

NATIONAL INFRASTRUCTURE ADVISORY COUNCIL

QUARTERLY BUSINESS MEETING AGENDA

May 21, 2020

1:00 PM - 3:30 PM ET

By Phone

I. OPENING OF MEETING

Ginger Norris, Designated Federal Officer (DFO), President's National Infrastructure Advisory Council (NIAC), Department of Homeland Security (DHS)

The CenturyLink operator opened the call by thanking attendees for standing by and welcoming them to the President's National Infrastructure Advisory Council's (NIAC) Quarterly Business Meeting (QBM). The operator shared that the meeting would begin in a few moments with a call to order and roll call; however, first he would provide a few housekeeping items. He shared that all of NIAC members, invited speakers, and panelists on the call today were on an open line and able to fully interact for the duration of the meeting. He asked that they use their mute key when not speaking to minimize background noise. He shared that there was private operator assistance available by pressing *0 on their phone keypads. He then turned the meeting over to the NIAC Designated Federal Officer, Ms. Ginger Norris, to officially open the meeting.

Ms. Norris thanked the operator and wished everyone a good afternoon. She shared that she was the DFO for the President's NIAC and appointed by the Director of the Cybersecurity and Infrastructure Security Agency (CISA) within the Department of Homeland Security (DHS). She shared that, on behalf of the NIAC, she would call the council's roll. She reminded everyone that this QBM was open to the public and accordingly members should remember to exercise care when discussing potentially sensitive information.

She also reminded everyone that since this was a phone QBM they should ensure that their phones are muted and should allow some time for pauses between speakers, which would be greatly appreciated as they navigate hosting this meeting completely by phone.

II. ROLL CALL OF MEMBERS

Ginger Norris, DFO, NIAC, DHS

Ms. Norris shared that she would normally call each name for the roll call but since attendance was being captured through the automated operator assisted phone lines the roll call would be skipped in the interest of time.

She informed everyone that the President's NIAC was established under Section 10 of Executive Order (EO) 13231, *Critical Infrastructure Protection in the Information Age*, and was most recently amended and continued under EO 13811, *Continuance of Certain Federal Advisory Committees*, in October of 2019. She stated that the NIAC is composed of members appointed by

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the President and includes senior executives with expertise throughout the critical infrastructure sectors as identified in Presidential Policy Directive 21, *Critical Infrastructure, Security, and Resilience*. During its nearly 20-year history, the NIAC has conducted and completed over 31 in-depth studies, which resulted in more than 330 recommendations to the President, including how to improve intelligence information sharing across government and industry and how to identify and reduce complex cyber risks for cyber physical systems that operate critical processes. All of these recommendations have been made available to the public.

She shared that as there were no registered public comments for this QBM, so there would not be a Public Comment portion. She added that if someone wished to submit comments in writing for this QBM, they had 30 days from the date of this meeting to submit those comments. She explained that those comments could be submitted using the www.regulations.gov website and that their comments would include any personal information that they provide.

Ms. Norris, pursuant to her authority, called the NIAC QBM for May 21, 2022 to order and handed the meeting over to the NIAC Chair, Ms. Constance Lau.

NIAC MEMBERS PRESENT:

Ms. Jan Allman, Mr. J. Richard Baich, Mr. Rand Beers, Dr. Georges Benjamin, Mr. William Boston, Mr. Robert Carr, General Albert Edmonds, Mr. William Fehrman, Mr. Benjamin Fowke, Ms. Margaret Grayson, Mr. George Hawkins, General Reynold Hoover, Chief Rhoda Kerr, Ms. Constance Lau, Mr. Richard Ledgett, Mr. Randolph Lowell, Ms. Joan McDonald, Dr. Kevin Morley, Mr. James Murren; Former Secretary Kirstjen Nielsen, Mr. Keith Parker, Ms. Ola Sage, Dr. Beverly Scott, Mr. Michael Wallace, and Mr. Daniel Walsh.

NIAC MEMBERS ABSENT:

Mr. Carl Newman

SUBSTANTIVE POINTS OF CONTACT PRESENT:

Mr. Theodore Basta with Dr. Beverly Scott; Mr. Samuel Chanoski with Mr. Michael J. Wallace; Mr. Charles Durant with Mr. William Fehrman; Mr. Frank Prager with Mr. Benjamin Fowke; Nathaniel Millsap with Ms. Jan Allman; and Mr. Scott Seu with Ms. Constance Lau.

OTHER DIGNITARIES PRESENT:

Ms. Ginger Norris, NIAC DFO, CISA, DHS; Ms. Kayla Lord, NIAC ADFO, CISA, DHS; Dr. Julia Nesheiwat, Deputy Assistant to the President for Homeland Security and Resiliency; Mr. Brian Cavanaugh, Special Assistant to the President and Senior Director for Resiliency, NSC; Dr. Ed Canuel, NSC; Ms. Sara Mroz, NSC; Ms. Kelly Shaul, NSC; Director Christopher Krebs, CISA, DHS; Deputy Director Matthew Travis, DHS; Assistant Deputy Bradford Willke, CISA, DHS; Assistant Deputy Brian Harrell, DHS; Acting Associate Director Enrique Matheu, CISA, DHS; Ms. Helen Jackson, CISA, DHS; Ms. Elizabeth Gauthier, CISA, DHS; Ms. DeShelle Cleghorn, CISA, DHS; Ms. Deirdre Gallop-Anderson, CISA, DHS; Ms. Julia Hanson-Takyi, DHS; Mr. Gray Paul, CISA, DHS; Mr. Steven Curren, DHS; Mr. Matthew Hadley, DHS; Mr. Christopher Demi, U.S. Coast Guard; Mr. John Donovan, NSTAC Chair; Mr. Kevin Jiang, CISA, DHS; and Mr. Peter Altabef, NSTAC Member.

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III. OPENING REMARKS AND INTRODUCTIONS

Constance H. Lau, NIAC Chair

Beverly A. Scott, NIAC Vice Chair

Dr. Julia Nesheiwat, Deputy Assistant to the
President for Homeland Security and
Resilience, National Security Council (NSC)

Chris Krebs, Director, *CISA, DHS*

Ms. Lau thanked Ms. Norris and welcomed everyone to the NIAC's first virtual QBM. She opened with an aloha to everyone since they were all spread across the United States (U.S.) throughout multiple time zones. She hoped that everyone and their families were well and safe during this pandemic and added that it was a great day to have tremendous attendance.

She then issued a special welcome to two new NIAC members. First, she mentioned Mr. Randolph Lowell, who is a partner at Willoughby & Hoefler and who served as counsel on a number of infrastructure and utility projects in rail, port, highway, nuclear, water and wastewater, electric, and gas sectors. She shared that he has wonderful experience for this particular council and wished Mr. Lowell a warm welcome. Then, she welcomed Mr. Daniel Walsh, who is the Senior Vice President and Corporate Strategic Advisor at CACI. She shared that before joining CACI in February, Mr. Walsh held several senior management positions in the White House, most recently as assistant to the President and Deputy Chief of Staff for Operations. She then warmly welcomed Mr. Walsh and shared that he has great insight from his time in the White House and that one thing the NIAC had often discussed was how to make their recommendations most actionable for the government.

Ms. Lau complimented the great agenda they had for this QBM and shared that they were going to be covering three major topics. She explained that the first topic was an update on the follow-on tasking from the NIAC's December 2019 study, *Transforming the U.S. Cyber Threat Partnership*, which was co-chaired by NIAC members Mr. Mike Wallace and Mr. William Fehrman, during which the NIAC recommended four strategies to respond to catastrophic cyber risks within the energy, communications, and financial service sectors and shared nine recommendations to achieve these strategies. Ms. Lau shared that the first strategy was to make cyber intelligence actionable and the first recommendation was to establish a Critical Infrastructure Command Center (CICC) that would consist of co-located government intelligence analysts and cyber experts from the most critical of the critical infrastructures and critical functions. Following the issuance of that study in February, the National Security Council (NSC) requested a follow-on analysis of how to operationalize the CICC. NIAC members Mr. J. Richard Baich and Mr. Richard Ledgett have agreed to co-chair this follow-on analysis, and they will provide an update on that study.

Ms. Lau then explained that the second topic was one where many of the NIAC members and government partners are serving on the front lines: the current COVID-19 pandemic. She shared that they would be hearing firsthand from the NSC, CISA Director, and four of the NIAC

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members about their observations and insights thus far. She explained that the third topic was one that the NIAC has long been concerned about given the criticality of critical infrastructure to our nation's security: having a skilled and resilient workforce. She added that this is a major pillar within critical infrastructure. She explained that without a workforce that is adept in operating, maintaining, and repairing current infrastructure and preparing for the infrastructure of the future, the nation is increasingly vulnerable to catastrophic disruption. She shared that on April 27, 2020 the NIAC received a new tasking to study and develop recommendations to ensure the readiness of the U.S. critical infrastructure workforce. She stated that Dr. Beverly Scott and Ms. Jan Allman have agreed to co-chair that study, and that they will be kicking it off today with a panel of representatives from the transportation, energy, and water and wastewater sectors to provide insights. She then stated that she would like to ask her vice-chair, Dr. Scott, if she had any opening remarks to share as well.

Dr. Scott thanked Ms. Lau and stated that she would like to add her welcome to the newest NIAC members, Mr. Lowell and Mr. Walsh, and expressed how delighted the NIAC was to have them on board. She shared that they bring tremendous experience and insights to the NIAC, and she added she knew it would be a pleasure to work with them. She shared that she was impressed with the speed of the work and effort underway on the CICC involving the public and private sectors to help move this important work to operational functionality. She shared that she was waiting to hear from the NIAC members who are on the frontline in terms of the COVID-19 pandemic and the tremendous effort of the critical infrastructure sector workforce during this unprecedented modern day crisis. She shared that she was very pleased to be joining Ms. Allman as co-chairs for the study on workforce and talent management and was very appreciative of the speakers who were joining them on the kick-off panel and who were from three of the four lifeline sectors. She also thanked John Donovan from the National Security Telecommunications Advisory Committee (NSTAC) for joining them today. She concluded by stating that they had a power-packed agenda today and she was pleased to be able to support.

Ms. Lau thanked Dr. Scott and then welcomed Dr. Julia Nesheiwat of the NSC. Ms. Lau shared that on February 21, 2020, Dr. Nesheiwat became the Deputy Assistant to the President for Homeland Security and Resilience and that she would love to turn it over to her for opening comments. Dr. Nesheiwat thanked Ms. Lau and asked if everyone could hear her well, sharing that she was calling into the NIAC QBM from Air Force One. Ms. Lau shared that Dr. Nesheiwat could be heard. Dr. Nesheiwat thanked the NIAC for the opportunity to join today's meeting. She shared that both private sector and government leaders are fortunate to have the NIAC, being able to share all of their unique perspectives to improve the security and resilience of the country's critical infrastructure. She shared that this is very near and dear to her heart because at her previous position she also served as Florida's first Chief Resilience Officer, and her current role allows her to integrate some of these critical infrastructure nodes at the national level, such as the power-energy industry, transportation sector, and telecommunications that were so important to the U.S. homeland.

She shared that she was honored to be part of this and was very impressed with all that the NIAC does. She added that, in regard to the administration, they continue to focus squarely on trying to strengthen the nation's security and overall resilience, while at the same time defending against

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the evolving threats of today and reducing potential future vulnerabilities. She shared that, as discussed earlier, the threat from pandemics is certainly clear as they continue to fight against COVID-19. She stated that she is currently serving on the White House Coronavirus Task Force and that they will continue to look for creative ways of how we can learn from this unprecedented challenge. However, she added that the threat landscape is certainly wide-ranging and there are a lot of malign efforts ranging from foreign adversaries to issues such as severe weather and other geological events, hurricanes, earthquakes, wildfires, and even flooding like they are currently experiencing in Michigan.

She stated that in addition to all of these response efforts, they have other areas where they are trying to focus, including strengthening election security, building resilience against electromagnetic pulses, enhancing their understanding of U.S. Arctic Critical Infrastructure, and encouraging the responsible use of position, navigation, and timing assets. She added that there are multiple lines of effort to safeguard homeland security and that she was looking forward to the QBM's robust discussions, which, as noted earlier, were very broad and very timely. She finished by stating that as they have started to address a lot of these threats facing the U.S., it is important that they continue to try to pursue innovative policies, active stakeholder engagement, and a whole of community approach.

She continued that they look to enhance that collective defense against these diverse threats. She again stated that the topics that were being covered today would certainly demonstrate the need for a continued line establishing those capabilities and those resources. She shared that this was welcomed exploration of the innovative way that both the federal government and the private industry should work together and really try to help manage these risks. She appreciated the chance to speak here and thanked the NIAC for their invaluable contributions to keep the nation safe.

Ms. Lau thanked Dr. Nesheiwat and told her that the NIAC really appreciated her being at this virtual QBM. Ms. Lau shared that it was particularly interesting to listen to her and the broad swath of things that she was thinking about, sharing that being in critical infrastructure, the NIAC members appreciate how many things she really has to consider to keep the nation safe. She added that she was unsure the general public appreciated the breadth of the issues that need to be assessed, monitored, and dealt with on an ongoing basis. She again thanked Dr. Nesheiwat for her comments.

