United States Election Assistance Commission

VVSG 2.0 Requirements Hearing 3:
Manufacturers & Voting System Test Labs

Virtual Public Hearing

Held at

1:30 p.m.

Wednesday, May 20, 2020

Via Zoom Meeting

VERBATIM TRANSCRIPT

The following is the verbatim transcript of the United States Election Assistance Commission (EAC) Virtual Public Hearing that was held on Wednesday, May 20, 2020. The meeting convened at 1:30 p.m. and adjourned at 3:35 p.m.

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CHAIRMAN HOVLAND:

Good afternoon. It looks like we've got everyone here, so we'll go ahead and get started on time as there's a lot of ground to cover.

So, I'm U.S. Election Assistance Commission Chairman Ben Hovland, and I'd like to call the third hearing of the VVSG 2.0 requirements to order.

For the first order of business, I'd like to call roll. Vice Chair Don Palmer?

VICE CHAIR PALMER:

Here.

CHAIRMAN HOVLAND:

Commissioner Thomas Hicks?

COMMISSIONER HICKS:

Here.

CHAIRMAN HOVLAND:

Commissioner Christy McCormick?

COMMISSIONER MCCORMICK:

Here.

CHAIRMAN HOVLAND:

All of the Commissioners are present.

Moving on, unless there are any corrections to the previously distributed minutes, I will now take a motion to adopt the minutes from the May 6th, 2020, VVSG 2.0 requirements hearing #2.

COMMISSIONER MCCORMICK:

I so move.

CHAIRMAN HOVLAND:

All in favor, say aye.

[Chorus of ayes]

CHAIRMAN HOVLAND:

Opposed?

Hearing none, it has been properly moved and seconded, and we've adopted the minutes from the May 6th, 2020, hearing.

See the agenda on the screen for today's hearing. Thank you.

I would take a motion to adopt today's agenda.

VICE CHAIR PALMER:

Move to adopt.

CHAIRMAN HOVLAND:

All in favor, say aye?

[Chorus of ayes]

CHAIRMAN HOVLAND:

Opposed?

Hearing none, today's agenda, as submitted, has been approved.

Well, thank you, everyone, who has joined us for today's virtual hearing. My fellow Commissioners and I appreciate the many people who have taken time to watch things, especially during this time where we're all facing the challenges of the COVID-19 pandemic. While not the circumstances that any of us would want, the EAC recognizes the importance of continuing to move the approval process of the VVSG 2.0 forward.

To date, many experts have contributed to the VVSG 2.0 development process. The resulting proposed requirements reflect years of collaboration amongst our Federal partners, NIST, and other experts in usability, accessibility, security, and election administration. And of course, those efforts have been guided by real-world expertise from the EAC's advisory boards, as well as election administrators and the public that are committed to ultimately implementing VVSG 2.0-compliant voting systems.

The new guidelines under development seek to enhance the security and accessibility of voting systems, strengthen interoperability among system components, and encourage innovation in the voting system marketplace and ultimately create a more nimble set of standards that are responsive to the evolving

needs of the elections community. These efforts and these goals have not been easy, but we must finish the job.

There are remaining challenges and real-world considerations that must be taken into account. How will this new version of the VVSG be rolled out? What will the impact be on State and local governments that recently invested in systems set to the current standards? How do we address historic criticism to make our testing and certification program better moving forward?

Those are all questions the EAC must work to address, but in order to do that, we must also focus on the questions and issues in front of us today. Put simply, are these technical requirements sufficient to design and build the next generation of voting equipment? Do these requirements reflect the goals I mentioned earlier? Do they strike the appropriate balance of setting a meaningful set of standards without limiting innovation or the development of a healthy marketplace?

This is the third hearing regarding the VVSG 2.0 requirements or technical requirements. Speakers from the previous hearings have provided an overview of the VVSG 2.0 requirement development process and discussed the implementation and importance at the State and local level, as well as the balance of accessibility and security, which has been much of the focus of this effort. Today, we will be hearing from some of

our key stakeholders on building and testing to the VVSG 2.0 requirements.

Participants in today's hearing include voting system manufacturers and Voting System Test Labs, also known as VSTLs. Hearing and evaluating the manufacturer and test lab perspectives on the VVSG 2.0 requirements and potential challenges they face in the Federal certification program is an integral part of the -- of our success in moving the process forward.

The first panel will include testimony from eight voting system manufacturers who will provide assessments of the proposed guidelines and speak to the feasibility of the new requirements. The second panel will include testimony from the voting system testing labs who test voting systems to ensure that they meet the VVSG. The VSTLs will speak to the test readiness to the VVSG 2.0 requirements and the impact that the VVSG 2.0 will have on the industry and within their organizations.

I look forward to today's discussion and would like to thank the panelists for joining us today.

Vice Chair Palmer, would you care to offer any opening remarks?

VICE CHAIR PALMER:

Yes, Chairman Hovland. I appreciate your comments.

We, as the Commission, entered this public comment period on a third of a series of hearings listening to EAC stakeholders. We have previously heard from Federal partners such as NIST, local and State election officials, and other experts in the field. I want to thank the EAC staff for their continued quality work and making democracy work for all Americans during this COVID crisis.

This third hearing is vitally important because, in my opinion, it will include the direct testimony and expert opinion of the voting system manufacturers who will be designing the new voting systems and the Voting System Test Laboratories where the voting equipment will eventually be tested to new standards and certified for use by election officials and voting Americans.

We, as Commissioners, want to know that the new requirements in security, functionality, and operability, for example, will work for American manufacturers that build these machines, that the poll workers that interact with them and the American voters that will eventually cast their ballot. We, as Commissioners, want to ensure that the manufacturers have what they need to start designing and bringing in systems to be certified under 2.0.

I appreciate the opportunity to listen to you today and ask a few questions that will perhaps inform our next steps. Chairman Hovland.

CHAIRMAN HOVLAND:

Thank you, Vice Chairman Palmer.

Commissioner Hicks, do you have opening comments?

COMMISSIONER HICKS:

Thank you, Chairman.

The development process for VVSG 2.0 is one way to [inaudible] the future with regard to the next generation of voting equipment. Manufacturers are a key part of this process. We rely on their innovation and ideas as they build new equipment with the VVSG 2.0 in mind.

We know what's on everyone's mind right now. We must think about how we will move forward with VVSG once this pandemic has passed. The next voting equipment development not only needs to be innovative, secure, and accessible, but we hope manufacturers will also keep in mind the budget constraints of State and local election offices.

This past winter, my home furnace stopped working. I received a wide range of estimates for the same level of service. Which one did I go with? The one that was least costly, as I felt the systems did the same thing: heat my house. For the most part, election officials are going to go with the best value for the level of service from the manufacturers. This is one reason why these voting system guidelines should ensure that equipment meets strict standards.

And I yield back my time, Chairman.

CHAIRMAN HOVLAND:

Thank you, Commissioner Hicks.

Commissioner McCormick, do you have an opening comment?

COMMISSIONER MCCORMICK:

Thank you, Chairman Hovland. Welcome to those of you who are watching online, and thank you to our panelists today for taking time to participate in this hearing on the VVSG 2.0 requirements.

The Commissioners and I recognize that there is a need to get this right. There are many stakeholders in the VVSG, including voters, State and local election officials, and manufacturers. It is critical that we hear from all interested parties. We've heard from election administrators and advocates and from those who have had major roles in drafting these requirements, and today we're hearing from the manufacturers of the voting systems and from the laboratories who are testing the systems prior to certification. As Commissioners, it is our duty to balance the interests of all of the stakeholders, which is challenging, and I don't believe we can satisfy everyone. But it is necessary so that the updated guidelines will strengthen security, usability, and accessibility, but also

encourage innovation and usher us into the future of voting technology.

It is also my hope that the manufacturers who are testifying today will offer us insight on how this update to the requirements can and will strengthen the market for voting systems. And I look forward to hearing today's testimony, and I yield back to the Chairman. Thank you.

CHAIRMAN HOVLAND:

Thank you, Commissioner McCormick.

The first panel today will focus on perspectives from voting system manufacturers. You cannot discuss the next phase of voting technology without talking to the manufacturers who will be meeting that development. We have good representation today from a wide variety of manufacturers who I'd like to introduce at this time.

Steve Pearson is the Senior Vice President of Certification with ES&S. Ian Piper is the Director of Federal Certification with Dominion. Edwin Smith is the Director of Global Services and Certification with Smartmatic. Bernie Hirsch is the Chief Information Officer with MicroVote. McDermot Coutts is the Chief Software Architect and Director of Software Development with Unisyn and a member of the TGDC. Ben Adida is the Executive Director of VotingWorks. Jim Canter is the Chief Technology

Officer with Hart InterCivic, and Russ Dawson is the Federal Certification Program Manager with Clear Ballot Group.

Thank you all again for joining us today. We'd like to give each of you the opportunity to provide an opening statement. We will go in the order I introduced to you earlier. Seeing that we have a large number of people, we would appreciate your brevity where possible, but again, we absolutely want to hear from you, so please go ahead.

Mr. Pearson, can you get us started?

MR. PEARSON:

Yes, good afternoon, and thank you, Ben Hovland -- Commissioner Hovland, and the rest of the Commissioners. I'm Steve Pearson. I'm the Senior Vice President of Certification for ES&S.

