providers. You know why are
2 you -- why aren't you giving -- they are very
3 powerful lobbyists for their own interest.

4 MEMBER BALDWIN: It's competition. I
5 believe we have an issue with we have a lot of
6 training that's delivered to employees, skills
7 training, knowledge base training and the
8 employees want some kind of certification to go
9 with that so that it's fundable.

10 And it's actually easier for me to
11 take that training to Europe and get it certified
12 for college credit in Europe that can then
13 transfer back than it is to go to any of the
14 colleges here to get them certified for college
15 credit.

16 MR. SINGERMAN: So man NAM created the
17 Manufacturing Institute, which was -- Emily
18 DeRocco, who was the major figure in the Bush
19 administration Department of Labor, was involved
20 in that I think subsequent to that administration
21 and that was intended to work on this stacked
22 certification. I'm not an expert at this. So

1 NAM is the body. They have an interest and a
2 capacity to work on this.

3 But I'm sorry I'm not helpful on this
4 but, as I said, it's a bigger problem than kind
5 of the bureaucratic tools that are available to
6 us but it is a very -- have you had Labor people
7 speak before the body this year?

8 MR. BUERSTATTE: Not this year.

9 MR. SINGERMAN: So you should get the
10 Labor people in here and grill them on this stuff
11 because I think there's a real opportunity here
12 for this body to make a difference in this
13 sector.

14 MR. BUERSTATTE: We'll have some good
15 time just around the hour to dig into this a
16 little bit deeper with Phil, and Mike, and a few
17 others. Andrew Steigerwald from DOE will be
18 joining us. We've met with him before.

19 So, I hate to cut it off, but I do
20 need to keep us on schedule.

21 And with all that dialogue happening
22 and the questions, I'd like to throw a question

1 back at the team here and think about as we move
2 into the second half of our day think about two
3 things. One, what is it that we can do near-term
4 as a body to help Phil and team in our
5 manufacturing efforts here at Commerce, as well
6 as T. J. and the FirstNet team.

7 So again, what is something near-term
8 we could do, whether it is help FirstNet advocate
9 and amplify the opportunity at a few universities
10 and a few cities? What does that look like? And
11 two, with that in mind, how can we leverage that
12 activity or that support to build toward a
13 broader initiative, something where we really
14 should be operating and will be. But I want to
15 set a 50 meter kind of target that we can hit,
16 less risky, something that we could immediately
17 take action on while building momentum toward a
18 policy initiative and some more awareness,
19 whether it's the workforce piece in
20 manufacturing, you name it.

21 So those two things I think will set
22 us up for success in the second half of today.

1 Melissa, I'm not sure if you're still
2 hearing us -- and she just dropped off.

3 So, that's it for my formal closing
4 remarks. But I did want to open up -- Operator,
5 at this time, I want to open up the call for
6 public comment, if there are any members of the
7 public on the line.

8 OPERATOR: If you would like to make
9 a comment, please press *1 and record your name
10 at this time.

11 MR. BUERSTATTE: All right, is that no
12 public comments, operators?

13 OPERATOR: That is correct, sir.

14 MR. BUERSTATTE: Great. Thank you so
15 much.

16 All right, absolutely. So we have a
17 government comment. Jennifer, one of our
18 partners over at SBA from the Office of
19 Investment and Innovation who we'll be hearing
20 from or participating in some dialogue with with
21 more of her team members later but Jennifer has
22 got some awesome updates with what they've been

1 working on, which I know is going to be relevant
2 to a lot at the table here. Jennifer?

3 MS. SHIEH: Yes, thanks.

4 Hi, everyone. You might have met me
5 briefly at the February meeting. I'm the Chief
6 Scientist Senior Technology Policy Advisor for
7 the SBIR STTR programs. And so I'm just going
8 over a few really brief updates on what's been
9 going on with our programs and then if you have
10 questions about them, John Williams, the Director
11 of our office, and Brittany Sickler will be here
12 for the breakout session later.

13 But so one is that we made 21 FAST,
14 the Federal and State Technology Partnership
15 awards that are going to start September 30th. I
16 know there are a couple of awardees here actually
17 at the table. So and these are for organizations
18 to increase the SBIR participation and there is
19 only one per state.

20 We will be announcing 20 additional
21 Growth Accelerator awards to existing growth
22 accelerator companies in October.

1 We just released the FY14 SBIR annual
2 report. We're trying to catch up. So the FY15
3 annual report will hopefully be out relatively
4 soon. But on SBIR.gov, if you want to take a
5 look at the annual report that talks about the
6 SBIR program, the numbers of applications,
7 awards, how it breaks down for women-owned small
8 businesses, socially/economically disadvantaged
9 small businesses, HUBZones, that's all there.

10 And then the report for FY15 isn't out
11 but you can actually go to the dashboard for the
12 annual report data for FY15 is there. So you can
13 also take a look at also state breakdowns, if
14 that's something you're interested in.

15 We'll be continuing our SBIR road
16 tours in California and Hawaii in September. So,
17 if you're out on the West Coast, maybe come
18 visit. There's five cities that we'll be hitting
19 in California.

20 And then the thing I really wanted to
21 say is also we are still really very actively
22 working on developing our strategy for creating

1 an inclusive innovation ecosystem through the
2 SBIR program and increasing the participation for
3 underrepresented groups. And so I, personally,
4 am very -- if you know of programs or
5 initiatives, people that would want to talk to me
6 about this, yourselves included, please contact
7 me and I'd love to work with you.

8 MR. BUERSTATTE: And you'll be hanging
9 out for the afternoon.

10 MS. SHIEH: I'll be here the
11 afternoon. I'll probably come tomorrow morning,
12 too.

13 MR. BUERSTATTE: Great! Awesome.

14 MEMBER JOHNSON: Just for everybody
15 around the table, these tours are great. You
16 just have to sign up in advance but you should
17 get all your technologists to go have these one-
18 on-one meetings. They are fantastic.

19 MS. SHIEH: Yes, thanks. So the road
20 tours are basically we literally bring a busload
21 of agency representatives, all the program
22 managers that run the SBIR programs at all the

1 different federal agencies come do one-on-ones.
2 We talk about high level --

3 MEMBER JOHNSON: They have \$3 billion
4 they're trying to give away.

5 MR. BUERSTATTE: We call them awards.
6 We don't give it away. They're awards.

7 MS. SHIEH: They're earned. They're
8 applied for.

9 MR. BUERSTATTE: They're earned, yes.

10 MS. SHIEH: I guess I'm going to throw
11 a little bomb in here. Just in case you don't
12 know, also there's a change in the definition for
13 Research and Development for development. There
14 is a congressional research service report, if
15 you're interested in learning more about how that
16 may affect R&D funding.

17 MR. BUERSTATTE: We'd love to hear
18 more.

19 Okay, we are five minutes ahead of
20 schedule, which means you get a longer bathroom
21 break.

22 At this time, I'm going to adjourn the

1 formal portion of today's public meeting. So,
2 Operator, please close down the line.

3 PARTICIPANT: Craig, can I ask a
4 question first?

5 MR. BUERSTATTE: No.

6 PARTICIPANT: Okay, sorry.

7 MR. BUERSTATTE: Please close the
8 line.

9 (Whereupon, the above-entitled matter
10 went off the record at 3:25 p.m.)

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