Ms. Lau then introduced Mr. Christopher Krebs, the director of CISA, who she shared had been with the NIAC for quite some time. She commented to Director Krebs that the NIAC always appreciates him being at their meetings and asked him to share any opening remarks. Director Krebs thanked Ms. Lau and Dr. Scott and thanked them for those opening comments, which set the stage for the meeting. He stated that he would try to really quickly work through a few of the things they have been undertaking with the COVID-19 response. He shared that he did not want to take away too much of the conversation about COVID-19 coming later in the agenda but that he wanted to set the stage for that conversation.

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The first thing that Director Krebs mentioned was that CISA has been doing three things for the COVID-19 response. He shared that first they had to understand the shift in the risk landscape, then they had to protect the response, and finally they had to secure the resulting digital transformation. He elaborated by stating that, on the first front, understanding that the risk formula has at least three variables of vulnerability, consequence, and threat. He shared that where they have seen the most dramatic shift was the consequence variable. He stated that a year ago all of these organizations that are now so critical to the COVID-19 response, they were certainly critical from a national critical function perspective, but now they are much more specialized.

He added that when someone thinks within the context of EO 13636 and Section 9 about those critical infrastructures that are of such great significance that if disrupted by a cyber event they would have catastrophic impact, these lists were fairly steady state. However, in this environment of the shifting consequence variable caused by COVID-19, they are taking a new look to see if there are additional organizations in the healthcare sector, such as those that are developing vaccines or manufacturing Personal Protective Equipment (PPE), that should be reconsidered for inclusion. He shared that this had been the first part of really understanding that shift in the risk landscape and then in understanding what that shift was; whether it's a commodity shortage, whether it's workforce absenteeism, whether it is an increase in demand or a decrease in demand, those external drivers that could disrupt that function. He explained that the last piece was that cyber security risk.

He shared that this then informed a series of other activities that they have been doing, which is protecting the response. Now that they understand who these organizations with heightened significance are, they can begin to work with them. He shared that CISA wants to provide them additional support and resources from both cyber and physical security perspectives. He added that it was not just the cyber threats but also the potential increased demand that could disrupt the service. He posed the question: what guidance and the other sorts of engagements can we provide them? He responded that they were providing cyber security assistance, but were also delivering physical security support and supply chain analysis.

He stated that the last piece was securing the digital transformation, stating that the joke was "what was it that was behind your organization's digital transformation? Was it the CEO, was it the CTO, or was it COVID?". He shared that what they found was that a number of organizations have tried to accelerate digital transformation over the last couple of years, but for whatever reason, found it challenging. He emphasized that the majority of organizations figured it out quickly in early to mid-March. He shared that CISA is at about 93% telework currently and is looking at how to maintain this posture moving forward, considering what advantages it might gain. He shared that they have found that workers are quite productive, and hasn't seen a significant drop-off in productivity, which is why they would like to keep it going as long as they possibly can.

He shared that they have set up a dedicated product line and web presence aggregating various digital transformations; securing telework, video conferencing, and security considerations, pushing out not just CISA products but also those from the National Security Agency (NSA),

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National Institute of Standards and Technology (NIST), the United Kingdom's National Cyber Security Center and also from the private sector, for example the Global Cyber Alliance and Federal Readiness Institute. He explained that they are trying to create together a one-stop shop for digital transformation.

He shared that, going forward, this will be an area of focus for CISA's foreseeable future, and they will work to protect and secure this digital transformation. He went on to explain that he would get a little bit more into this in the following conversation about the COVID-19 response and would discuss some of the things that they have done, including the essential critical infrastructure worker guidance. He then thanked the NIAC for their early and constant contributions to that effort. He shared that a lot of the NIAC's strategic thought really helped them get where they needed to go. He then turned the meeting back over to Ms. Lau, sharing that he was looking forward to today's conversations.

Ms. Lau thanked Director Krebs and shared that the NIAC is always pleased to have his personal attendance and participation. She also acknowledged the extraordinary effort of Director Krebs and his team because when they talked about particularly protecting the response and working with the critical infrastructure, she felt that CISA has been fantastic, has been incredibly responsive, and has helped coordinate government response.

IV. UPDATE ON NATIONAL SECURITY TELECOMMUNICATIONS ADVISORY COMMITTEE ACTIVITIES

*Mr. John Donovan, Chair, President's
National Security Telecommunications
Advisory Committee (NSTAC) (Invited)*

Ms. Lau then announced that the NIAC had a special guest at this QBM: NSTAC Chair Mr. John Donovan. She said that many of the people at today's virtual QBM know that the NSTAC is the other Presidential Advisory Committee in addition to the NIAC, and she shared that they have talked for several years about how the two councils could coordinate and collaborate more since they are both so focused on helping the nation maintain its security. She stated that they invited Mr. Donovan to join the NIAC today and are really looking forward to some comments from him about what the NSTAC has been doing.

Mr. Donovan thanked Ms. Lau. He shared that he noticed two big differences right off the bat between the NIAC and NSTAC. First, he shared that the NSTAC has never had anybody call in from Air Force One, and second, no matter how much doubt they have in their heads, they never say, "can you hear me okay?" He chuckled and went on to say that there should be armies of people making sure that everybody can hear everyone else. He said he was unsure if Mr. Scott Charney, the vice-chair on the NSTAC, had been able to join today's QBM, but he checked to be positive.

Mr. Donovan then shared that the latest NSTAC Member Meeting was held on May 13, 2020, and he explained that while they discussed a number of topics during that meeting, the foremost topic was the impact of the coronavirus pandemic on the information communications

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technology ecosystem, as well as communication resiliency. He then highlighted that they have had to broaden the technology stack more because applications now communicate, and messaging is now complementing voice. This has made that landscape become much more of an ecosystem than what one would consider traditional communications and is certainly well beyond telephony.

He shared that the communications industry has taken a number of steps to ensure service to their customers and network performance during the pandemic, adding that this includes making commitments extending late payment and service suspension relief, increasing mobile hotspot and data allowances, and allowing for unlimited home data, and a variety of similar programs minimizing individual impacts. He further explained that the industry's networks continue to perform well and that they have been working closely with DHS and other agencies to ensure the necessary access to maintain continuity of operations. He shared that their primary concern at this stage was shifting towards the challenges with return to work and the various guidelines issued by state and local officials. He stated that they would love to see a consistent approach nationwide, adding that some other priorities for them included ongoing access to PPE and resources for essential services. He mentioned that the Business Roundtable recently issued guidelines on many of these issues that were widely supported by their industry. Additionally, he highlighted that the software centric network was a big part of the statements he made about the adaptability and resiliency.

Mr. Donovan explained that software centric networks are what they often refer to in the industry as Software Defined Networks (SDN). He shared that SDNs kept business customers connected in a highly safe manner and added that even though a network is not designed for a pandemic, it turned out that when a network is built on software and open hardware specifications, it can be made ready for just about anything. He shared that this shift, as well as the increase in demand as high as 30% to 40%, and in some cases 50%, and the geographic shift from office centric to home centric environments for the better part of the working day, was really made possible by SDNs. He stated that a blog posted by the Chief Technology Officer (CTO) of AT&T, Mr. Andre Fuetsch, explains how AT&T's network transformation journey helped in this to seamlessly connect during this pandemic.

He shared that the reason he brought this up in connection to the pandemic was because their current study is on SDN. He shared that the SDN study is analyzing the impact of SDN on national security and emergency preparedness in particular as it relates to the supply chain risk, 5G, and other aspects of the Information and Communication Technologies (ICT) industry beyond just communications. He shared that they anticipate the study to be concluded in the late August timeframe.

He added that the NSTAC meeting last week also included a discussion of the U.S. government actions on 5G. He shared that they had a great panel discussion on that and that they received a status update on the ongoing development of the SDN work, as he had mentioned. He added that they evaluated two potential future projects. He shared that one of those projects was taking earlier work that the NSTAC had done on network resilience and communications infrastructure, and he shared that the previous update was much more around physical natural disasters and was

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a complete refresh in a world that has moved from wired to wireless and what this means for the emergency preparedness basis.

He said they felt like the study needed a refresh as it related to the interfaces with power and how they recover from power outages. He explained that the increasing role that apps play in communication, evacuations, and those sorts of things was another reason they felt they needed a refresh. He added that this was an agenda item well before the pandemic and when evaluating if they should update the work in light of their findings from the pandemic, they felt it was definitely necessary.

He then explained that the second study, intended to be a longer-term project, is ensuring trusted identities across the network, which is often referred to in the industry as moving from a “what” network to a “who” network. He stated that regarding the future side topics, the administration asked the NSTAC to move forward with the new study, refreshing those guidelines on network resilience. He shared that they expect to commence this study late this summer or early fall and that this will be more of a “speedboat” because it is a refresh. He shared that one of the things that the NSTAC is trying to do is align better with the administration to separate out a Moonshot Study that might take 18-months, to a Topic Area Study like SDN that they could fit into a year’s timeframe. They would still develop a comprehensive and thorough study, then look at “speedboats” that they can get done in a matter of a few months to get the clock-speed aligned to the administration's need for things like a refresh of the network resilience work.

Mr. Donovan concluded that he believed they were in good shape. He thought people had been really enthused about the work that they have, and he added that this pandemic certainly lit a fire under the sense of urgency for the two types of projects that they currently have on the front burner. He then thanked the NIAC for inviting him to speak today and shared that he was looking forward to listening in on the rest of the meeting. Ms. Lau thanked Mr. Donovan and shared that she could not say how many times the criticality of communications has come up in NIAC conversations and studies, adding how glad the NIAC was to be building a much closer working relationship with the NSTAC as they move forward. She shared that the NIAC also made a similar shift from the 18-month study to much shorter studies and that next on the agenda was, in fact, the follow-on analysis that the NSC asked the NIAC to do on their CICC study. She again thanked Mr. Donovan for joining today’s QBM.

**V. CRITICAL INFRASTRUCTURE
COMMAND CENTER (CICC)
FOLLOW-ANALYSIS UPDATE**

Rich Baich, Chief Information Security
Officer, AIG

Rick Ledgett, Senior Visiting Fellow, The
MITRE Corporation; Former Deputy Director,
National Security Agency (NSA)

Ms. Lau mentioned that before beginning the CICC discussion and turning the meeting over to Mr. Baich and Mr. Ledgett, who are the co-chairs to the working group, she wanted to share that they were a little late in distributing the minutes for the February and March QBMs. She let the NIAC members know that they should check their emails for those minutes. She added that they

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would take up the approval of those minutes at the end of the meeting today. She then turned the meeting over to Mr. Baich, who thanked her and wished everyone a good afternoon or evening, stating that they had a geographically diverse group. He expressed his excitement in sharing an update on the latest efforts that is focused on how to achieve functionality of the NIAC recommended CICC. Before starting, he wanted to thank his fellow working group members, co-chair Mr. Ledgett, Mr. William Fehrman, Mr. Michael Wallace, Ms. Ola Sage, and Mr. Kevin Morley.

He then asked for the presentation to be moved to Slide #2 and clarified that this should be the slide that says, "Agenda." He stated that they would be sharing with everyone some of the guidance they have received from the NSC on how they should approach this study. Afterwards, he outlined that they would review with the interviews they have conducted so far and outline their Next Steps. He concluded his introduction by stating they will hold a time for the NIAC members to ask questions.

He shared that he would like to provide a short overview of the CICC concept that they recommended in the 2019 *Transforming the U.S. Cyber Threat Partnership* study. He said that the NIAC recommended the creation of the CICC to improve real-time, bi-directional sharing and processing of private and public data, including classified information, between governments, intelligence analysts, cyber experts from various companies at great risk, and key government agencies. He added that the CICC is intended to be a tri-sector collaboration with a handful of identified companies from the energy, financial services, and the communication sectors.

He explained that company and government intelligence and cyber experts would be working side-by-side, 24/7, on a Watch Floor to receive cyber threat information in real-time, understanding the implications of the threats to specific company systems, validating the impact that threat would have on the critical infrastructure, and enabling company-specific and sector wide mitigation actions quickly. He explained that these actions can include actual intelligence but also innovations and actions that entities might take as a result of that intelligence. He went on to share that the participating companies would provide cleared personnel to work on the Watch Floor and that these individuals would have strong technical knowledge, plus a very strong understanding of the corporate enterprise that would allow them to understand or translate a specific type of cyber threat into the operational implications for a C-suite executive. He explained that the government intelligence offices that would be working at the CICC would be able to provide information on trends and national consequences of the identified cyber threats. He highlighted that they were not tied to the name CICC or even the mechanics of how it would work that had been laid out in the 2019 Report; rather, they are interested and focused on delivering the outcome that the CICC concept would achieve, which is what the NIAC is being asked to examine in this latest effort from the NSC.