ES&S has a long history of building voting systems to emerging standards, so we're excited to see this first set of standards come to fruition and look forward to working with the EAC in the final stages leading up to their adoption. We appreciate you allowing us to come together today and answer your questions and offer ideas. Thank you.

CHAIRMAN HOVLAND:

Thank you, Mr. Pearson.

Mr. Piper?

MR. PIPER:

Thank you, Chair Hovland and Commissioners, for the opportunity here to provide feedback regarding the Voluntary Voting System Guidelines 2.0 on behalf of Dominion Voting Systems. My name is Ian Piper, and I serve as the Director of certification.

Given time constraints for the opening remarks, I won't go into many specifics. However, I can address any issues during Q&A. For now, I want to provide some general thoughts on what it's going to take for the industry to build to VVSG 2.0 as a more dynamic and flexible format.

First, agility. Dominion supports approaches to build more agility into the new iteration of the standards, particularly those that accelerate testing campaigns and recognize the importance of moving security patches and de minimis changes through quickly. I applaud the EAC for considering the use of test reports from State campaigns for use in EAC campaigns. It's important to have a framework that's not too prescriptive and that has the ability to be changed and updated over time.

The Nation's thousands of local election jurisdictions have differing laws, equipment, staffing, budgets, and technical fluency levels. Ideally, the new VVSG program will shorten the time

needed for system certification while continuing to ensure accountability for the quality of testing and products.

The second priority should be clarity. It's key to review the requirements for scope and clarify details through RFIs. While manufacturers must ensure that the new systems meet the new requirements, we must also meet a pathway on how to best support the older systems where jurisdictions choose to maintain that equipment. The definition of voting system is very important here as some requirements such as interoperability leave many questions about how this will work and be tested. Other substantive requirements for hardware testing, auditability, and E2E systems also need clarification. Manufacturers now need to know the "how" to determine if our systems meet the "what."

The third priority to keep in mind is stability. VVSG 2.0 assumes that requirements and test assertions may change more frequently but the high-level benchmarks will not. We need to know how frequently the requirements will be reviewed and changed so that we can plan for when systems will need to be updated or replaced. We want to continue to meet the market demand for new systems that support the latest needs for security and auditing but in a predictable and stable manner. In short, industry manufacturers are where the rubber meets the road. We urge you to build as much agility, clarity, and stability into the VVSG 2.0 as

possible to deliver a strong framework for the next generation of voting systems.

Thank you for the opportunity to provide comments on behalf of Dominion, and I welcome your questions.

CHAIRMAN HOVLAND:

Thank you, Mr. Piper.

Mr. Smith?

MR. SMITH:

Good afternoon, Chairman Hovland, Vice Chair Palmer, and Commissioners McCormick and Hicks. Thank you for the opportunity to make comment today.

Smartmatic has a cross-functional team that is stepping through these new requirements of VVSG 2.0, and we will provide feedback to the EAC next month, as requested. Ahead of that review and to address one of the requested thoughts for today, we do find that the new VVSG to be an improvement over existing ones. It provides for better security, reliability, and usability of the voting systems, and I personally, as someone who's advocated for a number of years, appreciate the baking-in approach that the new VVSG draft requires. Rather than bolting on security, VVSG 2.0 makes very explicit the need to bake in architectural features around security and accessibility, usability.

I do find it important to note that this VVSG lacks what other VVSGs have had and that's an innovation class. Previously, VVSG has made such a path available to system providers. And, in fact, if you just word search VVSG 2.0's draft, innovative does not appear in the draft, and roots of the word innovative appear only around giving some leeway to the structured system documentation and noting that more voters are using channels such as remote access vote-by-mail. There's no provision for system innovation and the certification of that. I find that to be a significant deficiency.

Associated to that, I caution the Commissioners around areas in the VVSG that ban certain technologies. It's my personal experience, be it environmental cleanups to voting systems, I find that when technologies and methods are banned in governmental standards, they never make it back in, regardless of technological advances. Here, as I've seen in the past, the small but vocal group of people will probably raise uncertainty and doubts regarding the banned technology, and that's combined with the inability to prove negatives in some cases, what will keep that technology that's banned from coming back in.

Aligned with that, voting systems need to move to the cloud as our intelligence community and other entities with sensitive data have moved to. And my reasoning behind that is not just technological advancement, but is this: Wouldn't you rather have

an army of experts at Amazon, Google, Microsoft, and Oracle fending off nation-state attacks rather than the typical county clerk's office with 5 or 10 people, oftentimes none of whom have a computer science or computer engineering degree. It also makes it easier on the States to supervise the counties, and you can avoid having to move quite a lot of data, uploads and downloads such as Statewide imports. And regardless of which you may have heard the connection to the cloud can in fact be secured. In fact, YouTube and everybody who's going to watch this hearing over YouTube is connected to the cloud to do so, because that's a Google cloud technology. Banning tech is a blunt-edge technology. It must be used sparingly.

And I wish to note also in addition, building on Commissioner McCormick's remarks, that the technology bans favor security concerns at the complete expense of system usability and accessibility.

So, those are my remarks. And once again I thank the Commission for the opportunity to give them.

CHAIRMAN HOVLAND:

Thank you, Mr. Smith.

Mr. Hirsch?

MR. HIRSCH:

Well, thank you, Chairman Hovland and Vice Chair Palmer and Commissioners McCormick and Hicks.

MicroVote, as you're probably aware, is the longest continually operating voting system manufacturer in the country. We were also the first to be federally certified. And, as Commissioner Hicks pointed out, we're very interested in making sure that our systems continue to provide value and service to the public.

So, from a very high level -- and there's not time in this introduction to talk about all the various aspects of this almost 400-page document, but from a high level, our systems are essentially hardware, software, and documentation. And I'd like to briefly talk about each one of those.

So, as we're moving from the 1.0 to the 2.0 system, essentially what we're being given as manufacturers is a new obstacle course. So, I was around when we tested our existing currently fielded system to the 1.0 certification standard. It took us four years in order to do that with a system that was already fielded with very little changes to get it certified in the EAC system, four years. So, what we're looking at right now is a process that very easily could take that long or longer to not only design and develop a system to requirements that are not yet complete, but then, also

to go through a certification process that is brand-new with, you know, a very long set of requirements and testing assertions.

So, when we go through that process, I think it's very important that we have a very clear pathway to be able to support our customers and the public for the next 10 years with the systems that we already have fielded. We -- MicroVote might have sold a voting system a month ago and made assurances to the county that we sold that system or the State that it would be viable for the next 10 years in writing. And in fact, as a part of these new standards, we are certifying that our systems will be viable for the next 10 years. In order for us to accomplish that, we need to make sure that we have a mechanism in the 1.0 standard to continue to enhance, modify, update, make more secure the systems that we are now fielding and that we hopefully will continue to field for the next four to five years while we're developing and certifying this next system. So, it's important I think that the EAC have a very public and firm position on how we're going to maintain the systems that are now fielded for the next 10 years.

And then -- so, with regard to the hardware and the software and the documentation, so much of the system that's fielded right now from a hardware standpoint would not be compatible for a number of different reasons with the new standard. There's contrast ratio, display size, device labeling, braille, various new

requirements. If we are able to -- if we're going to manufacture those new requirements, we're going to have to make choices that will ultimately translate to how affordable, how available, how innovative our systems are. So, just keep in mind that much of what is out in the field right now is going to have to be replaced, and it's going to be new.

Some of the hardware requirements that are in place right now are extremely difficult and expensive to comply with. And a lot of equipment that you might think is extremely reliable is not allowed in the voting system because it doesn't meet those standards, and a good example would be an Apple iPad. One manufacturer several years ago tried to certify an iPad in the voting booth and was told that, well, it doesn't actually meet all of the various hardware standards that it has to meet in order to be compliant. There's a lot of off-the-shelf equipment that is used -- that would like to be used in a voting booth that we simply can't because it doesn't meet what may be too restrictive of hardware requirements.

From a software standpoint, our current systems we use published standards, as well as in-house development coding standards. The new requirements will specify that our new system must be only using published standards. While that's -- on paper sounds like a great idea, what that does mean is that any of the

standards that we've been clearly using for years, we have developed mature, well-vetted, well-tested systems with -- have standards that we developed ourselves in some cases, we won't be able to use that code or there will be significant rewrite of that code. So, that's another thing that could add expensive time to develop and delay us introducing newer systems.

And then finally, hardware, software, and then there's documentation. So, I want to point out that the 1.0 standard had two volumes. It had a Volume 1, which was the guidelines and -- the certification guidelines and principles and requirements. It was 228 pages long. What we are now today discussing is 364 pages long. And then we haven't even seen the test assertions yet. In the 1.0 standard Volume 2 was 146 pages long. So, that's a lot of documentation to comply to. And then a part of these new standards are going to require a lot of new documentation that's written or the documentation we have is going to be revised.

So, we want to get the most talented engineers, talented developers that we can to work on the system. As everybody knows, most programmers hate writing documentation when they're done, but it's something that we have to do. And I think the public and our election officials don't really read most of it, so we're using those resources and that time mostly for the testing authorities and the EAC and people who are certifying our systems to read and

enjoy. But we also need to consider which ones of those things could be eliminated or pared down so that we can get our systems out in the field faster.

So, that's our system in a nutshell. I want to talk just for 30 seconds about security. Security is a process. It's not something that we can achieve 100 percent at any one point in time. And in order for us to maintain security in our system, we need to have a process that allows us to update that system on a regular basis, not just once every year or two. And so, as a part of that, I think we need something between a de minimis determination and a full system modification that could take a year to a year and a half.

And a perfectly good example of that is this COVID-19 thing we're going through right now. So, the public wants to know how should equipment be sanitized? How should we protect the public as they're doing in-person voting? Well, that's a part of our documentation. It could be part of our software. And these are things that would take us typically a year to modify or a year and a half to get modified and certified. So, it's a perfectly good example of how we need to stay nimble in order to be able to provide the best value for the public.

So, again, I'm Bernie Hirsch. I'm the CIO for MicroVote, and I thank you for the opportunity to talk today.

CHAIRMAN HOVLAND:

Thank you, Mr. Hirsch.

Mr. Coutts?

MR. COUTTS:

Good morning, everybody -- or actually, good afternoon. Thank you for the opportunity to speak today. I'm McDermot Coutts, Director of Software Development at Unisyn Voting Solutions. Unisyn has a long history of pioneering new standards. We were the first optical scan system to be certified. We were also the first company to do de minimis software change.

The VVSG 2.0 started out with much promise. Its goals in my mind were to provide a standard that was clear, flexible, and would speed the process of certification so we could solve the problems of tomorrow in a timely manner and to provide a baseline of what a voting system should be and do without hampering innovation. It started with the principles and guidelines, which in and of themselves are excellent. It provided a framework showing the ideals that we should aspire to. And I say aspire as none of us individually or together is capable of perfection.

Then, things slowly got off track -- people pushing their own solutions for current problems -- creating a prescriptive and unwieldy mass. I liken it to creating a suit of armor. The designers kept adding additional pieces to protect against a specific attack until the user is unable to move. Don't get me wrong. Nothing that

was suggested was inherently a bad idea, but in aggregate, any system built to this will be very homogenous and very expensive.

We tried to write standards around security and auditing and wound up designing the system instead, a system designed to address perceived problems of today but not able to react to the problems of tomorrow. An example of this is the adherence to the FIPS 140-2 standard of encryption. This is an old standard, and we've already had to write an exception in the VVSG that would accommodate homomorphic encryption. And this will have to be done for every innovation in encryption moving forward. And ultimately, encryption, in and of itself, does not equal security. It needs to be built in from the beginning and encompass both technology, process, and trust.

As far as price is concerned, one of the most egregious examples of cost increase is the UL 37-rated locks, which are rated at about $100 apiece, which is a huge -- over 1,000 percent price increase over normal locks. This is not including the additional testing and engineering tests that are part of developing a new system to the standard.

That brings up an additional point that it will not really be possible to retrofit existing systems into the VVSG 2.0 as it stands now. It is a fundamental rethinking of the standard, which in most cases will require ground-up redesign to a very prescriptive mold.

Overall, the foundations of the VVSG are very good, but they have been twisted from their path, and we need to get back on that path with a clear eye towards what the standard should be and what they should accomplish and making sure that we have a good value for the cost and effort it will entail.

Again, thank you very much for the opportunity to speak.

CHAIRMAN HOVLAND:

Thank you, Mr. Coutts.

Mr. Adida.

DR. ADIDA:

Thank you, Commissioners, EAC staff, and fellow vendors. My name is Dr. Ben Adida, and I'm really thankful for the opportunity to provide feedback on the VVSG 2.0 requirements on behalf of VotingWorks.

Like you all, we are passionate about elections and democracy. We believe in the voting booth as the great equalizer, the only place where every citizen has an equal voice. That's why the EAC is a critical agency because the technology we all build to support our great democracy must live up to the highest standards. Our elections must be secure, usable, and accessible.

In America, the best way we know to achieve such ambitious goals is through competition in an arena of well-crafted rules. May the best vendor win. May voters and election officials benefit from

this race between vendors to build a better voting booth, a more auditable election, a truer democracy. And I know I'm preaching to the choir, but forgive me. This is my first time speaking to this esteemed group. I hope that's okay.

If we all believe in competition, why then are we, VotingWorks, the first new voting machine vendor in more than a decade? The thrust of our feedback today is that the EAC should ensure that the VVSG truly encourage and enable competition. And we have three points.

One, we commend the EAC on the interoperability section of the requirements. Interoperability lets a jurisdiction pick the best system for the job, the best precinct-based scanner from vendor #1 and the best accessible voting machine from vendor #2. The next logical step is to allow for certification of independent modules so that a new vendor can focus entirely on the one component they can best improve. That's real competition. That makes things better for election officials and voters.

Number two, we also commend the EAC on the addition of user-centered design. We must design for voters and poll workers first. We urge the EAC to consider that the only true test of user-centered design is in the field, and requirements should allow for this. The requirements should be minimized for small real-world deployments and should ratchet up as the deployments scale up.

And number three, all vendors should be in the same boat. Today, we, VotingWorks, are the only vendor subject to the 2015 standard while other vendors continue to rely on a standard older than the first iPhone. This disparity turns a certification standard that's meant to enable competition into a mechanism for excluding new entrants. It's not a coincidence, I think, that we're the only new vendor in more than a decade. We hope that VVSG 2.0 can change this dynamic. All vendors should be held to the same standards. Maybe then, in a couple of years, we'll share this table -- hopefully, not a Zoom meeting, hopefully a table -- with some newer vendors than us. We certainly hope so.

We have additional feedback, a little bit in the weeds. Some of the detailed requirements are, we believe, overly prescriptive, but the best setting for that, I think, will be in a follow-up written form that we will be happy to provide in the next few weeks.

Thank you, Commissioners. We look forward to your questions.

CHAIRMAN HOVLAND:

Thank you, Mr. Adida.

Mr. Canter?

MR. CANTER:

Good afternoon. My name is Jim Canter, and I am the Chief Technology Officer for Hart InterCivic. I oversee all aspects of

Hart's product development, which has produced our Verity voting system, what we believe to be one of the newest and most secure election systems on the market today.

I want to thank the Commissioners for the opportunity to address the adoption of the VVSG 2.0 requirements. Receiving feedback from the voting system manufacturers and test labs is essential to developing a new set of standards that will allow companies like Hart InterCivic to provide election officials with innovative new systems that meet or exceed current best practices in security and accessibility.

I'll spend my limited time emphasizing the importance of putting in place a process that involves the Commissioners to circling back with the group assembled today once all the public comments have been received and compiled for an in-depth, closed-loop discussion of the technical language of the requirements themselves. As the end-user of the guidelines, we have unique insights into the real-world applications of the standards and their implications in developing compliant election systems.

As to the requirements themselves, as currently drafted, many of the individual draft requirements lack sufficient details to guide manufacturers in the design of products to comply with the standard. Some requirements appear to clash with or even

contradict each other, while others seem to create a standard that may be difficult if not impossible to comply.

For example, Principle 9, auditability, calls attention to software dependence but applies the principle only sporadically. For example, the requirements hold electronic voting devices, DREs, to the letter of the principle, but appear to leave the practice of placing voter selections in barcodes completely exempt. For Principle 9 to have a meaningful impact on the security of elections, it must be applied across the entire voting system.

Also within Principle 9, end-to-end cryptography is recognized as a means to provide software independence. However, the specification imparts undue hardship in bringing end-to-end cryptography into an election system with requirements such as multiyear public availability prior to adoption and even a new public approval process to be established by the EAC.

As a last example, again, Principle 9 is the goal for efficient audits. As a high-level principle, this is good, but as a requirement, the language is ambiguous. For example, 9.4-A, efficient compliance audit, what does efficient mean? How is efficient tested? The requirement is silent on this. These are just three representative examples.

This obviously has a direct impact on our ability to predict the timeline for delivering a system to meet the new standard.

Estimating a product's availability is predicated on well-written requirements, and until the requirements are agreed upon and finalized and accompanied by test assertion that drive the testing and certification process, it's not possible to accurately assess the timeline for a compliant system.

Hart InterCivic strongly supports updated national standards for election systems that better address modern requirements for security and accessibility and will work with the EAC to ensure these standards are prepared for publication.

Thank you, and I look forward to answering your questions.

CHAIRMAN HOVLAND:

Thank you, Mr. Canter.

Last, but not least, Mr. Dawson.

MR. DAWSON:

Thank you. Hello, everybody. I am going to go off script a little bit because the preceding comments offered by our manufacturer appears to largely overlap what Clear Ballot wanted to offer, so I appreciate all of those preceding comments very much, especially the spectrum of those comments.

Thank you very much for inviting me today to participate. My name is Russ Dawson, and I'm the Federal Certification Program manager for Clear Ballot Group, a privately held company out of Boston, Massachusetts. Our ClearVote suite features the industry's

most trusted and voter-friendly methodology, that being the voter-marked paper ballot. ClearVote also includes highly accessible devices for voters with disabilities, enabling them to mark ballots privately and independently.