He then handed the discussion over to Mr. Ledgett and asked for the presentation to be moved to Slide #3. Mr. Ledgett thanked Mr. Baich, Ms. Lau, and Director Krebs and shared that he was happy to be talking about this today. He shared that the NIAC had submitted the recommendations shown on the Slide entitled "NSC Guidance and Study Approach" to the

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White House in December, and in February, the NSC came back with guidance for the NIAC, stating that while there was interest and support for the CICC concept, they wanted additional detail in order to decide a path forward. He explained that the NIAC was asked to conduct a follow-on analysis to recommend to the federal government and to people within industry how to achieve the operational functionality of the CICC. He went on to share that, as part of the analysis, they were also asked to demonstrate the value the CICC would provide and any challenges that would need to be addressed. He said that the NSC specifically asked them to look at how the CICC would improve upon the type, speed, accessibility, and relevance of information and intelligence sharing between government and industry, existing government entities, programs, or initiatives that could be used to stand up the CICC and help accelerate limitations, the legal agreements required to implement the concept, and finally, how to identify and clear the appropriate staff to serve in the CICC.

He said that in response to this tasking, they formed a working group of six members, including the four NIAC members who developed the 2019 recommendations, which is conducting briefings with key organizations and interviews with senior leaders in government and industry to gather information on existing programs and efforts. He added that they are also supplementing the insights gathered in these interviews with in-depth research and, ultimately, they will have focused work sessions of the group, hopefully in person, but maybe virtually, to identify key themes and develop their recommendations. He then asked for the presentation slide entitled, "Working Group Members". He shared the list of the working group members and the excellent support that they have gotten from the NIAC Point-Of-Contacts (POCs), Mr. Samuel Chanoski and Mr. Charles Durant, and turned the discussion back over to Mr. Baich.

Mr. Baich asked for the presentation to be moved to the slide entitled "Interviews Conducted". He shared that there was a significant amount of information that they were trying to discover, as well as gain an in-depth understanding of how things have been working today. He shared that, as a result of this, the working group, to-date, has conducted eight different interviews and shared that these interviews were listed on the next two slides. He shared, as a reminder, that in the 2019 study, this study was happening in parallel with the Cyberspace Solarium Commission (CSC) efforts. He explained that they knew during that study there would be overlaps between their efforts and the synergies across these two different efforts. He shared that they spoke with the commissioner, the executive director, and the task force lead to better understand the commissioner's recommendations as well as the next steps and how to align these issues to the CICC concept.

He shared that they spoke to individuals at different organizations who were successfully conducting public and private intelligence-sharing, similar to what they had envisioned for the CICC. He spoke about the Kansas Intelligence Fusion Center (KIFC), which is at the state level, the Chief Executive Officer (CEO) of the United Kingdom (UK) National Cyber Security Centre (NCSC), and the heads of the Australian Cyber Security Centre (ACSC), which he shared were a few of the highlights. He stated that the insights they received from them have been extremely helpful. He then went on to the slide entitled "Interviews Conducted". He shared that as they began and continue to work on this study, they have spoken with representatives from many different federal entities who worked with the critical infrastructure sectors and share intelligence

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and these included the Assistant Director of the National Risk Management Center, the Chief of the Planning Grants for the Operational Collaboration Subdivision within the Cybersecurity Division at CISA, and the Bureau of Intelligence Council and Information Sharing Analysis Unit at the Federal Bureau of Investigation.

He concluded that these were just the initial interviews and that they plan to continue to engage experts as they move forward, learn more, and dig into their analysis. He shared that they always end their interviews by saying, "Is there somebody else or another group that you believe we should talk with as we expand our interviews to ensure we're getting a broad view of how today these efforts are being addressed, not only domestically, but as well as internationally?", and then he turned the discussion back over to Mr. Ledgett, who would be discussing their next steps.

Mr. Ledgett reiterated that they were continuing to conduct interviews and follow up conversations with those that they have already interviewed. He added that they were receiving briefings and were doing research. He shared that in the coming weeks the working group was scheduled to interview a representative from the Financial Systems Analysis and Resilience Center (FSARC) and representatives from the U.S. Coast Guard Intelligence, and then they are also looking at other organizations that they have not yet scheduled with but are reaching out to, which included the Director of National Intelligence, the Cyber Threat Intelligence Integration Center, the National Security Agency, U.S. Cyber Command Integrated Cyber Center, other state and local entities, and the Information Sharing and Analysis Centers (ISACs). He mentioned that they are developing a matrix that is designed to help them capture the information they were gathering about existing entities and how they align to what they envision for the CICC, and they thought that this would help them identify all the things that need to be done and provide a laydown and connection points going forward, helping them identify where they might need additional interviews and research.

He then paused to see if any of the other working group members had anything to add. Mr. Wallace stated that he wanted to echo a theme that they have had for quite a while, and which applies here, "the key to success is likely executive-driven, public-private partnership with executive engagement on both sides." Mr. Ledgett thanked Mr. Wallace, and then shared that they would move into a time for NIAC members to ask questions. He stated that he understood that Ms. Norris would be the interlocutor for those questions. Ms. Norris stated that no questions had been received, so Mr. Ledgett closed the discussion by stating that they were still at the beginning stages of this effort and they looked forward to providing the rest of NIAC with an update on their progress at the next NIAC meeting. He asked that if any NIAC member should have any thoughts between now and then that they feel free to send them Mr. Baich, himself, or Ms. Norris.

Ms. Lau thanked Mr. Baich, Mr. Ledgett, and all other Working Group members and added that they had quite a list of people that they were going speak with and that she was sure that the recommendations were going to be quite insightful. Director Krebs then asked if he could ask the Working Group question or two. He asked Mr. Baich and Mr. Ledgett if they had any immediate findings worth sharing from the interviews that they have conducted thus far. He shared that the reason he asked was because CISA was in the process of moving out on last year's study and had

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reshaped a number of the activities within the legacy in CICC spaces and are working through some planning within a collaboration zone. He added that this includes a physical facility while also sorting through the COVID-19 considerations and effects on the co-locations that they currently have. He concluded by sharing that they are looking to see if there is anything that the NIAC Working Group feels is important to share at this moment or if they should wait until the study has concluded.

Mr. Baich shared that one interesting thing that they have found was that there are different approaches to how the entities, as well as countries, are approaching this. He felt the benefit was that they were getting a consolidation of those efforts. He thought that the two things, right now, that were a little bit newer to the thought process was to not forget about including academia as a potential participant in the actual CICC itself and to value the university systems. He shared that the second thing he had found was that it was not merely about intelligence but also about providing solutions. He told Director Krebs that there was a lot of the intelligence that he had seen from CISA and, in combination with the bureau, and he felt the direction that they go should be very actionable. He said that the Center itself could also contribute through the finding of innovative solutions that then can be pushed out through the various members to address the intelligence, concluding that they could more than just report intelligence but could also have specific actions and innovations that the different sectors can take in order to mitigate those risks. He stated that these were two things that were standing out to him and really have not been talked about much in the past.

Mr. Ledgett shared that the actual intelligence was the key and added that, as Mr. Wallace had mentioned, the executive-driven public/private partnership was critical. He shared that all those successful efforts have senior leadership involvement and support and that he would not task someone who was a junior to go off and do something for this but would actually get the senior leadership involved in providing resources and priorities to the things that are going on. One other thing he shared was that when they talked to the UK's NCSC and Australia's ACSC, both successful, he saw that the NCSC was probably the most successful in the world right now at doing the public/private partnership. However, it was a very different situation there because they exist in a different legal regime, representing a smaller government, and a smaller nation. Even so, there were useful things they pulled out from those interviews, which have helped to shape and tailor to their unique situation.

Director Krebs stated that this was helpful and that Mr. Baich's point about doing something about the intelligence was a bit like the mantra that is stamped on his forehead, at least at this point within the organization. He said it was not merely being able to develop a situational awareness but really asking two key questions: 1) What does this actually mean? and 2) What are we going to do about it? He thanked them for that and shared that he thought the COVID-19 response conversation would help them get a little bit more flavor as to what they are doing in that "so what are we going to do about it" bucket.

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VI. COVID-19 PANDEMIC RECOVERY

Brian Cavanaugh, Special Assistant to the President and Senior Director for Resilience, National Security Council (NSC)

Chris Krebs, Director, Cybersecurity and Infrastructure Security Agency

Dr. Georges Benjamin, Executive Director, American Public Health Association

James Murren, Chair, Nevada Covid-19 Task Force

Joan McDonald, Director of Operations, Westchester County, NY

Chief Rhoda Mae Kerr, Fire Chief, Fort Lauderdale Fire Department

Ms. Lau then opened the COVID-19 Pandemic Recovery discussion. She shared that those attending had all the names of the speakers, so she would not specifically introduce them at this time and clarified that they would start the discussion with Mr. Brian Cavanaugh, Special Assistant to the President and Senior Director for Resilience at the NSC. Mr. Cavanaugh thanked Ms. Lau for the introduction. He then shared that he first wanted to thank the NIAC for everything that they have done and continue to do for the federal government, sharing that their work is proving to be an immense benefit.

He stated that he thought the COVID-19 Response and Recovery has posed some dynamic and interesting challenges from supply chains, which has exposed vulnerabilities that have been allowed to develop and grow over decades of economic ease over national security, to operational coordination challenges across all levels of government vertically across federal, state, local governments on a nationwide scale and horizontally across the various public sectors as they work from health and human services to Homeland Security to the Department of Defense (DoD). We have essentially seen challenges across all these different spectrums. He shared that situational awareness is something that they have discussed and mentioned that this event has proven to be beyond merely intelligence reporting and intelligence sharing, which they would elaborate on a little more in a moment. He shared that their response and recovery planning efforts had to evolve to support an event that was very fluid and geographically dispersed, and often the timing of where this event was popping up geographically presented challenges. He explained that this was not something that hit everyone all at once and was a very interesting dynamic space to work in.

He shared that creating public communications that span across all of these issues and ensuring the right message is getting out to everybody was important. He thought that the critical infrastructure world played a valuable role in sharing information up to the federal government,

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and he wanted to specifically thank CISA for the work that they were doing to identify key issues and in experimenting with stay-at-home orders and different shelter in place terminologies. He also highlighted guidance that CISA distributed to the critical workforce and shared that the NIAC and the various 16 sectors through their Sector Coordinating Councils (SCCs) were instrumental in providing the right feedback to the federal government to make sure they captured the various entities that were being impacted.

He shared that, as Dr. Nesheiwat alluded to on the White House Coronavirus Task Force, there is a whole government effort to address the global pandemic. He added that the nation's critical infrastructure sectors have been critical to the response and continue to be a key partner as they look to reopen the economy and kickstart the nation's economic drivers and the American way-of-life. He again stated that one of the challenges is the supply chain. He explained that one of the things they identified early on was the vulnerability that has evolved because the U.S. relies on critical components necessary for the American way-of-life but these components have been resourced out internationally and there is a heavy dependence on a handful of countries with very little diversity in offshoring. Looking through this and using tools that have not been used since World War II, such as the Defense Production Act, he thought that there had been a signal sent to those in the critical manufacturing sector that caused a bit of stress. He shared one of the things this administration took as a priority was not to position themselves to take over the private sector but to empower the private sector and protect its supply chain.

He shared that a lot of the Defense Production Act, Title I, or priority rated orders, were issued to ventilator manufacturers and PPE manufacturers. He added that this was not the U.S. government placing directive authorities on these entities but instead trying to work with them. He shared that they issued orders as people voluntarily asked for them to protect their supply chain and prioritize the order that they received their components and could complete their products. He added that, in regard to the ventilator efforts, they went from a nation that manufactured ventilators in the magnitude of tens of thousands, on the lower end, and that manufactured probably less than 20,000 a year, to a nation that manufactures 150,000 ventilators between now and September. He shared that they were able to ramp up production without having the U.S. government take over those capacities or facilities. He gave tremendous praise to the existing manufacturers in that space as well as the others that took the forward lean and got into the market, putting assembly lines that were not being utilized into work. He shared that they are taking lessons learned from the ventilator effort and applying that into Operation Warp Speed for the development of a vaccine.

He shared that one of the operational coordination challenges that the U.S. supply chain faced, which he was sure those in the NIAC and those in the private side had seen as well, was the different layers of government that had different authorities and control and the coordination in which it was implemented. He shared that the federal government sets a bigger picture and provides a lot of guidance, but it is up to the states in how they choose to implement those guidelines and they have much more flexibility to do so at that local level. However, he shared that one of the things that made the COVID-19 Pandemic different from other disasters was that the federal government was using the Department of Health and Human Services (HHS) as lead for it, which was not the go-to lead for run-of-the-mill disasters in the U.S. He shared that

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typically people would look to the Federal Emergency Management Agency (FEMA) during hurricane season, flooding, and other natural events, but this was the first nationwide effort where they had to have a HHS lead co-coordinate with FEMA and a mix of authorities from the federal government, which presented a few challenges. He shared that they were working through the states' rights and impacts, and he explained that when working with 56 different states, locals, tribal ways of doing businesses, there was a lot of learning on-the-fly.