I'm going to skip to my conclusion now. We are eager to embrace revised Voluntary Voting System Guidelines that are crafted to enable more rapid and frequent enhancements to be introduced into the marketplace. Just as importantly, we ask all stakeholders involved in this process to consider how each and every newly proposed guideline benefits the voter, enhances the voting experience, and helps election administrators conduct elections more efficiently and securely.

We appreciate the opportunity to serve on today's panel and to offer our opening statement. Thank you.

CHAIRMAN HOVLAND:

Thank you, Mr. Dawson. And thank you to all the panelists for those comments.

I will now start the question-and-answer portion of this panel. I'll start things off. And just to give a heads up to everyone, my first question is for everyone in brief, so if you can unmute yourselves, that will speed things up, as we are going to try to be sensitive of the time so everyone gets sufficient time to ask their questions.

But, in our previous hearings, we heard from NIST and other experts that these draft requirements will lead to the next generation of voting equipment being more accessible, more secure, and ultimately more user-friendly to voters. Can I have a quick yes or no -- and I know that some of you already indicated this in your opening comments, but I would like to have a quick yes or no, upon your initial review of the VVSG 2.0 requirements, do you believe that it's an improvement and necessary modernization from the current guidelines in place, Mr. Pearson?

MR. PEARSON:

We do. We believe that security and usability requirements have clearly been enhanced over the previous versions.

CHAIRMAN HOVLAND:

Thank you.

MR. PEARSON:

I think one piece of feedback we'd like to provide, though, is that the format -- the new format under the principles and guidelines, is challenging to navigate as opposed to the previous standards. It's a little more challenging for us. This is a natural byproduct of many working groups who worked on the various topics, we believe. We suggest a final formatting review to provide consistency throughout the document, but overall, we're very pleased with the document. We do have some areas of concern

that we would like to explore with you, but we appreciate the improvement in the process and these guidelines.

CHAIRMAN HOVLAND:

Thank you, Mr. Pearson. And certainly, we would welcome any written feedback to help make these better.

Mr. Piper, yes or no, do you view these as being an improvement and necessary modernization?

MR. PIPER:

Yes, I do. It's definitely an improvement actually in structure. I believe that, you know, when it comes down to it, it doesn't actually require specific -- or requirements from specific technologies. But, as I mentioned in my opening remarks, though, there still is a lot to be clarified in regards to these requirements so that manufacturers know how they are going to be tested to.

CHAIRMAN HOVLAND:

Thank you, Mr. Piper. And, again, I assure you my next question that I do want to get to will give you a little bit more time to talk. So, again, just whether or not these have -- are a necessary improvement and a necessary modernization, Mr. Smith, yes or no?

MR. SMITH:

It's necessary for certain -- even with the update in 2015, technology has changed, threats have changed, yes.

CHAIRMAN HOVLAND:

Thank you. Mr. Hirsch?

MR. HIRSCH:

I will answer yes with reservations.

CHAIRMAN HOVLAND:

Thank you. Mr. Coutts, I heard some reservations earlier. I assume you'll be in a similar boat, but ask you nonetheless.

MR. COUTTS:

From an accessibility standpoint, absolutely yes.

CHAIRMAN HOVLAND:

Thank you. Mr. Adida?

DR. ADIDA:

Yes, it's definitely an improvement, and I think it can go further still.

CHAIRMAN HOVLAND:

Thank you. Mr. Canter?

MR. CANTER:

Yes.

CHAIRMAN HOVLAND:

Thank you. Mr. Dawson?

MR. DAWSON:

Yes. Overall, yes. I want to echo something that Chairman Hovland offered in the opening remarks, which is I think that the

final adoption of the 2.0 guidelines needs to strike a balance between effective standards but also safeguarding opportunities for flexibility and innovation.

CHAIRMAN HOVLAND:

Okay. Thank you. And so here's one that gives you a little bit more time to talk, and again, some of you hit this in your opening remarks. I will ask this of all of you, and we'll go in that same order, but because it is crucial that manufacturers like yourselves build these new -- built to these new requirements, have you or your organization identified any requirements that are going to be overly burdensome, difficult to implement, or unnecessarily costly? Specifically, I know there have been concerns about some of the requirements in the VVSG 1.1, and what I'm interested in are specific requirements that may lead manufacturers not to build to this standard or that would add significant cost to State and local jurisdictions without adding a similar value to the voting equipment.

And so, I would welcome the feedback from each of you. I'll go through the order again, but -- and I know that some of you offered that in your opening comments, so if there are additional pieces that you'd like to flag -- and, again, if these are extensive, we would welcome that in written format so that we can properly address this, which is our ultimate goal.

So, Mr. Pearson, would you like to start?

MR. PEARSON:

Absolutely. We do -- we have identified some -- and I think they have been reflected in some of the previous testimony here, but we're currently scoping these out. And it's really impossible to say with certainty until we see the testing -- the test requirements. We do expect that there will be requirements that will be difficult to implement. One significant example is the current requirements for voting system screen size and resolution. While we can meet the size requirement for future hardware builds, the resolution for those given screen sizes is problematic. It will result at a higher cost.

Another example previously mentioned, as well, was the current requirement for drill- and pick-proof UL locks, the UL 437. Some of the housing of these locks is made from hard plastics, and it will be challenging to meet the new requirement without considerable product increase, not to mention that every lock that is in the field for every fielded voting system, which typically has two to three locks, would need to be replaced at a much higher cost.

CHAIRMAN HOVLAND:

Thank you. Mr. Piper.

MR. PIPER:

Yes, thank you. We're also in the process right now of reviewing all of the requirements to provide comments to the EAC, but -- so, at this point in time I just think it's too early to tell, you

know, what the cost might be until we actually get the test assertions that will allow us to clarify how these requirements are going to be interpreted.

CHAIRMAN HOVLAND:

All right. Well, thank you, and we will welcome your written comments on any of these requirements that you think should be improved upon.

Mr. Hirsch -- sorry, I skipped Mr. Smith. Mr. Smith --

MR. SMITH:

Sure.

MR. HIRSCH:

Sure. Well --

MR. SMITH:

Oh, go ahead, Bernie, and then I'll go after you.

MR. HIRSCH:

Who's up? No, go ahead, Ed.

MR. SMITH:

Thank you. 10.2.2.2 I believe it is, 10.2.2.2-F, the new draft suffers from one of the [inaudible], for lack of a better adjective, that older VVSGs do around FIPS compliance and how to display FIPS compliance. You have 10.2.2.2-F saying we need to submit associated with the randomization of ballot images, and then you have some other FIPS-related commentary but not anything to do

with submission to a FIPS lab. There are not a great number of FIPS labs, and their test efforts are very monolithic, meaning you need to go in with something that you think is going to pass, which is fine, we should do that anyway.

But, more importantly, those efforts take many, many months, generally 8 to 12 months for a full system like a voting system, and that would interfere if you try and do it in parallel. I don't know how you could manage such a certification effort in buying parallel, I mean, the FIPS lab and the EAC process. If you want to do the FIPS lab ahead of the EAC process, then you've delayed your EAC entry by that 8 to 12 months. So, that really needs to be resolved, and that will certainly be in our written comments.

CHAIRMAN HOVLAND:

Thank you. And to my colleagues, I'll just note I realize that this has gone over my initial time, but I certainly will yield any remaining questions because I do want to continue to drill down on this and get everyone's answer on this.

So, Mr. Hirsch, can you go ahead?

MR. HIRSCH:

Okay. Quickly, a number of paragraphs, so write these down. 9.1.1-A, software independence, it shouldn't call out DRE as a software -dependent voting system. The DRE is just a voting

device, in combination with a VVPAT, and I think VVPAT needs to be added in multiple places throughout this document. It becomes a software-independent system. And so I think that shouldn't be specifically disallowed, as well as other innovative things.

10.2.1-B, indirect voter associations, it says it's only for paperless systems. I think that should be allowed for a paper-based system. If it has that in combination with an electronic system like a DRE with a VVPAT should allow indirect voter associations so that we can invalidate ballots like if the voter dies or whatever.

1.2-F, continuous operation testing, the table needs to include DRE VVPAT combination similar to BMD or new technologies.

1.2-G needs to be called the temperature power. It's now temperature humidity environmental testing. It's now 24 hours, which I appreciate. It used to be 50 to 95 degrees. Now, it's 41 to 105 degrees. I don't think that's a realistic measure of reliability, and it's going to, you know, cost more, take more time.

The whole environmental hardware section 2.7-A through F, hardware testing, it should only apply to voting devices used in the polling place, not the voting system or equipment that's designed to be used in an office environment in the backend. It's never been tested that way. It's not clear. Also, I think they should designate

COTS equipment as supporting, like the manufacturer should be able to say, our UPS is supporting COTS equipment. It shouldn't have to go through all the environmental and electrical testing, if for no other reason, it's designed to fail in some cases, so that your voting equipment doesn't fail, okay?

2.7.1, electrical testing, it says that FCC Part 15D should apply to voting systems used in the field and A for everything else electronic. I think that's too restrictive. A is used for commercial environments like schools and government buildings and, you know, places where we vote. B is normally used in a home, and our equipment isn't normally used in a home, so I think we should reduce that level down to A. And also --

CHAIRMAN HOVLAND:

Mr. Hirsch --

MR. HIRSCH:

-- you have other paragraphs that apply to that. Yeah?