He then discussed the critical workforce. He mentioned how he highlighted earlier about how proud they were with CISA's leadership to get guidance out to the states, and he felt that there was a unique opportunity for them to revisit this during an after-action with the sectors so that they can learn the various things that were encountered. For example, he mentioned having the energy sector explain they handled the essential workforce that ran the control systems, sharing that he had heard from countless members across the country on how people were basically living out of their control rooms and trying to stay healthy while still maintaining the grid, and he felt this would be an interesting space in which to learn. He shared about how the transportation sector has worked in the inner-city bus and inner-city rail to overcome the challenges that were in that space and to assess how to social distance in a pandemic and keep the workforce safe. He added that with the increase in remote working, there are inherent risks that may not be immediately identifiable but also that there are net positives, and they look forward to a conversation with everyone on what are the lessons learned in that space. He asked what pro's and con's there were and how could they address some of those con's and highlight some of the pro's that came out of these things.

Ms. Lau thanked Mr. Cavanaugh for sharing and told the NIAC members that there would be ongoing discussions about how the NIAC might help advise on these kinds of issues going forward. She then asked Director Krebs to share on this topic. Director Krebs shared that he already talked about the three core lines: understanding risk landscape, protecting the response, and securing the digital transformation, but he wanted to build on some of the things that Mr. Cavanaugh talked about. The first thing he wanted to discuss was the threat landscape, and he shared that they are seeing activity across three different areas. He stated that the first was that cybercriminals and scammers are taking advantage of the fact that not that everybody is in front of the computers and devices all the time now due to teleworking, but they are also hungry for more information, whether it's about testing, vaccines, or the economic impact statements funding, and they are seeing a significant increase there. He stated that it was interesting, on the phishing side, that almost uniformly across phishing activity as it stands right now there is some kind of COVID-19 theme. He stated that they have been working with their partners throughout the federal government, law enforcement, and the private sector to identify these scams, phishing campaigns, and some of the malicious domains that have been popping up across the internet and working to disrupt those activities. He shared that another thing they are seeing, and one that was recently issued with the Federal Bureau of Investigation (FBI), is foreign intelligence services targeting COVID-19 responses, which included vaccine development, which he shared was kind of like the race for Artificial Intelligence (AI) or the race for quantum, where whoever gets there first has the strategic national advantage.

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He clarified their approach does not treat this information as if it is classified, but instead, it is to help these organizations, as he mentioned previously, who a year ago were certainly important but not at the forefront of a national security initiative and making sure that they have resources available, information, and actionable intelligence, similar to what was discussed with the CICC, so that they can defend their networks from an availability and integrity perspective. He shared that the third piece to this is a steady-state operational activity of nation-state hackers out there. He stated that one interesting thing about a pandemic is that it is not just the good guys, the defenders, that have been rocked back a little bit, but it has also been the offensive capabilities that have had to take a pause and make sure that they have protected their national assets. He said that they anticipate a reemergence of more bad activity on the more operational offensive side.

He discussed the Essential Critical Workers List and what they did in the mid-March timeframe, he believed it was about March 16th or so, that gave them a pretty good sense of the number of states that were going to issue their stay-at-home or shelter-in-place orders. He added that they had a number of different conversations with groups, including the NIAC, on what they thought they could do to help inform some of these orders to ensure the critical functions and critical services continue. He shared that in a span of about 36 hours they had pulled together the first version of the Essential Critical Workers List that was not out of whole cloth but was built on the back of work that the National Risk Management Center (NRMC) had done over the course of the last year or so to identify the national critical functions. He shared that they had a good understanding of what the national infrastructure looked like, and as they talked to their international partners that have historically more tightly defined critical national infrastructures, having six, seven, or eight critical sectors, they, in their classically American approach to “go big or go home”, had 16, 17, 18 sectors. He shared that they have always been viewed as going too broad in their critical infrastructure but, in this event, it actually benefitted them because they had mass critical services and functions that are not necessarily in the electricity or telecommunications sectors. He stated that they had a broader understanding of how the economy worked and were able to pull together who those critical workers were in very rapid fashion.

He shared that they are currently on version 3.1 of this list and that over the course of the implementation they saw about 42 states issue some kind of stay-at-home order and, of those 42 states, 35 had incorporated the list either entirely or by reference. He stated that they thought they accomplished what they were trying to do, which was to provide guidance that was not compulsory or mandatory and to provide guidance and assistance to state and local partners while also trying to achieve some sort of common national approach for essential workers and, based on 75% of those that have issued state level orders, they used CISA’s guidance, which shows success there. He shared that Brookings conducted an analysis of the list and they pinned it somewhere around representing 35% to 42% of the national workforce, which from one view it may be too many but from another it may not be enough. He stated that they viewed it as showing that the interconnectedness of the American supply chain, the American just-in-time delivery services, lack of diversity. He added that when a person thinks about what it takes to get a pack of ground beef onto the grocery shelf, they will see that it is not just the rancher or the food processor but the distribution. He then added that it is the carbon dioxide, it is ethanol, and

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it is the gas stations and rest stops. He stated that distribution is the whole host of people that are involved in ensuring that the lights stay on, the water stays flowing out of the tap, and the food is on the shelf. He shared that, as Mr. Cavanaugh had mentioned, in their lessons learned and after action process they are going to continue collecting best practices, adding that this is not just about state and local.

He then shared an example of getting tires for his wife's truck. He stated that he was researching rebates available for various tires and noticed that one company, Firestone, was giving a \$75 rebate to any essential workers out there as defined by the cybersecurity and infrastructure security agency Essential Critical Infrastructure Workers (ECIW) list. He thought that was an interesting way of using the list. He then shared that he continues to encourage their partners out there in the private sector, state, and local to let them know how they have seen the list. He stated that there may be a way that they can prioritize testing, deployment of a vaccine, and distribution of PPE and cross-mapping. He emphasized that they want to make sure that they are using this not just for COVID-19 but also the next big event; for example, a hurricane, as the National Weather Service or Hurricane Center has released their forecast and it will be an unusually active hurricane season and they want to be ready for that. He shared that they have to understand how to respond to hurricanes in a COVID-19 environment and added that they have a good start with the list and will continue pushing that forward.

The last thing he wanted to touch on was disinformation. He shared that this is something they have been tracking from the start when there were some text messages floating around about how there was going to be a national lockdown and a state of martial law declared. He shared that they have been actively working with FEMA, HHS, Centers for Disease Control and Prevention (CDC) task force, DHS headquarters to make sure that they reinforce that trusted authoritative information is going to come through official channels, adding that this information is not going to come through a viral text from a brother, sister, husband, etc. He shared that they would keep taking lessons learned from here and also developing best practices for countering disinformation and this will help them as well for the 2020 election as they continue to see adversaries taking advantage of uncertain environments to push and promulgate their messaging. He then thanked Ms. Lau for the opportunity to give an idea to what they are doing and the opportunity to share some of the important work underway.

Ms. Lau thanked Director Krebs and told him that she always appreciated his comments. She also thanked him for calling the special QBM of the NIAC in March so that the NIAC could connect with Director Krebs and Assistant Director Robert Kolasky at NRMC to provide some of the inputs that informed some of CISA's COVID response effort. She stated that one of the hallmarks of NIAC is that they do cover all 16 or 17 sectors and some of the NIAC members are very involved on the front lines and they would like to hear from them. She shared that the members who would be sharing today were Dr. Georges Benjamin, Mr. James Murren, Ms. Joan McDonald, and Chief Rhoda Mae Kerr and stated that they would start with Dr. Benjamin from the Public Health side.

Dr. Benjamin told everyone that he would try to give a quick example through the health lens and reminded everyone that this was a new strain of a virus, which ultimately resulted in a brand

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new disease process. He added that what makes this a 100 year event is that the last time we had a really big new virus like this was in 1918 and both had the characterizations of being highly infectious and between 15% and 20% of the people that got the disease got very sick and many died. He shared that it was also important to emphasize this is contracted from people and the CDC put out a notice to remind people that this is not like the anthrax letter attacks where everyone had to worry about decontaminating buildings. He added that they do have to disinfect things that infected people have touched, but this is a disease that spreads person to person and that drives a lot of what has been done around this.

He stated that the fact was that for the first time this was a global outbreak and if the whole world used non-pharmacological intervention, such as physical distancing, i.e. stay-at-home orders, it would not just reduce the morbidity and mortality, but also protect the healthcare system as a critical infrastructure. He added that now that people are beginning to get their hands around that, they are beginning to rethink what they now need to do. He shared that classic public health practices, such as hand hygiene, hand sanitizer, putting on masks, when there are no therapeutic options, are really all a person can do.

He mentioned that Director Krebs had brought out the issue of misinformation and he wanted to expand on that a little bit and also add the clinical misinformation around things, for example there are flyers going around telling communities of color to not take the test because it will give them the disease, or people getting ahead of the anti-vaccine movement by telling other people to not take the vaccine when it is available. He shared that all of these things obviously are going to make the response much more difficult. He added that eventually they will have vaccines and antiviral agents but that will take some time, and shared that until then they are going to continue to have to manage this with the non-pharmacological interventions as they have been doing. He stated that this has an impact on all critical aspects of the infrastructure because of its impact on the workforce itself.

He said that Mr. Cavanaugh and Director Krebs had done a great job of discussing the critical infrastructure and critical issues and wanted to add a couple things. First, he shared that one of the things they needed to rethink is the just-in-time supply chain process, particularly within the healthcare industry. He explained that the fact that they have never had anything on a global scale like this has made it very difficult to get simple stuff like swabs, and he shared that the corollary to this is the *NIAC Surviving a Catastrophic Power Outage: How to Strengthen the Capabilities of the Nation* report that NIAC just did on a large scale power outage. He added that the corollary to this on the infectious disease side is this same thing because, when the NIAC did the power outage report, they discussed the challenges in bringing support systems in to re-power communities and these are similar corollaries for things around healthcare, where in a global environment, everyone is actively competing for resources.

He shared that the other thing that Director Krebs discussed was the issue of essential workers, and he stated that it was very clear that, at least in these scenarios, a whole new range of essential workers were coming forward, for example bus drivers, grocery store clerks, and Uber drivers. He stated that the fact that some people have a hybrid society where they have some businesses that are working and allowing others to drive-thru in order to maintain normal society and other

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businesses are closed down. He shared that they need to be thinking about what this means as they go forward, emphasizing that this will not be the last time that this is experienced and adding that, like hurricanes and tornadoes, people can always hope they are 100 year events, but they may very well not be. He thought there was importance in the speed and response, sharing that this results in a lot of 24/7, rapid decision making, which had to happen particularly as they learned more. He shared that one of the early decisions they made was to tell certain people to wear masks and as they received more knowledge about the disease process and how it was spread, they then spread that knowledge, which led to them telling everybody to wear a mask when they were out in public. He explained that there is a need to overly-communicate that so people understand why something was done and maintain trust.

He then shared that this went from what was an early traditional public healthcare response to a very dynamic healthcare response, and if it is going to get back to normal or a new normal, they are going to be reverting back to what was a more traditional shoe-leather public health response with testing, contact tracing, disease containment, which will occur until they get a vaccine. Even then they will have the onerous task of scaling up that vaccine production and getting shots in the arm. He said that this may not be only one shot, but it may be two shots in case of a need for a booster shot to make the vaccine more effective, but they do not know at the moment. He stated that they should not be thinking of this as only about getting one shot in the arm for 330 million people because they may have to double or triple the amount depending on what the vaccine formulation turns out to be.

Ms. Lau thanked Mr. Benjamin and told him that she appreciated his comments. She shared that many people have been watching Mr. Benjamin on television and that it was great to actually hear him during today's QBM. She also thanked him for referring to the *NIAC Surviving a Catastrophic Power Outage: How to Strengthen the Capabilities of the Nation* study and stated that the NIAC members always said it wasn't actually about the power outage but about all of the sectors that had to come together to keep the country going during such an event. She then asked Mr. Murren, who went from the hospitality industry to the chair of the Nevada COVID Task Force, to speak.

Mr. Murren thanked everyone for allowing him to spend a couple moments with them and shared that after 22 years at MGM, he retired and took on the chair of the Nevada COVID Task Force, which is a private sector response to this public health crisis. He shared that the idea around it was that a group of private sector individuals can probably move more rapidly to address some of the urgent needs of the State of Nevada, but he has learned that this could be scalable throughout the U.S. He shared that the first need they had was PPE, which was recently referenced with the just-in-time inventory environment and how this created a vast shortage of PPE. He added that in the case of Nevada, they were dramatically under-resourced and shared that they tapped into his former company, MGM, as well as Wynn and Sands, who have large operations in Macau, and used their procurement arms to buy relatively intelligently in China. He shared that they have had no instances of counterfeit PPE and have not been price gouged. He stated that they understand what the different products are worth and what it could cost, and in order to do that rapidly, they have raised \$12 million philanthropically, adding that they couldn't wait for the state or federal government to provide the funds to buy that PPE because a lot of

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those orders required 50% to 100% deposit in order to execute a purchase order (PO). He shared that they raised the money quickly and got the private sector to donate all the resources pro bono: legal, tax, community foundation efforts, and he shared that all of the money has gone to buying PPE. He was happy to share that they have gone from a shortage to now being ahead on that and anticipating a resurgence of cases as the economy opens up in Nevada and added that they are building up the inventory for the warehouses in Nevada of PPE, which is remarkable, and getting ready for the school season; as an example, they have just purchased millions of products for administrators and the Clark County School District.