CHAIRMAN HOVLAND:

I'm sorry. I do appreciate that, your thoroughness. It's actually going to make me go back on what I said earlier and I would ask --

MR. HIRSCH:

I'll submit more in writing.

CHAIRMAN HOVLAND:

If you could send that in writing. And actually, everyone else, I have run, certainly, out of my time and want to be conscious of my colleagues and theirs, so everyone else that can submit that in writing, clearly we need it, we would ask that you do that, because we do want to make these as good as possible. And so, thank you.

Vice Chair Palmer, if you have questions, please go ahead.

VICE CHAIR PALMER:

Sure. Thank you, Chairman Hovland.

My question is for all the panelists. My general question is whether your company -- just each of you, whether or not your company has a timeline in mind in upgrading your current systems or building new systems to VVSG 2.0. As a believer in the markets, really the best way to get the process moving is for one of the manufacturers to actually bring it to be certified under 2.0. So, I'll give you a chance to make some general comments on the timeline but also make some news. If you think you could be the first or within 12 months, please, this is your opportunity to talk about it.

I'll start off with ES&S and Steve Pearson, and we'll just go down the line like we've done before.

MR. PEARSON:

Thank you, Commissioner Palmer. We -- yeah, we are in the process now of trying to ensure that our -- the existing systems

can be modified. I think that's one of the -- going to be one of the most important things that we address here with the Commissioners, here under this program. I think it's important to know that none of our fielded systems today can be upgraded as the standards are currently written.

I'd like to suggest that with the -- that the EAC consider and validate our soon-to-be comments because I think that they're going to be critical to the overall completion of this program. Over the past 18 months we've committed about two dozen people to this -- and different subject matter experts to this effort. We know that without testing requirements, just from our experience over the last two cycles of new standards, we foresee that it will take at least 18 to 36 months for the manufacturers to be able to build to these standards, and at the same time support the systems that are in the field.

So, we think it's critical that we have test assertions. We think it's critical that all of our comments are taken sincerely into account as these standards evolve. In doing so, we believe that in an 18- to 36-month window we can accomplish the goal here, but we also need to take into account that once we complete that Federal process, we have the State certification, and then, the deployment to consider as well. So, it's hard to say, at this point, because we don't know what the test assertions are going to be.

We don't know that the requirements are final, but I don't think it's unreasonable to expect that it will be an 18- to 36-month window to complete that -- the development for this.

VICE CHAIR PALMER:

Mr. Piper.

MR. PIPER:

Yes, thank you. We've actually already been working towards some of the sections in the VVSG 2.0 in regards to security and auditing features, as these are items that the voting system -- or the voting election officials actually want. So, we're -- as we try to work with them in order to develop a timeline for them, we have to understand, though, still, what the test assertions are going to be to clarify the requirements so that we can determine how long it may take for us to achieve that final conformance, and also for the jurisdictions to fund it. That's something that needs to happen as well, so that has to be worked into the schedule.

VICE CHAIR PALMER:

Ed Smith?

MR. SMITH:

Thank you, Vice Chair Palmer. We are continuing to evaluate the requirements, and at this point have not set out a timeline. But eventually, yes, we will move from our 1.1 development to 2.0 development.

VICE CHAIR PALMER:

Mr. Hirsch?

MR. HIRSCH:

We don't have a timeline other than my estimate would be two to three years to develop and build the first prototype for testing. And, based on past experience, testing can take two or three years for a new system, if not longer. Our first system took four years, just to give you a point of reference. That's for testing, okay, after it's built. And then, you know, people will be tearing it apart, at that point, saying it's not secure.

VICE CHAIR PALMER:

Mr. Coutts?

MR. COUTTS:

We are actually already moving towards -- especially around accessibility, towards the 2.0 standards in our new products. However, again, having gone through being the first time before, I know that that increases the amount of time for testing by quite a bit. And then, as was mentioned earlier, going around to the different States and getting them certified can take an additional 12 months or longer, depending on the rigorousness of the State. So, you're really looking at years before a system can be fielded.

VICE CHAIR PALMER:

Mr. Adida or any other vendors?

DR. ADIDA:

Yeah. So, we are ready to aggressively move on VVSG 2.0, and our extensive use of COTS equipment at VotingWorks helps us move quickly and effectively on these requirements. The one point I want to make, as we all know, time is money, so there's a couple of things that the EAC can do to speed things up, especially if this is something that is important to the EAC. Some of the requirements are carryovers from VVSG 1.1, which no one has successfully met yet, so I would suggest that they merit real care and consideration because they -- we think of them as carryovers, but really, they haven't been met yet, so they might be new -- they effectively are new, right, and they may take longer than one might expect.

And then, some requirements which I understand predate even VVSG 1.1 are particularly expensive to test. And again, time is money, money is time. For example, the seven straight days of testing machines, again, we use COTS hardware. We can almost certainly meet those requirements, but testing machines for seven days is a very high cost. And I would urge you, in general, to look at those carryovers and see if there's opportunities to streamline and trim them if they're no longer necessary, because that will help speed things up tremendously.

VICE CHAIR PALMER:

Mr. Canter?

MR. CANTER:

Yeah, I -- I'd like to say that Hart has always strived to take a security and accessibility-first approach to Verity. In fact, there are some areas of VVSG 2.0 that are catching up to Verity, not vice versa. Having said that, there are some very real hurdles in the new requirements. There are hurdles, just in the requirements themselves, as they're not fully fleshed out, as I mentioned in my opening statement. And until we have had the opportunity to work with the EAC through a closed-loop process to firm up the requirements, it's very difficult to assess what the go-forward plan is.

I'd also like to say -- and this -- just to echo my colleagues' comments, as written, upgrades to -- upgrading existing voting systems to VVSG 2.0 will be a challenge primarily because of some of the newer hardware requirements. The UL locks is an excellent example that people have brought up, very tangible. There are new alarming requirements to add alarms, so there are some very real challenges over existing hardware systems.

VICE CHAIR PALMER:

Mr. Dawson?

MR. DAWSON:

Thank you. I don't disagree with the projected timelines, and one of the more important things that I heard was even a rapid product development and VSTL test cycle, there often remains those State-based hurdles in getting products eligible in a variety of State. So, yeah, two, three, four years is not uncommon.

The other thing I'd like to echo, is having the test assertions is absolutely, absolutely critical, sooner rather than later.

VICE CHAIR PALMER:

Well, that is my question. I think that I'm going to hand it over back to Chairman Hovland, but I do have one statement. I think that -- I know, this Commissioner, and I believe the Commission as a whole, we're dedicated to making sure that those test assertions are available to you in the most timely manner possible, either shortly thereafter adoption or at adoption of the VVSG. Obviously, those take time and interaction with test labs and other partners, but we're committed to that. There is a sense of urgency that this Commissioner has, though, to bring this technology to the voters and to election officials, and whatever we can do to push that urgency and get this -- these new -- you know, this new technology and security and accessibility to the voters, we'll do it.

Mr. Chair.

CHAIRMAN HOVLAND:

Thank you, Vice Chair Palmer.

Commissioner Hicks, do you have questions?

COMMISSIONER HICKS:

Yes, I do. Thank you, Chairman Hovland.

This is for everyone. One, I wanted to say thank you for testifying today. And I know that this is something that we've all been looking forward to for the last couple of months and so forth. VVSG 2.0, the requirements here, my friend, my good deceased friend Wendy Noren, used to always say that she was one of two or three people who actually read through all the requirements. I think right now we have an opportunity with the -- this pandemic to be sitting at home and I'm going through the old adage of how do you eat an elephant? Basically one bite at a time, so I'm going to try my best to get through all these before the 22nd of June so I have a clear understanding of things.

I think I'm pretty good right now with it, and so, one of the things I wanted to talk about or ask about is the update to VVSG is the inclusion of interoperability. Mr. Adida had talked a little bit about this, basically Principle 4. And I wanted to know, how will this impact your designs of systems. Particularly, I'm concerned about how, down the road, when an issue may arise, who might be responsible for that within operability? Will it be the main manufacturer of that equipment or, you know, will it be the printer

associated with it, or whatever? But it's more of just getting an understanding of how are you going to design these, or how will it impact you? And, you know, let's start from the last person and go up, so starting with Mr. Dawson and then ending with Mr. Pearson.

MR. DAWSON:

Thank you. It's a good idea. I've got my 2.0 document right here, and I am looking at Principle 4. There are -- my handwritten notes state this: There's four NIST standards. Clear Ballot endorses standards. We understand that NIST has been influential -- they've been a necessary part of trying to craft these voluntary guidelines. The one thing I do want to stress, though, is when you go through the entire 2.0 guidelines from start to finish, there's layer upon layer upon layer of standards. We're not against standards. It's just another barrier or process that costs time and costs money.

So, specifically, with regard to Principle 4, I just want to say there's four NIST standards there, and it's going to factor into how rapidly we can bring something to market.

COMMISSIONER HICKS:

Mr. Canter?

MR. CANTER:

Thank you, Commissioner Hicks. It's an excellent question. And as far as benefiting the elections community, the certification -- the manufacturers' certification process, the jurisdictions in the

States, interoperability actually has a very high return on investment when it gets established, when the -- when it's finally designed and tested. You brought up a very real issue, and that is what is the source of truth? And it will take time to work through that, but once interoperability is available I see benefits in testing, in looking at optimizing the certification process and using interoperability to help us with the concept of component-level certification. It helps the States, as the States all have different methods of data exchange on election night, and that can actually speed up the process, if the States also adopt methods of getting this data.

So, the benefits are very real, but we can't shy away or hide from the fact that the standards are difficult to develop, it will take time, and it will take investment by many parties to adopt it. Unless parties -- many parties adopt interoperability, then it's just another feature listed in the spec, and there's no good return on investment for it.

COMMISSIONER HICKS:

Mr. Adida?

DR. ADIDA:

Yes, thank you, Commissioner Hicks. I think it's a really critical question. VotingWorks, the culture of VotingWorks comes from interoperability, open standards. That's what we stand for,

and that's where we started. We think it's absolutely critical to the standard, and we're really, really happy it's in there.

And as to how you go about it, I think there are ways to go about interoperability that are incremental where, first, we can require that all existing formats that are actively used be open for everybody to observe, be documented, right? So, we don't have -- we don't have to have this false dichotomy of either everything is closed or everything is standardized with a seal of approval. We can have some in-betweens where, while the standard may not be quite finished or it may be hard to reach, but everything that we do as manufacturers is openly documented and openly usable by other manufacturers so that we get the benefits of modularity even if the standards sometimes move a little more slowly, which is -- which we expect standards to do, so fully on board with that, and I think we can get the win-win of reaching for the standards and having open interoperability even when the standards are hard to reach.

COMMISSIONER HICKS:

Okay. Mr. Coutts? McDermot?

MR. COUTTS:

Yeah, that's the big question is who -- and you kind of hit the nail on the head is what if something goes wrong -- and things tend to do go wrong -- who's going to be blamed for it? Interoperability

is something that Unisyn has been building in from the get-go. We have implemented all the common data format standards, as they currently, exist into our currently certified system, but interoperability is a tough nut. You really do have to test everybody together and make sure everybody's interpreted and done it all the same way. It's kind of like trying to figure out if you've got a self-driving car and there's an accident, who's at fault?

COMMISSIONER HICKS:

Right.

MR. COUTTS:

And that's a hard nut.

COMMISSIONER HICKS:

Right. Mr. Hirsch?

MR. HIRSCH:

I'm all for standards, except, be aware that it reduces diversity. So, right now we have -- and I appreciate VotingWorks' position of everything being open and standardized so that, you know, a vendor could perhaps sell one component in -- as a part of a system. But in order for us to do interoperability, our certification program needs to have component-level certification. And from everything I've seen for the last 15 years, there's no inclination at all for these standards, or any other ones I've seen, to go certify

systems at the component level. And so, until we do that, you're going to experience a lot of pain for very little gain.

Our system, as an example, we'd have to retrain the people that use our system to now think in terms of other terms that are more standardized across everybody's, you know, other systems, diverse systems. So, yeah, while I think standards are good, I can't say that interoperability is going to be a great deal of gain for this round of certification, unless we change it from system-level to component-level.

COMMISSIONER HICKS:

Mr. Smith?

MR. SMITH:

Thank you, Commissioner. So, you've asked a question that has a technological piece and a market piece. Colloquially speaking, the market piece is how many throats to choke. So, you know, I'll go to the technical piece and then the marketing piece, but on the technical front, sure, you know, it's -- it can be done to build an interoperable system when it meets the common data format standards that NIST has published. There are some areas where that's -- those standards are not entirely complete. You have odd State specifications and such. And so, once again, like a lot of VVSG and its requirements, the devil will be in the details to

determine how the labs assess compliance and put a check by that box. So, that's the technical piece.

The market piece, you know, if you look at Los Angeles, Dean Logan, the registrar there, addressed this by making one entity -- in this case Smartmatic -- the prime integrator. And so whether it's the e-poll book, the pieces of the system that Smartmatic personnel developed or pieces of the system that Digital Foundry or others developed, having a prime integrator responsible for the operation of the system as a whole and in fact the certification, which, as we know, in California is a State-level certification -- as a whole -- and is this -- when I say as a whole, I mean the entire system end-to-end is one way to solve that problem, and that, in fact, is what Los Angeles has done.

COMMISSIONER HICKS:

Okay. Okay. Mr. Piper?

MR. PIPER:

Yes, thank you. It's -- it is a difficult one because right now it's still actually quite unclear as to how interoperability will be tested. In the past we've actually done whole-system configurations for an end-to-end test, and, you know, when it comes to having multiple components from different manufacturers involved, you know, whether that testing was done by the EAC, a

State, or a local election official, as Ed mentioned, somebody's going to have to be an integrator of that.

We also have some real concerns about the security of this system. And, as has been mentioned before, who's going to be liable or accountable for system failures, and what are warranty costs going to be? And the configuration could generate more work for election officials if they are to be the integrator.

COMMISSIONER HICKS:

Mr. Pearson?

MR. PEARSON:

Yes, thank you, Commissioner. Mr. Piper did a nice job of paraphrasing and explaining the challenges with interoperability at the component level.

At ES&S, we fully support interoperability for imports and exports at the EMS level. Inside of that, it becomes extremely challenging, just like Mr. Piper explained, and so there's lots of questions around that on the sustainability of that and the viability of it as well.

COMMISSIONER HICKS:

Okay. All right. Well, I -- the other question I have, which is pretty --

CHAIRMAN HOVLAND:

Commissioner Hicks, I'm just going to stop you. We've got -- you're over by 10 minutes, and we want to ensure that Commissioner McCormick gets 10 minutes like --

COMMISSIONER HICKS:

Well, I was going to say, can we submit these questions via written form to these folks?

CHAIRMAN HOVLAND:

Absolutely. Commissioner McCormick?

COMMISSIONER MCCORMICK:

Yes, I want to thank all of you for being here. I know having a limited amount of time is really unfortunate because we have so many questions, and we really want to hear from you. Your written comments are going to be extremely important to us, and I do want to let you know we will take those all into full consideration. Your comments are extremely important to us.

And I've said this in other hearings. We can require everyone to build a Lamborghini, but not everybody can afford to buy one. Based on some comments that I've heard today, the cost of these systems are going to increase to meet these new requirements. My question is, with the increasing costs, will it be prohibitive to the election administrators who need to buy these systems? And what will the increased costs do to the market in general? And I'll start with you, Mr. Pearson, and go down the line.

MR. PEARSON:

Okay. As written, they will. They're going to have a significant impact. None of our products that are fielded today can move forward and be certified to the 2.0 standards without producing new products in some cases, so it would strand the products that we currently have in the field, and so many of those have just been -- so many counties and jurisdictions around this country have just made recent purchases on these. So, that's going to be an extremely important aspect is that we don't make the same mistake that we did when the initial 2.0 came out in 2007, where it created obsolescence for equipment that's in the field or a barrier to entry for so many manufacturers to create new products, and the monies that aren't going to be available in -- at the counties and at the State levels. So, we're very concerned about some of those. We need to take hardware obsolescence into account here. I think we can make incremental changes here that are going to be very valuable, but let's look hard at some of these topics that we discuss today that affect the hardware. I think that's going to be your biggest barrier to allowing manufacturing to move forward with existing systems and still comply to the 2.0.

COMMISSIONER MCCORMICK:

Thank you. Mr. Piper?

MR. PIPER:

Yes, I have to agree with Steve in regards to his comments there, but, you know, in respect to funding a portion of it in this post-pandemic environment here, where State revenues are down and so, too, our local revenues as well, how the -- how jurisdictions are going to be able to fund any upgrades. As to the cost, if it was just an update to the software, that would be much simpler, but if it's also an upgrade to the hardware, then that's where a major part of the cost is going to be involved.

COMMISSIONER MCCORMICK:

Thank you. Mr. Smith?

MR. SMITH:

Thank you, Commissioner. Yes, I don't have any quantified data, but costs for the systems are going to increase based on the requirements we've seen thus far.

COMMISSIONER MCCORMICK:

And do you think that cost is going to be prohibitive to the jurisdictions who need to buy systems?

MR. SMITH:

Yeah, now we've delved -- as I said with Commissioner Hicks, you have a technical question, a market question. Now, you've delved into a political question, because -- and now you have tax revenues, and since this is a government-regulated good

and a must-have, it doesn't follow typical supply-and-demand economics, so that's difficult to say.

COMMISSIONER MCCORMICK:

Fair enough. Mr. Hirsch?

MR. HIRSCH:

Yes, Commissioner. I would say that not only is it going to be a very expensive solution, but these are mostly, or if not all, private companies funding this effort without the public support upfront, and it's not like the military or something. It's going to be expensive and difficult to do. We're certainly wanting to invest and stay competitive, but, you know, remember when HAVA was created in 2002, it put, what, $4-5 billion into the election system for jurisdictions to spend. And right now with this environment and COVID and everything else, I'm not seeing that kind of money being put forward to invest in all of these systems once they're done, you know, being certified four or five years from now. So, it -- yeah, it's going to be expensive and a difficult process.

COMMISSIONER MCCORMICK:

Thank you. Mr. Coutts?