He shared that the second thing they tackled was testing and mentioned that, in the State of Nevada, they learned that their diagnosis problem was because most of the tests were conducted in the state but processed out of state, which led to a 2 to 14 day turnaround time, which was unacceptable and almost useless in terms of its diagnostic capability. Another issue he shared was that most of the testing was being done on processors that could only process test kits that were manufactured by the same manufacturers. He shared that they tackled this by standing up two large throughput labs in the state, one in Las Vegas and one in Reno, using an open source processing platform and using thermal fissure processors because thermal fissure processors can test kits from a variety of manufacturers. He shared that they went from testing a couple hundred people a day to testing 5,000 to 10,000 people and added that they will be up to 30,000 tests by the end of June, stating that today they took over the Las Vegas Convention Center. He shared that, in conjunction with the Culinary Union, there were probably 7,000 or 8,000 at the Convention Center being Polymerase Chain Reaction (PCR) tested and said that this would go on for the next month and a half. He added that they are going to take this approach with virology tests as well, sharing that as they test more, the need for contact tracing becomes more acute and the manual methodology in Nevada needs to be enhanced.

He shared that it should be enhanced everywhere and to do this they have used a different enterprise within their task force to vet different contact tracing digital apps. He added that they have landed on one through the Apple and Google Stores and is being endorsed by the state, sharing that it will go online in a week to help supplement the manual contact tracing. He shared that his view on testing is at odds with many of the healthcare professionals that he has spoken to in his state and elsewhere. He felt that the view that testing was simply a response to a crisis was not correct. He thought that testing was an economic imperative and that there was no way that a state or federal economy could adequately restore its activity unless they improve consumer and business confidence. He shared that this can only occur, in his opinion, if they have more information, more testing, and more control on this virus and future viruses. He stated that it is an investment that Nevada is going to continue to make and that they will perpetually have high throughput labs in Nevada and will be able to digitally contact trace.

He shared that the fourth element he was working on now was how to reopen large scale venues, whether they were arenas, stadiums, large convention centers, casinos, big box hotels in a health environment and added that they were developing protocols with a variety of manufacturers to create a health passport, a protocol that starts with pre-opening these venues with cleaning and operations standard operation procedures (SOPs), as well as in terms of entrance control with thermal cameras, remote thermal imaging, contact tracing within venues. He added that they will

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be deployed on a fanless environment first. He then stated that next month, they were going to have Ultimate Fighting Championship (UFC) and boxing events in Las Vegas and, ultimately, team sports with the Women's National Basketball Association (WNBA), the National Basketball Association (NBA), National Hockey League (NHL) events, stating that they hope to get to a fan environment once they have more information in front of them.

He concluded by stating that he has learned that they can cut through a lot of bureaucracy at the state and federal level and that they do not have to go through the purchasing mechanisms that the state has to go through. He shared that they were able to buy intelligently and quickly, through raising money philanthropically and to leverage CARES dollars and other funding in a two to three multiple way. He added that they were able to get ahead of the line in terms of testing and PPE and what they learned was that the little State of Nevada does not want to be held hostage any longer to out-of-state labs, single source testing solutions, inadequate amount of supply inventory of PPE, or need to rely heavily on consumer confidence. He shared that they are a destination that needs to invest as much money in health infrastructure as they invest in stadiums joined with convention centers, theaters, etc. He added that this has been a learning experience and that they are still learning as they go. However, he shared that they took a little state and got them competitive nationwide, and he shared that what they have learned can be adopted in other states around the country.

Ms. Lau thanked Mr. Murren and joked that he did not stay retired for long. Mr. Murren replied that he really felt that this was what he needed to be doing for right now and that this was so squarely within the charter of this incredibly important NIAC commission, as the health infrastructure is something that people have taken for granted for too long. He stated that they were very lucky with Ebola, and he felt that this made people very complacent. He shared that a pandemic will happen again in some other form and people have to be aware of it. He stated that this is now a new way of life and shared that it was like how 9/11 didn't stop people from traveling but changed the way they traveled. He shared that this was not going to stop people's desires, willingness, or ability to consume entertainment at large scale, large human interaction, but that it has to change the way they do that, adding that health security is one of the new forms of changing the way they harden their perimeters around risk. He imagined that every single audit committee of every public company coming into this fall would have an enterprise risk discussion around health risk and that they were going to devote money to this as they did after Y2K, after 9/11, after the Great Recession, or after the cyber-attacks. He added that they are going to devote money toward this and that companies that get ahead of this will be vastly better off than the ones that don't. Ms. Lau thanked him again and turned the discussion over to Ms. McDonald.

Ms. McDonald stated that she was going to pick up on a couple of the points that have been made before her and get a little bit more granular on the county government level. She stated that most of her emergency response experience had been either in the weather or power related arenas of Superstorm Sandy, Hurricane Irene, Tropical Storm Lee, and snowstorms. She then explained that what made Westchester County somewhat unique was that they had Index Patient Number 1 in New York State on March 3, which was when she was still in Hawaii after the NIAC's February QBM and shared that she was involved in a lot of conference calls at the end

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of her vacation because they immediately stood-up an emergency operations center (EOC). She shared that one of the lessons that they learned and are still learning is how important it is to have the human infrastructure in place to respond to an emergency in a situation. She shared that, similarly to what Mr. Cavanaugh said, traditionally, their emergency management department leads all of the emergency response but that they had to set up co-leads with their Public Health Commissioner and their Emergency Response Commissioner at their EOC. She shared that they also set up a satellite EOC at their Health Department's lab, which consisted of public health nurses, epidemiologists, and statisticians, so that they could start to track and see how things moved forward on the day-to-day health side.

She stated that what immediately became clear was that, unlike other situations that they have been involved in, there was no end date to the response. She explained that normally they would have a three to five day weather event that they were responding to and then go into recovery but that this event's response and recovery was ongoing, which was a new thing. She shared that their guiding star has been the CDC and their guidelines because even though the identity of Index Patient 1 was confidential, it was in the City of New Rochelle. She shared that Index Patient 1 had been at a synagogue and went to a wedding, to a funeral, and to weekend services. She explained that they were very concerned that there was going to be a stampede for testing and being able to follow those CDC guidelines regarding asymptomatic, symptomatic, and how to do the contact tracing was critical for them in the early stages and throughout, adding that they assessed the different roles of federal, state, and local government.

She mentioned that another issue that Mr. Cavanaugh and Director Krebs discussed was the differing roles of government and the levels. She shared that New York on about March 12, Governor Cuomo issued EO 20.1, which defined the state powers and also stated that the state powers superseded all local government powers and duties. She explained that on the county level, to which there are 57 counties, plus the five boroughs in New York State, all had to follow whatever guidance and directions the governor put out, which did make it easier when they were responding to a lot of the questions. She echoed what Dr. Benjamin said, which was that just-in-time delivery of PPE has hurt governments, hospitals, and healthcare facilities. She emphasized that this was something they need to take a look at. She shared that they developed plans that they never thought they would have to develop and, as a county, worked with their school districts to develop a childcare plan and shared that the priority was healthcare workers, first responders, and essential employees, adding that as others have said, this includes essential employees in supermarkets, in the healthcare facilities, and in public transportation. She added that these essential employees were the top priority for setting up childcare facilities. She shared that the governor mandated that every public school had to set up a childcare facility and a food distribution program, which they coordinated with the schools. She explained that food distribution, as well as the power and the great support of their not-for-profits, aided them in getting food distribution out to their Uber and Lyft drivers, who helped developed those plans for food distribution, which was very important.

She shared that one thing that she never thought she would ever have to think about was a fatality management plan. She shared that the week before Easter and Passover was when their county was still up on the number of deaths, and she explained that their hospitals, hospital

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morgues, and funeral home morgues were overwhelmed. She stated that they had to work with their state's emergency services and develop a fatality management plan, which they did, and it is still in place. She added that she was fortunate to have a great commissioner who said that they have to think about it as a logistics exercise and deal with the human aspect of it as well. She had to consider how to deal with government and government employees and how they identify what an essential employee was and what a non-essential employee was, as others have said, and she shared that having a terrific Internet Technology (IT) department was worth every penny they have paid them because getting people equipped with laptops so they could telework, looking at alternate days of coming into the offices, and using their cleaning companies, their cleaning staff, their vendors to deal with all of the cleaning that they had to do in their public buildings was crucial.

She shared that they are in the re-opening phase in the way the governor laid out from a statewide basis, explaining that the state is divided into ten economic development regions and those are how the decisions are made regarding the reopening. She shared that seven of the ten are open but that her region was not yet. She explained that there are seven metrics that need to be met in order to reopen and that her region has met five of the seven, adding that they are very close. She then explained that once those seven metrics have been met the businesses go into a phased re-opening, echoing the sentiment that Mr. Murren had made about the need for people to have the confidence that they can go back out and be safe and healthy. She said that they endorse the phased approach for re-opening and that they were developing a very aggressive contact tracing program, adding that a lot of these public employees in the county will be doing the actual contact tracing and that they are getting them trained through a partnership with Bloomberg Philanthropies and Johns Hopkins, which will take up a big piece of their time going forward.

She shared that she had a couple of points that she wanted to quickly touch on before she closed, that these are things that they have experienced before but are now at a greater magnitude. She mentioned that first, they were dealing with a longer situation and the impact that it has had on employee burnout and mental stress. She talked about the fatality management plan and on how the county executive, their commissioner of health, spent two hours with the body handlers from their county's morgue who knew their jobs were important but were concerned that they were bringing the disease home to their families. She shared that they set up a special mental health response team to support them. She said that they have new and non-traditional partners, explaining that, in a weather event, the traditional partners are public utilities, transportation, and the business community, but not so much hospitals, nursing homes, not-for-profits, funeral homes, food pantries, restaurants, hotel associations, and now they are working with all of those different organizations and communicating with everybody, adding that all involved in this start their day talking and end their day talking. She noted that by nine o'clock, when the last conference call was over, she did not feel like talking to anybody but that she thought communicating was key.

She stated that when there is a will, there is a way and that people do come together. She said that they were very grateful to the federal government in supplying the ventilators and in supplying the PPE, and she gave special recognition to the Army Corps of Engineers who came

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into their county center, which was a 4000 seat small arena, and helped to make it a 110 person hospital, sharing that this is not merely with curtains but that there are 54 hospital rooms within the county center that have ceilings, walls, doors, and then there are four tents outfitted the same way, sharing that this was built in three weeks. She shared that people want to have something done, it can be done, and it did not have to be used for COVID-19 but is being used to do the antibody tracing and any additional testing that they need. She concluded that a lot more will be written as they go forward, and she agreed with Mr. Murren that this is the most important thing that they are all working on right now.

Ms. Lau thanked Ms. McDonald and shared that since they were running a little behind on time they would transition straight over to Chief Kerr. Chief Kerr thanked everyone for including her on the topic and stated that she wanted to share some initial thoughts before she got started, stating that she would try to be quick to catch them up on time. She enjoyed hearing from a state level perspective from Nevada, which made her wish that she had Mr. Murren there with her in the state of Florida, with his philanthropy and bypassing all of the challenges that they have had in procurement, and hearing from Ms. McDonald's county perspective, especially in a national hotbed. She shared that the City of Fort Lauderdale resides in Broward County, Broward and Palm Beach, and Dade County and had the highest number of cases in the whole state. She said that the state had around 48,000 cases to date and of those cases at least half were in these three counties, adding that this had been a busy couple of months.

She explained that Fort Lauderdale is a city of about 190,000 permanent residents but that it is also a county seat, a popular tourist destination, and a home to many snowbirds. She added that when the coronavirus started to spread, and they started to act, they had been right in the middle of Spring Break and their beaches were packed. She shared that part of their action was to shut down the beaches, but that meant getting 30,000 college students off of them. She stated that the city has 165 miles of waterways, as it is the Venice of America, sharing that they are bound on the east side by the Atlantic Ocean and have a total land mass of only 34.7 square miles. She then shared a little bit about Fort Lauderdale Fire Rescue and some of their challenges and said that they are multi-hazard response agency, providing Emergency Medical Services (EMS) and transport through the Fire Department, and she shared that the Ocean Rescue Lifeguards are also part of her Fire Rescue Department. She stated that they have annual calls that consist of about 58,000 incidents, with 412 sworn, and she shared that all of their 56 Ocean Rescue Lifeguards are either paramedics or Emergency Medical Technicians (EMTs) and added that they make good use of those who work on the beach.