MR. COUTTS:

Yes, I agree. I mean, there's a lot of different things that are coming into play here. One of the ones that hasn't been mentioned is the concept that there are certain parts of the standard that are

actually patented, and so, even though they are going to have to be -- there's going to have to be a negotiated price, those -- that's going to be added into the cost because we have to negotiate to use of those patents, and that -- the patent -- this standard is patented.

COMMISSIONER MCCORMICK:

Okay. Mr. Adida?

DR. ADIDA:

Thank you, Commissioner. I completely agree with your points about costs. It's one of the main reasons why VotingWorks exists, which is to reduce costs to jurisdictions. The best way to reduce cost systematically is to increase competition, and the best way to increase competition is to make it easier to innovative. COTS makes it easier to innovate. It makes it cheaper to innovative. Interoperability makes it -- as a system, things cheaper. And, as Mr. Hirsch said, we also need modular certification because that helps you vendors improve components of the system and make those components cheaper. Getting all vendors to the same standard increases competition. I think all of those things would be great ways to reduce cost without watering down the important standards that we want to meet.

And I want to add one point. I hope it will be okay for me to say this. I think it's understandable that existing manufacturers with

significant market share are going to dislike interoperability. It's not -- if I were a dominant player in this space, I probably wouldn't want that requirement. But it is in my opinion the clincher that will increase competition and reduce costs.

COMMISSIONER MCCORMICK:

Thank you. Mr. Canter?

MR. CANTER:

Commissioner, if the requirements are adopted as-is, there will be a cost increase, potentially significant.

COMMISSIONER MCCORMICK:

Do you think it would be cost prohibitive?

MR. CANTER:

Yes.

COMMISSIONER MCCORMICK:

Thank you. Mr. Dawson?

CHAIRMAN HOVLAND:

You are muted, sir.

MR. DAWSON:

I've got a painting crew painting the exterior of my house, and they're banging ladders outside. I apologize. This is food for thought. If the per-device price becomes too prohibitive, I think there might be several outcomes of that. One would be a preference to go away from ballot-marking devices and go to single

precinct-based scanners. The other thing that might happen in terms of election management policy is it could -- a high per-device price could drive more jurisdictions to adopt early voting, vote supercenters, or vote-by-mail. I haven't really thought this through that much, but it's a very real possibility. Jurisdictions might make purchasing decisions and policy modifications based on per-device pricing.

COMMISSIONER MCCORMICK:

Thank you. Well, in the interest of time, Mr. Chair, I will add my questions to the list that we send out to the vendors or manufacturers if that's okay.

CHAIRMAN HOVLAND:

Thank you for that. And thank you all. As indicated, there are more questions that we want to ask, but we are over our time. I do want to just -- before closing out this panel -- flag some food for thought. One, I think it is clear that we want your feedback, and we want these requirements to be something that can be built to, that can be cost-effective for jurisdictions, but I will say, I -- listening to this, I find a lot of frustration in -- that this is a years-long process. I'm not saying the points that you have made are not valid, but I'm saying that I know at least as long as I've been DFO of the TGDC -- we've had seven meetings. We had a number of hearings. I know that there were some shortcomings in the NIST public working

group, but we are late in this process for this, and so, what I'm saying to you now, in case no one's ever said it, we need this feedback. Please provide it. We do not want to adopt a standard that cannot be built to or is not useful. And if you do not provide that, we cannot look at that and address it.

So, thank you. And I do appreciate you all taking the time and being here and providing this feedback.

With that, I'd like to turn things over to Vice Chair Palmer as we begin panel two.

VICE CHAIR PALMER:

Thank you, Chairman Hovland, and thank you, Mike and Jack, for agreeing to sit on this next panel.

The VSTLs play a vital role in voting system testing and certification by testing the voting systems to ensure they meet the VVSG. The VSTLs are in constant contact with our testing and certification program and provide valuable input on our testing and certification policies. So, I know Mike and Jack have managed many voting system testing and certification projects at the Federal and State level, and even internationally. We look forward to hearing their thoughts on the VVSG 2.0 requirements.

With that, I'd introduce Mike Santos, Senior Test Manager, SLI Compliance; and Jack Cobb, Co-Founder and Laboratory Director of Pro V&V, Incorporated. Mike, go ahead and you can

start with your comments first. You -- Mike, you may still be on mute.

MR. SANTOS:

I'm on mute. Sorry.

VICE CHAIR PALMER:

It's all right.

MR. SANTOS:

Good afternoon.

VICE CHAIR PALMER:

Good afternoon.

MR. SANTOS:

Thank all of you for inviting SLI Compliance to participate today. I am Michael Santos. I'm Senior Test Manager for SLI Compliance Voting System Test Lab. As you know, SLI is one of two accredited VSTLs under the EAC and NIST NVLAP lab. Not only does SLI perform Federal certification testing under the EAC, but we also provide security and certification testing services, including penetration testing and risk and vulnerability assessments directly to several States. I appreciate being here today to provide a statement regarding the proposed VVSG requirements from a VSTL standpoint. As we all know, it is imperative to get certified voting systems to the field as quickly as possible in a manner that

does not impose unnecessary cost, which I think has been a significant topic here today so far.

With that in mind, SLI continues to stress the importance of having standards that are as unambiguous as possible to help accommodate those needs. For VVSG 1.0, there have been over 20 requests for interpretation that were opened due to the ambiguity of many of the requirements. This is a very tedious and time-consuming effort that involves parties from both labs, the manufacturers, and the EAC, and can hinder the process of getting voting systems through the testing and certification program in an efficient and timely manner.

Having standards that are clear and as precise as possible also prevents inconsistencies in testing among the VSTLs. I more than appreciate the time and energy that has gone on to developing the proposed VVSG 2.0 requirements, but I would like to respectfully request that modifications be considered to reduce that ambiguity in a manner that some of these requirements have been written, and I think we've heard a couple of examples by some of the manufacturers previously.

SLI has not seen nor participated in the development of the test assertions that have been developed to date, and perhaps they have been written to address the ambiguities in the requirements that we're referring to, but it's hard to say without having seen the

test assertions. I feel it is imperative that communication with the VSTLs take place before the requirements and test assertions are finalized, as there is still a significant amount of ambiguity in the requirements as they are written today.

SLI was asked to assist with the development of test assertions for VVSG 1.0 2005, and we were very involved in the creation of test assertions written to address ambiguities that were realized after implementation. We have not participated in developing test assertions for VVSG 2.0, which is a bit concerning considering that the primary reason for developing the test assertions is to assist the test labs.

Once again, I appreciate the opportunity to provide a statement today. It is important that the newly developed requirements contain little to no ambiguity and that the test assertions be reviewed with the VSTLs before they are finalized. We have had plenty of opportunity to learn what has worked well and what has not, and I feel that precise requirements and worthwhile test assertions will help to make this next round of standards more effective and prevent needless inefficiencies and inconsistencies between the test labs. I also feel that it would be beneficial to have discussions after the VVSG 2.0 comment period has ended with the VSTLs and the manufacturers to discuss the response provided by the public.

I more than appreciate you listening to my feedback, and I am happy to answer any questions you may have. Thank you.

VICE CHAIR PALMER:

Thank you, Mr. Santos.

Mr. Cobb?

MR. COBB:

Thank you, Vice Chair Palmer and Commissioners. I would like to thank you for the opportunity to speak today on the Voluntary Voting Systems Guidelines 2.0 or the VVSG 2.0. While I've read through the VVSG 2.0, I have not had an opportunity to fully assess the requirements against any current systems or proposed systems that have come in. With that said, I believe these requirements are a step in the right direction.

I have had an opportunity to assess voting systems to the FEC 1990 standards, the 2002 VSS, the EAC 2005 VVSG, and the EAC VVSG 1.1. Working with these standards has always been -- had a drawback of allowing for innovation. All of these previous standards were comprised of design requirements and requiring manufacturers to develop voting systems to meet age-specific requirements. The VVSG 2.0 draft recommends -- in recommendations taking a different approach by looking at the required functions of a computerized system to be a voting system. One example of this issue is currently presenting itself to our lab.

Because the VVSG 1.1 contains many design requirements, many nontraditional voting systems cannot be fully evaluated against these standards.

States are doing catastrophe planning for the November election. Many of the States are just moving to all mail-in ballots, but other States are evaluating newer technologies such as electronic ballot and delivery and returned remote voting, voting by phone using cellular networks, and even vote by text. Pro V&V has been asked to evaluate some of these systems against the VVSG 1.1. We have found it difficult at best to try to map what requirements are even applicable to these systems. One of the major challenges is just identifying what the system is classified as, a DRE system, paper system, or even just an electronic ballot-marking system. It's my belief that the new VVSG 2.0 provides a framework where new technologies may be even technologies that haven't been developed now can be evaluated more easily.

Again, I thank you, Vice Chair, Commissioners, for the opportunity to speak on this important topic, and I'll be glad to answer any questions.

VICE CHAIR PALMER:

Well, thank you for your comments. Mr. Chair, I'm going to ask the first question. And should I go ahead? Okay.

CHAIRMAN HOVLAND:

Yes, go ahead. Thank you.

VICE CHAIR PALMER:

For -- this is really for both of you. Feel free to answer the question. You know, how will the changes in 2.0 impact your testing as a whole? And I think you mentioned a little bit of this in your comments, but if you could go to a little bit of detail, how they'll impact your testing. And do you see any obvious advantages or disadvantages to those changes?