She shared that on January 31st, 2020, they received an alert from the Florida Department of Health containing guidance on the COVID-19 outbreak, and on February 5th, they updated the protocols in their dispatch center to include a questionnaire to callers about COVID-19, sharing that there was a breakdown in communications from that dispatch and they were sending units out on a call that had not been properly questioned, which lead to them walking into a situation where the patient was probably a COVID-19 patient. She shared that they implemented protocols that started to protect their firefighters and medics. She stated that before they would enter into a building, they would try to have someone come to the door and would question them. She explained that if someone called because they fell and broke their arm, but if they fell and broke

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their arm because they were coughing and became faint, they could have COVID-19 symptoms that got ignored in the questioning from the dispatch center, and she shared that they want to eliminate this risk by making sure to ask some questions when they arrive. She then shared that on March 1st, the governor declared a public health emergency; on March 6, they issued a COVID-19 protocol for all EMS responses; and on March 9, a state of emergency was declared by the governor and they put together a COVID-19 team that would address all areas of concern and who assigned work to team members daily.

She shared that they created a research team that worked on assessing mask types and their efficacy and did test methods on serology versus the PCR. She stated that they had policy development to meet the changing environment and for sanitizing methods and at the same time they added an infectious disease officer who managed all personnel on sick calls, all testing schedules, when personnel could return to work after quarantine, who needed to be in isolation, and the outcome of suspected COVID-19 positive transports. She shared that they worked with the state on adult living facilities (ALFs) and skilled nursing facilities, and then they had a large number of cases in two of those, worked with the state, and were able to send in an incident management team and get these facilities to use proper PPE, separate positive residents from non-positive residents, and stop the spread in these facilities, in the city, and throughout the county.

She then shared that on March 16 they had their first positive patient that was ascertained by the hospital and within the next ten days they were quite busy with the state Incident Management Teams (IMTs) and with the hospital trying to determine their next steps. She shared that on March 20 they issued a process where they logged the use of N95 masks for the responders, explaining that there was such a shortage of masks that they were logging them on brown paper bags and the mask went back in those bags after each call. She shared that it was at a critical juncture, and then their Public Works department and their Parks and Recreation department built Ultraviolet C (UVC) boxes and they started to sanitize their N95 masks, sharing that every single fire station had a sanitizing box that extended the wear of their N95 masks. She explained that this gave them some breathing room until they could improve the supply chain and added that the City Procurement has worked tirelessly to find PPE and they were buying supplies from Home Depot, Lowe's, paint stores, and ACE Hardware, sharing that it was a pretty intense time at the very beginning. She stated that they also implemented a system that would sanitize their units using ozone technology, explaining that it takes 20 minutes to sanitize the whole inside of the transport vehicle, or what they would call a rescue truck, and that they can sanitize the stretcher, putting their gear and equipment in there and everything will get sanitized within that 20 minutes. She shared that they previously were using an electrostatic method, which relied upon a scarce consumable product, which was another thing that they were having a hard time obtaining in their supply chain.

She shared that her Fire Logistics Office became the lead and responsible for warehousing PPE for the entire city, which even included picking up supplies from the state through the county and delivering them to the ALFs and the skilled nursing facilities. She then shared that they also took the lead in setting up the testing site in the city and are still maintaining the communication and responsibilities for that testing site. She shared that one of the challenges was the lack of

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equipment in parks that are critical to their operations, explaining that this has a lot to do with supply chain. She said that an example of this was the mobile compressor that fills self-contained breathing apparatus bottles on incident scenes, explaining that it was out of service for two weeks because they could not get the parts because the parts were hard to come by, and they were recently able to get that done.

She stated that communications with and getting data to the workforce was so important, as was previously mentioned. She mentioned that they have a Fire Analyst that has created some fabulous dashboards that allow them to communicate information and is available for every single firefighter and Ocean Rescue lifeguard in the department. She added that they have been dispatched to 701 calls exhibiting signs and symptoms of COVID-19, but now that the curve is starting to flatten out and they are not entirely focused on procurement response and adapting to this rapidly changing environment. She indicated that they are entering into a research project with the Gordon School of Research, at the University of Miami's Leonard M. Miller School of Medicine on a project called Firefighter Tracking Resources and Assessment of COVID-19 Epidemiology (FTRACE). She shared that they are going to test all of their firefighters and Ocean Rescue lifeguards using the serological blood antibody testing which will identify those with the antibody in either the acute phase or the later stages. Then, she shared, they can use this data to either test further, or with the PCR testing, or if they have antibodies, they will be able to possibly place those individuals into one of their cluster areas, where they have high COVID-19 cases. She shared that they are going to use the data for personnel management, work or no-work, status, and to assess return to work and the appropriate policy procedure development. She shared that it was important to note that this is not a onetime test and that have purchased 2000 test kits to do this process, explaining that this is the start and there will be initial and continued screening. She said that the whole idea is that it is not only part of their medical surveillance program but also part of the research for the University of Miami, and she added that it will be a national research program and have a lot to do with the contact tracing, how long the antibodies last, and how effective are they within an individual.

She shared that Monday was the first day that the city began phase one of re-opening. She thought that the hardest challenge they had was that there was not enough collaboration from city to city, explaining that they have a city about 15 miles north of them and this city does not have any requirements on wearing facemasks, which means that everyone can go there, walks around, and do what they want, go to restaurants and to bars without facemasks on, and then come back as asymptomatic COVID-19 positive, spreading the disease. She emphasized that these were some of their challenges, adding that she went through very quickly because she knew they had limited time and needed to cut off at four o'clock.

Ms. Lau thanked Chief Kerr and thanked all of the commenters for this portion of the agenda, adding that they have captured a very rich discussion and that she knew if she opened it up for questions and answers now that it would take the rest of the time. She stated that they would move on to the next panel but noted that Mr. Cavanaugh and Dr. Nesheiwat have discussed with the NIAC about a tasking they would like the council to do post-pandemic.

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VII. WORKFORCE PANEL DISCUSSION AND Q&A

Dr. Beverly A. Scott, NIAC Vice Chair

Dr. Ed Canuel, Director, Critical
Infrastructure, National Security Council

Jack Clark, Executive Director, Transportation
Learning Center

Michael A. Innocenzo, President and CEO,
PECO

Chad Weikel, Education and Workforce Manager,
American Water Works Association (AWWA)

Ms. Lau transitioned to the last topic, which was the panel discussion on the new workforce tasking that they received, and she turned the meeting over to the NIAC Co-chair, Dr. Scott. Dr. Scott thanked Ms. Lau and said that she would be moving quickly as to be respectful of everyone attending the QBM, adding that she thought it was clear that everyone was engaged in one way or another and was supporting the national, state, and local response toward COVID-19. She shared that she was delighted to be joined by Dr. Ed Canuel, who is the Director of Critical Infrastructure with the NSC and who was going to be talking about exactly what the framing was when looking at workforce. She added that she was thrilled to have Ms. Jan Allman join her as co-chair of this tasking.

She then provided some context. She shared that the last NIAC study that was really done on workforce was about a decade old and added that virtually every NIAC report during her years on the Council has included important insights regarding the criticality of people-readiness in the critical infrastructure sectors. She explained that this tasking was not driven by the pandemic and that workforce had come up as one of the top five issues in almost everything that they had reviewed during her time on the NIAC. She shared that this tasking will be informed by current recovery and re-opening work that is underway but there are still scripts being written and they do not want to be premature in any way, in terms of trying to make that become the predominant focus. She shared that, from her perspective, this is not a traditional workforce review but one that they are going to try to unpack, adding that everyone says that people are the greatest resource, and she added that it was almost cliché but that they are taking it from a topside focus on ensuring national security and defense and what this mean from a strategic, intentional, “what do we need to do better and more of” perspective. She shared that she applauded the American workforce and added that if anything has shown their caring commitment, creativity, and resilience it was this period. With that, she asked Dr. Canuel to give the perspective on this tasking and then mentioned that she would move forward with the panelist discussion.

Dr. Canuel thanked Dr. Scott and shared they could not emphasize enough the crucial importance of a strong workforce in protecting the homeland. He stated that they must have deep, continued workforce coverage to guarantee that their critical infrastructure assets operate effectively and reliably despite whatever threats they face, whether it be, as they heard today, the

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COVID-19 pandemic or an earthquake, a flood, or a foreign adversary. He stated that the administration continues to recognize the key role that a talented, robust workforce plays in their collective security. For example, he shared that the national security strategy focuses on developing and maintaining a skilled workforce, which is a vital element of national economic security. The National Counterintelligence Strategy also emphasizes the necessity of training and retaining critical infrastructure experts to provide increased threat awareness and information sharing all while developing a workforce capable of even more agile responses than foreign intelligence threat. He shared that this brought them to the panel. He stated that they are learning through experts who walk the talk and that their discussion will strongly contribute to the development of the next NIAC study: Workforce and Talent Management. He explained that study will consider a host of central related issues, including ensuring that workers have the needed skills to operate, repair, or restore infrastructure in emergencies and non-emergencies; identifying, and ultimately plugging, workforce training gaps and analyzing how all stakeholders, including those in the private and public sectors, can better work together to meet the workforce needs of today and tomorrow. He deeply thanked the NIAC members for accepting this new study challenge and thanked the panelist, Mr. Jack Clark, Mr. Michael Innocenzo, Mr. Chad Weikel, for sharing their knowledge and experience.

Dr. Scott thanked Dr. Canuel and shared that it gave her great pleasure to have these three panelists joined them, adding that they are from three of the four critical lifeline sectors. She stated that there are 16 critical infrastructure sectors and it has been emphasized how critical every one of them are. She then shared that she was going to make the introductions and then each panelist would have about a minute or minute and a half to share their perspectives on four questions – including a quick topside overview of the dimensions, size, and particularly critical workforce challenges facing their sector. She wanted to make sure everyone knew that several of the panelists had prepared backup information and everyone would receive that, sharing that some of the information had already been provided to them. She applauded the NIAC members who have approached them and shared interest in being part of this Working Group. She also shared that for the NIAC members, the Working Group would be assembling a Study Group and asked the Council members to share their recommendations about who could potentially be a study group participant on this particular work.

She then began the introductions with Mr. Clark, adding that she has worked with him for 20 years. She shared that he is the Director of the Transportation Learning Center, which is the only national labor management consortium with a particular focus on frontline workforce issues in the transportation sector. She stated that they were pleased to have Mr. Clark on this panel and that he would be speaking on some of the work and the demographics in the transportation sector. She then introduced Mr. Innocenzo on the panel and shared that he is the President and CEO of Philadelphia Electric Company, which has about 1.6 million electric customers and about another 550,000 natural gas customers, sharing that he also served as part of the Edison Electric Institute's Workshop, where there is a real focused look on reskilling gaps and enhancing science, technology, engineering, and mathematics (STEM) and vocational education with a particular focus on the energy sector. She then shared that Mr. Weikel is the head of education and workforce management within the American Water Works Association (AWWA), an association that represents about 80% of the nation's drinking water and about 50% of those

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involved in wastewater. She concluded that they have a strong group on the panel and that they were delighted to have their participation. She then instructed that Mr. Clark would start, followed by Mr. Innocenzo, then Mr. Weikel, and back to Dr. Canuel or her for the next question.

Mr. Clark thanked Dr. Scott and clarified that she only wanted him to speak for a minute to a minute and a half. Dr. Scott confirmed he was correct, and Mr. Clark began. He shared that he had sent Ms. Norris, prior to this QBM, a very extensive PowerPoint, which gave a lot of background, but that he was not going to refer to that PowerPoint, as he expected that a lot of people had already looked at it. For those who have not, it may be worth looking at afterwards because it had a lot of rich detail. He stated that, broadly in terms of workforce, he could speak to public transportation, sharing that he thought across the infrastructure sectors it was hard to fill a frontline job because it was a challenge to find the appropriate people who have the necessary skills. He said it was also true that his workforce is older, whiter, more male, and less diverse in general than the overall workforce, which presents a problem but also a potential opportunity. He explained that they have done a lot of work over a lot of years, and as Dr. Scott indicated they have worked together for about 20 years. They have tried to get the frontline workforce and management working together and build shop floor to top floor partnerships. He stated that they have tried to work on database solutions where real, jointly-owned information drives decision making and shared that things like skills gap analyses, standards for training, development of full range of courseware, and apprenticeships are a very big element for their work and for the future of workforce. He then paused for anyone who might have a question.

Dr. Scott shared that Mr. Terry Boston had a question and asked if he would like to ask the question at that moment or wait until all of the panelists had spoken. Mr. Boston shared that his questions would be better at the very end because it tied all three subjects together and, if time permitted, would be best at the end of the panel. Dr. Scott thanked Mr. Boston and then asked Mr. Innocenzo to provide his opening comments. Mr. Innocenzo thanked Dr. Scott and shared some background on their initiative. He stated that he was the President and CEO of PECO, sharing that this is part of the Exelon family of companies, which also includes Commonwealth Edison, Baltimore Gas & Electric, and Potomac Electric Power Company, and represent four of the largest cities in the U.S.: Chicago, Baltimore, Philadelphia, and Washington. He shared that, as Dr. Scott had mentioned, the Edison Electric Institute has an initiative around workforce development, and he wanted to quickly discuss the problem statement and how they are thinking about it.

He said that the energy industry sees a lot of growth in infrastructure investment, whether it is modernization of the grid or the addition of renewables that requires additional transmission investments or resilience. He explained that when natural disasters occur, whether hurricanes, flooding, or wildfires, they all require a different expectation of grid resilience, as well as cyber and physical security. All of those things are driving significant investment, more than they have ever seen in his 30 year career in this industry. He shared that they have, similarly to what Mr. Clark mentioned, tremendous opportunities in the workforce, whether it is the need to replenish an aging workforce or the opportunity for diversity and inclusion. He mentioned that they typically have a white male workforce but they are growing, which means that this is a

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tremendous opportunity to tap into probably underutilized workforces, including underserved communities, or whether it is women in the trades, or communities that are dealing with significant inequity and poverty levels. They view this when they talk about the physical security of the grid but also when they discuss the economic security and the opportunity that they have to provide the jobs that they are describing. He shared that these trade jobs can be family and life changing.

He mentioned that they approach this three different ways, organized around STEM. He shared that the first one was STEM and vocational education, making sure children are aware of and have the background skill sets to be successful in these jobs because even though they do not require all college degrees, they all require some understanding of science, math, technology, and technical skill. He shared that they have also worked on a pillar that is called *Creating Job Opportunities Through Partnerships and Coalition* and have found that there are lots of partners out there that can help them with skill building, whether it is the cities they operate in, colleges and universities, or high schools or school districts, significantly from the non-profit community. He added that the non-profit community is often focused on providing products or services for underserved communities when the best thing they can do is provide those job opportunities. He shared that the last one was identifying and eliminating barriers. He explained that it is not as easy as just going out to a job fair or putting applications out there for people to apply for jobs, because there is plenty of those out there. He added that there are often barriers, whether it is their technical training for the high schools, whether it is understanding what the job's about, whether it is driver's licenses or family care issues. He shared that sometimes there are known barriers and sometimes there are underlying barriers that they have to peel apart and work with community partners to understand, adding that they are trying to attack these with those three pillars. He said that the only thing was that this was all launched before COVID-19 and the current pandemic has heightened the importance of what they are doing, both the importance of the infrastructure and the opportunity, sharing that infrastructure investment presents opportunities for economic recovery.

Mr. Weikel thanked Dr. Scott and shared that he was the Education and Workforce Manager for AWWA and wanted to start by thanking the NIAC for involving the water sector in this critical discussion. He added that he had about 20 minutes of material to cover in about 90 seconds and began. He shared that they have a number of workforce issues that they are facing, such as operator certification, licensure, and lack of standardization and reciprocity, which is one that he was going to focus on shortly. He stated that a couple of the other factors were that they have an aging workforce, which impacts knowledge retention as well as succession planning and hinders their ability to recruit and retain a highly skilled workforce. He explained that they have a big emerging issue with cyber security, noting that he knew they were not the only ones, and added that a lot of their utilities cannot or will not pay the market rate for IT staff. He shared that they have inconsistent, uneven pathways to enter the water trades, and that has impacted training apprenticeships and vocational educational opportunities. He added that they do not have a diverse enough workforce and need to establish community partnerships to fix that.

He shared that they need more tools and resource sharing; for example, he stated that things like workforce strategic planning, knowledge transfer, community partnerships, and, sharing that he

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knew they were going to get into this in the questions, facing a digitization and automation of the workforce, adding that there is a skill and knowledge deficit around that. He shared that the focused issue he wanted to spend a minute talking about, which he felt was the greatest threat and the biggest opportunity to improve the water workforce resilience, was standardization and reciprocity of operator certification and licensure. He told Dr. Scott that this effort is to increase that standardization and reciprocity for the state and territories as well as tribal nations, but he shared that the problem is that there are more than 50 different programs for operator certification and licensure. He explained that there are lots of similarities between those programs, but they also have some critical differences and that someone needs to know that the criteria are different from state to state, impacting the different exams that operators face.

He shared that states differ in how they classify systems, in continuing education requirements, and in final reciprocity policies, adding that the impact of this problem is that there are barriers for operators to move from state to state or territory to territory. He shared that there are also barriers to help during emergencies, such as natural disasters or contamination events. Other impacts are unclear pathways to join the water workforce, which makes it difficult for them to recruit and results in varying levels of quality and effectiveness of operator training. He thought that the real key of this issue was that they lacked the ability to pool their resources, sharing that there are more than 50 different programs and a lot more than that in different training programs. He told everyone to imagine if they had the ability to pool all those different resources into one high quality and highly effective training program: this is what the solution looks like, increasing the standardization of operations certification and licensures to states, territories, and tribal nations. He added that the benefits are increased reciprocity, quality, effectiveness, and accessibility, which is a key part of that operator training.

He shared that they had a lot of efforts to date: The Water Environment Federation, AWWA, and the Association of Boards of Certification (ABC), who manage the certification exam are taking the lead on this. He added that they also have a secondary set of stakeholders, which are the Association of State Drinking Water Administrators (ASDWA), National Association of Clean Water Administrators (ACWA), Environmental Protection Agency (EPA), their section, the member associations, their chapters, Rural Community Assistance Partnership (RCAP), and National Rural Water Association (NRWA). He discussed how they have identified the benefits and drawbacks of increased standardization reciprocity and have also identified the solutions and challenges. He stated that they see the clear methods to proceed and have identified some challenges that they are going to face. The next steps are surveying states to identify early adopters and then formalizing that cohort group to move forward and to try to get those mid and late adopters on board at a later time. He stated that they also need to capture solutions from other sectors. He shared that he has learned a lot from Mr. Clark and his Deputy Director, Ms. Xing Wang, through the success that they had in the transportation industry, and he thought they could replicate a lot of those great lessons learned in the water sector.

He stated that there are other sectors that have had success, for instance pharmacists and nurses, and they want to take those great ideas and implement those into the water sector. He added that they have a limiting factor, which is that they do not have enough stakeholder capacity to take this effort on. However, he mentioned that there have been discussions going on for years and

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now that they have some momentum behind it, he felt they needed to move from design and research into implementation and needed more capacity for that. He then explained that the federal role is to support their effort and help them increase connections to other solutions. He shared that the Department of Labor has tried to connect them to other successful programs and industries, but also felt that there was an opportunity for more funding to stand up more program management and administration of this effort, and, ultimately, an operator certification training program.

Dr. Scott thanked Mr. Weikel and said that his discussion was great. She told Dr. Canuel to begin with the first question and then she would follow with the next. Dr. Canuel asked the panelists what the biggest technology or operational changes impacting their workforce were and asked if they could also touch upon the impact of COVID-19, stating that they would start with Mr. Clark. Mr. Clark shared that he would start with the COVID-19 part of that question, stating that, for public transportation, the biggest challenge remains basic safety. He shared that the toll of operator sickness and death has been appalling and shared that in New York City the Transport Workers Union has pointed out that the incidence of COVID-19 infection and death among transit workers outstrips fire fighters, EMS, and the police department combined. He shared that this is a real crisis situation and that the Amalgamated Transit Union has come up with plans that have yet to be implemented anywhere but would involve securing the operator compartment so that there is some protection and a safe space, but also changing the Heating, Ventilation and Air Conditioning (HVAC) system and airflow on buses, which he thinks is even more urgent on trains. He shared that no one can get past any of the workflow issues if people think they are risking their lives coming to work every day. It has affected the mechanics and other workers but hit the operatives hardest.

He shared that transportation has a lot of technical challenges. He added that one challenge that they have focused a lot on recently, which is a leading edge question and going to be similar within a lot of other infrastructure sectors, is that there are increasing mandates for zero-emission buses, especially in California and New York, although there are a lot of discussions about fuel cell buses coming down the line. He shared that the current transit and maintenance workforce is not ready to handle fully electric buses, and the timeline now for places that are using the electric buses to have a small cadre of specialists who are sharp on electronics is short. He added that they know how to do it, but that the cohort of specialists is too small to handle a double, tripling, and quadrupling of the electric bus fleet, which is coming pretty quickly. He shared that they are looking at ways to try to expand the skillset rapidly and are working on an online course that major battery electric bus manufacturers are helping put together that will provide a basic familiarization in one three- to two-hour session.

Dr. Canuel thanked Mr. Clark and then asked Mr. Innocenzo the same question. Mr. Innocenzo shared that the answer for them is not all that different than what Mr. Clark described. The electrification of the transportation sector is a technological shift that is driving and changing infrastructures, or rather is changing the grid. He shared that the introduction of renewables and the introduction of distributed automation and generation takes the same grids that have served us for 100s of years, and makes how they operate and are monitored a much higher technical level, making it much more challenging than ever before. He shared that from a technological

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change, he would say that a workforce has the ability to handle that higher focus and added that they may still be putting poles in the ground and wires in the air, but there's a lot more focus on high tech tools and equipment. He shared that STEM education was another challenge for them because there has been the de-emphasis on the trades within schools. He explained that they do not see as much of a pool of people at the high school level who have a good trade background but that they could always be trained on the technology if they had some backbone in trade skills. He stated that because they have seen this de-emphasis it has created a challenge for them finding necessary skills within the workforce.

Dr. Canuel then asked Mr. Weikel to share his thoughts. Mr. Weikel stated that he agreed with both Mr. Clark and Mr. Innocenzo with the de-emphasis of trades. He shared that a couple of the technology operational changes impacting the water sector was the increase in digitization and automation of operation. He shared that he is an education and a workforce manager and believes the solution is training, and feels that a critical piece of this is to increase training resources and accessibility to that training to equip the workforce to meet the needs of the increased digitization and automation. He shared that the more that they could increase the standardization of operator certification and licensure, the more they could pool those resources for some of these other emerging issues and critical pieces. He added that another operational change that the water sector faces are the new and emerging contaminants, stating that the solutions there are to increase the amount of research going into effective solutions and delivering those solutions through effective and high quality training.

He shared that they are still learning the impacts of COVID-19, and having a webinar on June 5 that will focus on the operational impacts to the workforce during this COVID-19 environment. He shared that he has heard from utilities that they are splitting shifts so that workers are not working with different groups, which means that they are working with the same cohorts daily, adding that they are also practicing social distancing. He shared that they are working with different agencies and different organizations to get the PPE that they need and that he knew one utility who spends the last 30 minutes sanitizing their workplace after a shift, and when a new shift comes on, they spend the first 30 minutes sanitizing the workplace as well. He emphasized that they are learning as they go and will learn more about the different impacts of this COVID-19 as the pandemic continues.

He shared that one of the plant managers talked to him about their emergency response planning, sharing that going through a tabletop exercise is one thing but implementing it during this environment provides a lot of lessons learned. It is coming at a good time, as the American Water Infrastructure Act requirement to conduct and update risk and resilience assessments and emergency response plans are hitting a lot of these utilities now, allowing them to incorporate these lessons into their reports. He shared that he was concerned about the small system impacts at this time, explaining that larger systems like DC Water can absorb having 10 people out, but if a smaller system in rural America has two workers that test positive, it could represent up to 50% their workforce. He shared that he is increasingly concerned about that as this crisis continues to move into rural and smaller communities, since water plays a critical role in recovery. He shared that he was thankful that the NIAC had representation from Mr. Morley as he would be able to raise any new and emerging issues affecting the water industry's workforce during this period.

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Dr. Canuel then turned it over to Dr. Scott for the second question; however, Ms. Norris informed him that Dr. Scott had been disconnected from the call. She shared that Dr. Scott had wanted to ask the panelists if they have any more thoughts that they wanted to share, also adding that she wanted to remind all of the NIAC members that they will continue to have more conversations with each of these panelists as the study launches and asked that they work through the panelists until Dr. Scott was able to rejoin the virtual QBM. She asked the panelists if they had any last thoughts they wanted to share.

Mr. Clark stated that, in terms of federal policies, the biggest thing to try to emphasize was that workforce challenges for infrastructure are not going to be solved without a broader workforce investment more generally in the U.S. He shared that there have been a lot of discussions about resilience in this meeting. He shared that in 2017 the Organization for Economic Cooperation and Development (OECD) did a study ranking 32 countries, 32 member nations, on the percentage of the Gross Domestic Product (GDP) they spend on workforce, adding that the U.S. ranked 31 out of those 32 and Germany ranked tenth and spent more than six times what the U.S. spent on workforce training and development. He shared that the OECD looked at the last big crisis and reported that when 2008 economic collapse occurred, there was no set of workforce policies that would help them avoid this. However, he stated that it was not about avoiding these crises but about how the workforce would emerge from the crisis that was important. He shared that the resiliency of the workforce depended a lot on how much they engaged in active training, education, and lifelong learning, which was why countries like Germany and Denmark were stronger, had a more resilient workforce, and a much quicker recovery out of the last crisis than the U.S. did. He shared that he thinks that this is still true.

He added that related to the point about diversification of the workforce, a number of studies indicated that the U.S. had a much higher proportion of disconnected youth, which was young people who were both out of school and out of work, than any other advanced economy. He thought a lot of this had to do with the college mentality, where children were told that they either went to Harvard or they were nothing, which is simply not accurate. He explained that only about 1/3 of the adult workforce had a bachelor's degree and that most people do not have four-year college degrees. He added that, as Mr. Innocenzo and Mr. Weikel had indicated, there are a lot of jobs that are really solid family supporting jobs and do not require a degree but instead require partnerships and training, which could be an opportunity for reaching out to disconnected youths who otherwise might have miserable life prospects and connect them to critical jobs that need to be done. He shared that this could change their life, change their communities, and could make everyone better. Dr. Scott agreed that this was wonderful, and she apologized for being dropped from the virtual QBM. She asked Dr. Canuel if he had completed the second question. Dr. Canuel stated that they were letting the panelists wrap up with their own insights right now, given the time pressure and shared that he would allow the other two panelists to continue.

Mr. Innocenzo added, similar to what Mr. Clark shared, that investment in education, particularly in trade, and promoting STEM awareness at the younger and high school level, would put a better emphasis on trade and help them coordinate together, which would be very helpful. He

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thought that it really required infrastructure investment being included in the policies that helped to enable infrastructure and added that there was a lot of infrastructure investment going on but that there were a lot of difficulties that they had encountered because people want reliable power, gas and water service but nobody wants anything built in their backyard. He stated that policies that help to enable investments and also enable placement of investments, which would be helpful. He shared that there has been a lot of incredibly well-meaning, well-intentioned organizations, including his own, that are all working on workforce development, adding that they have found even within their own Electronic Export Information (EEI) study that there are many parallel or duplicative efforts, which could have been coordinated and divided up where they all could coordinate better, be more precise in those areas, and get more done. He concluded that his last thoughts were around education, policies that enable and make it easy for investment in infrastructure, and coordination around some of these initiatives.

Mr. Weikel shared that his last thought would focus the issue around operator certification and licensure. He shared that he joined AWWA in 2012 and that the workforce issues were of great importance then and they have not lessened. He stated that they have more momentum behind addressing those workforce issues today than ever before during his tenure, sharing that EPA has taken a real leadership role with the new EPA Water Workforce Initiative. He stated that they are not coming up with the solutions but are leading a broad stakeholder effort with AWWA and all the different organizations that are involved in that effort, adding that this is what AWWA was set up for back in 1881. No utility is facing a new novel challenge that other utilities have not already faced and built solutions for. He added that they are working to figure out what the great solutions are, what community partnerships they have, and what their novel recruiting efforts are. He desired for them to share those more broadly with the water sector so that they can raise the levels and, ultimately, protect public health. He stated that outside of that Workforce Initiative, there is the issue of increasing standardization of operator certification and licensure. He could not think of any issue that had more potential to be a game changer for their sector and added that, with Federal help, in which he had identified supportive connections to other industries, their successes, and their solutions, he believed that this would move this from planning and design into implementation and would be huge in terms of investment in the industry. He mentioned some facts and figures that he had heard from Ms. Wang at the Transportation Learning Centers on the return of investments of that original seed money, he believed, from the Department of Transportation. He thought that they could replicate that in the water sector with a similar vision. He stated that Federal funding can get them going down the road on this and, ultimately, they would become sustainable through the subscriptions and memberships of their states, tribal territories, other territories, and also through their large utilities, such as DC Water, Denver Water, and San Francisco PUC. He shared that this could be their vision and thought that it was the greatest opportunity for them to build resiliency in the water sector in order to respond to pandemics and the other myriad emergencies that they face. He thanked them for letting him participate and shared that he appreciated it.

Ms. Lau stated that she was going to break in for a minute because she knew that Mr. Cavanaugh had a hard stop and wanted to give him the opportunity provide any closing remarks, sharing that after these remarks they would return to the panel. Mr. Cavanaugh thanked Ms. Lau and apologized for being high maintenance this afternoon. He thanked everyone for the great

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discussions today and shared that it was very important to focus in on resilience, adding that he thought a lot of that conversation between the Workforce Panel, the COVID-19 Pandemic Recovery, and CICC were about being more resilient. He thought that their work could not be done without their partnership from the NIAC and with their private sector colleagues and thought that the NIAC would help lead the leadership in that space and help them bring the rest of the sectors along. He thanked Mr. Innocenzo for his comments on the workforce development and thought that, with regard to STEM and community colleges, there was a lot of stuff there that was happening. He thanked those in the private sector that were really leaning hard in advancing STEM, getting that type of education awareness out there, and encouraging it to be built into the middle school and high school levels. He shared that they have seen a lot on that and that he looked forward to testing that out with some of their other colleagues in the Domestic Policy Council.

He stated that on information sharing he wanted to foot stomp something he had said earlier., which was that one of the biggest challenges they saw in COVID-19's response was their inability to understand. He said that an acute example of this was what was happening at the hospital level in terms of how many Intensive Care Unit (ICU) beds were being used, how many ventilators were being used, and how many ventilators were available. He stated that there were a lot of tools in the policy tool kit to close the delta between the forecasted ventilator need and what was available, including the Defense Production Act mentioned earlier to ramp up production. He shared that they worked with the Food and Drug Administration (FDA) to modify regulations and use some out-patient surgery facility ventilators (primarily used while someone is under anesthesia for out-patient surgery) for COVID-19 patients. He shared that one of the lessons he took away from those first six weeks was how the fog of war really impacted the ability to make decisions.

Mr. Cavanaugh stated that he challenged the CICC Working Group to push hard and figure out how they can have data sharing and be innovative in how they think about this, sharing that if someone had asked him this question six months ago he would not have talked about hospitals, ICU bed capacity, and ventilators but that, when people look at different stresses and shocks to their systems, they need to know data would be needed to move multi-directional between the private sector and public sector in terms of helping to make operational decisions that will save lives, adding that everyone stores that data on a number of different platforms. He thought there were opportunities out there with AI and with other types of computing to enhance how they look at that data and inform the decision-makers. He concluded by sharing that he really appreciated everyone's time today and looked forward to the next NIAC meeting, thanking Ms. Lau and Dr. Scott. Dr. Scott and Ms. Lau thanked him as well.

Ms. Lau stated that they were looking forward to September as well. She then stated that they had one official action that needed to take place, which was the approval of the Minutes, restating that if anyone had any comments, they could send them to her or Dr. Scott. She said that if there were no objections that she and Dr. Scott would incorporate those comments and then sign off on the final version. As there were no objections, she stated that they would approve the Minutes, subject to Dr. Scott and herself signing off on them. She then thanked everyone. She shared that for those who had a hard stop they should feel free to leave the virtual

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meeting, but that she now wanted to return the Workforce Panel, asking if there was anything else the panel would like to discuss and sharing that they would conclude the meeting in about 10 or 15 minutes.

Mr. Boston shared that the question he had earlier might tie all three of these together and Dr. Scott asked him to share his question. Mr. Boston said that in the opening remarks his question had been for Mr. Donovan and Director Krebs, but to his pleasant surprise, these discussions were able to crystallize everything in critical infrastructure, both in engineering and construction. He shared that they had bought thousands of laptops and mobile devices and had doubled the bandwidth of their networks in Fairfax, Virginia, spreading Wi-Fi across entire construction sites for wind and solar in the Midwest, where Wi-Fi has been having bandwidth issues. He stated that they found that the productivity of their workforce went up about 15%, which was a pleasant surprise given the social distancing and the PPE requirements that they had but that it was really tied to the increased efficiency. He shared that they found that even the employees all across the system were connecting on the weekends about 20% more because of the increased connectivity.

He shared that with the rolling out of 5G in a big way in Philadelphia and the Mid-Atlantic, he noticed in the schematics that there was not a battery back-up or an uninterrupted power supply on a lot of the antennas because of their increased density. He asked if they should, because of a widespread power outage study that the NIAC had done, have a criterion in terms of back-up power supply on the 5G network, given that 5G is going to be used by ambulances to send medical data to the emergency room as they roll in. Mr. Donovan thanked Mr. Boston for this question and asked if Director Krebs would like to respond first. Director Krebs stated that Mr. Donovan should start as he was the expert but stated that he had some thoughts to share after. Mr. Donovan stated that when someone thinks about telecommunications network, they think about the core, for example the internet, out to the person or the device, and he explained that in the core there is tremendous redundancy of hardware and software. He shared that the engineering intensiveness as people get out closer to the edge is more people and power dependent, explaining that it is fundamentally telecommunications and that communications in general is signal, process, and power converting over the line, which makes it a power conversion process. He explained that 5G affords, in addition to higher security and better network performance, the capability for meshing. As they look at the state of networks and the traditional view of where and how power tends to be reliable, the industry has made tremendous investment, of billions and billions of dollars, to get back-up power both on a fixed basis and on a mobile basis. He added that, depending on the type of event, there are a lot of resources that the industry has moved into the vicinity and parks at the edge of danger to keep the network going.

He wanted to point out a couple things. First, he mentioned that DHS, FEMA, the power industry, and the communications industry have a tremendous emergency operations procedure where a customer can become everyone's customer and there is tremendous cooperation. Second, he shared that there is always an emphasis for them to get their feet on the street, which includes the first responders, especially in a pandemic crisis because the closer one gets to where the demand is the more that capacity is required. Third, he pointed out that with 5G and a new network they get to fundamentally rethink all of those things. He shared that it is part of the design and consideration for how networks will be configured for not only performance and

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capacity but for resilience. He then turned it Director Krebs. Director Krebs shared that he did not have much to add, expressing that Mr. Donovan had explained it in a master level class way and adding that he appreciated that kind of a background on where they were going.

Dr. Scott then thanked the panelists for their thought provoking discussion and shared that they would be depending on them very heavily as they proceed with workforce study. She shared that she knew they had plenty of additional comments and she is absolutely thrilled. She then turned the meeting back to the NIAC Chair. Ms. Lau thanked Dr. Scott and said that if any NIAC members wanted to join the Workforce Working Group, they should let Ms. Norris know. Additionally, if any NIAC members had input for the CICC Working Group that they should send that in as well.

VIII. PUBLIC COMMENT

Ginger Norris, DFO, NIAC, DHS

There were no public comments submitted.

IX. CLOSING REMARKS

Constance H. Lau, NIAC Chair

Beverly A. Scott, NIAC Vice Chair

*Brian Cavanaugh, Special Assistant to the
President and Senior Director for Resilience,
National Security Council (NSC)*

Chris Krebs, Director, CISA, DHS

Ms. Lau announced that they would be moving into closing remarks, and she asked Director Krebs to begin. Director Krebs thanked Ms. Lau and stated that he would keep his remarks short. He shared that he more than anything wanted to note his thanks and gratitude to the NIAC. He stated that this as a whole, as well as a number of the individual contributions many of the NIAC members have made over the last couple of years, has positioned CISA, in particular, and more broadly the Federal Government to be able to respond effectively. He stated that he would share on behalf of CISA and that they valued the NIAC's advice, guidance, and counsel that they have given CISA over the last couple years, remembering a time when he sat in a side room after a QBM a couple years ago and talked Mr. Wallace and Ms. Lau through the concept of the NRMC and the National Critical Functions approach and how he thought it would be able to transform the way they understood risk and were able to act on it. In fact, that concept, that dream, that aspiration was proven in this response. He said that an example of this was their ability to pull together the Essential Critical Infrastructure Workers list. He added that others had a very strong hand as well, sharing that Secretary Nielsen's vision in helping them get the NRMC up and running and with the National Critical Functions (NCFs) as well as the focus she put on systemic risks. He wanted again to thank them for their leadership and their counsel, which has made his team able to be successful here.

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Ms. Lau thanked Director Krebs and shared that in the time she had been on the NIAC it has been really great to see the much cohesive collaboration with CISA and with the NSC. She applauded Dr. Canuel as he was moving on to his next assignment and shared that she and Dr. Scott would miss him. She added that it had been terrific having Dr. Canuel as their day-to-day liaison with the NSC and shared that, as Dr. Scott has always said, they will all come visit him in Vienna for some coffee. She then turned it over to Dr. Scott for her closing remarks.

Dr. Scott shared that over the years the NIAC members have learned what topics each is passionate about and emphasized that workforce and people-readiness has always been her passion. She stated that she was very honored to be able to Co-Chair this study with Ms. Allman and that it could not be timelier. She recognized some of the comments that have been made by the panelists today about the cross-sectoral collaboration opportunities, stating that they were all in this together and that the similarity could not be timelier. She thanked the panelists, saying that they are foundational in all of this. She shared that the thing for NIAC has been the work that everyone is doing is making a difference, which is evident. She also said that she would miss Dr. Canuel and did want to get coffee with him.

Ms. Lau thanked Dr. Scott and all of the panelists, extending a specific thank you to Mr. Donovan for joining as their special guest. She shared that they could see the value of the NIAC as they were probably the only council where all the sectors come together and that this was proven in this pandemic as they saw many critical infrastructures engage in the response to COVID-19.

X. ADJOURNMENT

Constance H. Lau, NIAC Chair

Ms. Lau then announced that she would be adjourning the meeting and thanked all of the NIAC members. She said that she could feel all of them on the other side wanting to jump in as Mr. Boston had and to have a dialogue among the NIAC members. She encouraged them to participate with the Working Group because a lot of the discussion that they were able to have also happens there. She added that they would try to structure the September 17th QBM so that they have a little more time for the NIAC members to discuss things together.