MR. SANTOS:

Well, I think the VVSG 2.0 is definitely an improvement in terms of like the formatting and content. I think in previous versions of the VVSG, you know, things were written much more ambiguously, and it was a lot more difficult to, you know, A, on the manufacturers' side interpret some of those requirements correctly and implement them correctly, which caused some downstream issues, where manufacturers would sometimes interpret something because it was ambiguous and vague to their liking, which usually turned out to be incorrect. So, they -- you know, it did -- it wasn't until it got to the certification process that it was encountered and then sometimes it, you know, was almost at an architectural level that they would have to then go back and rearchitect something or make a lot of changes that weren't really necessary had those requirements been more complete and more clear up front.

So, I really like the layout of VVSG 2.0 overall. I think it's -- you know, as we've heard some other comments and some of my comments earlier, I think there's still some room for improvement. There are still some ambiguities that can be ironed out, but I think we've really taken a number of steps forward. What do you think, Jack?

MR. COBB:

I would have to agree with Mike. Everything he said about the test assertions and some of the panelists on the first panel were talking. The test assertions are very important, so we still have a lot of work to do, and we're not exactly sure what that effort is going to entail, but I think we're still moving in the right direction. So, as of right now, we couldn't test to these requirements with what we have currently developed. We would have to develop a new -- a whole new system, I guess, for testing. It's not odd to have to do that, but it just -- that's -- we would have to put some effort into designing a new system for testing.

MR. SANTOS:

And from SLI's point of view, we'll -- that will be the same thing. We've been looking at them. And apologies to the EAC that we haven't gotten any comments to you guys yet. We're working on them. We're in process, and we anticipate sending comments in

the near future. And -- but I would definitely agree with what Jack just said.

VICE CHAIR PALMER:

Okay. Mr. Chairman, I'm going to turn it back to you for some questions.

CHAIRMAN HOVLAND:

Thank you, Mr. Vice Chair. And thank you all for being here.

Mr. Cobb, I -- at a previous hearing you had flagged a long-standing issue, I believe, from the VVSG 1.0 with the decibel level that has stuck with me as an example of something that needed to be fixed and hadn't been for a number of years. Do you -- have you had a chance -- have you identified issues within these requirements that could be similar or things that we can fix on the front end?

MR. COBB:

I have not had the opportunity to get that deep into it. I learned something today on this call, that there's a lot -- a UL lock is $100. I did not know that they were expensive. So, as we play with the standards and do our analysis of them to get comments to you guys, we may need to do some further looking into things because I had not -- you know, I hadn't priced a lock like that, so I've learned that today.

CHAIRMAN HOVLAND:

Thank you. And, Mr. Santos, do you -- is there anything that you all have noticed yet or, if not, certainly we would welcome that in written form.

MR. SANTOS:

Yeah, we'll definitely provide that in written form. You know, one thing I noticed in the usability, it looks like some of the content for usability was taken from an RFI that was put out in 2013, but not all of it, and we were a little surprised because, you know, it calls out for certain kinds of testing, but it stopped there, where in 2013, it kind of went to the next step in the RFI, where it also kind of called out a number of -- a minimum number of participants. And I think, from a usability point of view, that would -- participants that successfully complete the testing, so that it recommended to them to have more than eight because -- in case some fell out during the test statements. With the way it's written right now, you could have one person, relevant sample size, probably not. So --

CHAIRMAN HOVLAND:

Thank you. Similarly or along the -- look at these requirements. You know, I've also heard a lot of feedback over these many months of this process and, you know, a lot of people believe, well, obviously historically, the test assertions have been developed, you know, by the labs is my understanding, but a lot of people believe, you know, a number of the requirements are

sufficient in detail. Do you have a sense, sort of either broad percentage, or can you provide feedback on which requirements you believe provide sufficient detail to test to with more specificity in order to provide test assertions that can help inform design and build and ultimately testing new systems?

MR. SANTOS:

Well -- go ahead, Jack.

MR. COBB:

Go ahead, Mike.

MR. SANTOS:

So, historically, the test assertions were actually driven by NIST and in the labs participated and helped them with that. So, with the current standard that we're looking at, VVSG 2.0, percentagewise, you know, I would say it's a very high number that really don't need test assertions, 85 percent maybe, you know? I think, as I talked about a little bit earlier, I think a lot of the requirements that are in 2.0 have been well-thought-out and very explicitly written down.

I think there's still some that need more updating. I think Mr. Canter earlier, you know, talked about the vagueness of some of the terminology where it says like, you know, it must be fairly done or something like that, okay, but how do you define fairly? So, I think within the requirement itself, because that's something that

manufacturers are going to need to understand, well, what does "fairly" mean, or, you know, industry best practices. It's a great concept, but who's going to make that decision of what is the industry best practice? If it's left to interpretation, you know, you're going to have nine people and you'll get 10 different opinions. So, I think those things could be hired out in the VVSG itself.

I think there are some areas like, you know, maybe in security, encryption, and things like that, where we legitimately need some test assertions to kind of consistently drive the verification and validation of any new requirement consistently within the program. But I think, overall, VVSG 2.0 is pretty well self-standing.

CHAIRMAN HOVLAND:

Thank you. Just to be conscious of my time, Mr. Cobb, if there's anything you want to add quickly, thank you.

MR. COBB:

Yeah, I agree with what Mike said, but I'd like to remind everyone that as we were writing the -- as the 2.0 was being written, we knew that this was -- we were -- that was part of the purpose was to move some of the things that shouldn't be descriptive to a point where we can test to those things instead of build to those things.

CHAIRMAN HOVLAND:

Thank you. That is a very important point.

Commissioner Hicks, do you have questions?

COMMISSIONER HICKS:

Yes, I do.

Thank you, gentlemen, for testifying before us today. What are some of the technologies that we're seeing that can't conform to the old standards as we move forward?

MR. COBB:

Okay. I'd like to take that one first. I'm going to give hypothetical system A and hypothetical system B. A votes on a smartphone and transmits the encrypted data back to a server in the main office. System 2 uses a mobile browser and just sends the selections back to the server. I have a requirement in VVSG that says the device that captures the votes has to be auditable, okay? What am I auditing and where on these systems? I can't audit someone's smartphone. So, those are kind of the square peg and the round hole kind of idea.

COMMISSIONER HICKS:

Mr. Santos?

MR. SANTOS:

I think, you know, Jack kind of really pinned that one down pretty well. You know, I think we still need to look at those newer technologies and what kinds of technologies like a smart phone is

going to be implemented and how do those speak to the requirements. And I know one of the manufacturers brought that up, too -- or maybe it was Jack earlier -- where it's hard to tie a lot of requirements to like a specific device type. I think in the sense that the requirements have still been kind of thought along the traditional lines of thought of polling place devices and things like that. As we get to more nontraditional types of devices, how -- what is the napping going to be between those types of devices and the current requirements?

COMMISSIONER HICKS:

Thank you. I think that, you know, since we are running over, I am going to submit the rest of those questions via written form so we can continue on.

CHAIRMAN HOVLAND:

Thank you, Commissioner Hicks.

Commissioner McCormick.

COMMISSIONER MCCORMICK:

Thank you, Chair Hovland. And thank you to Mr. Cobb and Mr. Santos for being here.

What would you say is the biggest reason for lengthy testing times, and do the new requirements address that or exacerbate it? We'll start with Mr. Cobb.

MR. COBB:

Yeah, the length of time was when the standard came out, the systems weren't prepared for what the standards actually said. They were prepared for the 2002. And manufacturers were trying to get the systems to conform to the 2005 standard. We've now gone to the point to where they're -- it does not take a long time for test certification anymore. I mean, if you're in for three or four months, that's about normal and, as Bernie was saying earlier, you know, 40 years when we first started going to this stuff in 2005. So, I would -- I would say the system preparedness and preparedness towards the standard.

COMMISSIONER MCCORMICK:

Thank you. Mr. Santos?

MR. SANTOS:

I definitely agree with Jack that, you know, the time frames have definitely come down. I think when some of the manufacturers were alluding to like really long certification processes, we're talking about back in 2007, 2008, 2009. And I think part of it was that the program of the EAC was just getting off the ground, and there were a lot of things that needed to be ironed out. I think the state that we're at from an EAC program perspective that, you know, I think is a much more consistent flow, and we don't see very many bumps like what we used to see.

And also, with respect to the standards themselves, I think there was a lot of ambiguities in the previous standards, and I think manufacturers took their own interpretation of those requirements and then many times found out later well down the path that it was an incorrect interpretation. I think we see VVSG 2.0 being much more explicit and easier to understand, a lot fewer ambiguities, especially, hopefully once we're done with the finalized version that a manufacturer will have to trip over. I think we'll see much shorter time periods for certifications like Jack mentioned earlier.

COMMISSIONER MCCORMICK:

So, kind of as a follow-up to that, do you believe from a VSTL standpoint that the new 2.0 requirements will require manufacturers to start from zero in designing new systems and therefore increase the time, say, to two or three years, as we heard in the previous panel? Mr. Cobb?

MR. COBB:

Well, that's something that I'm interested in myself. I would like to be able to evaluate a system on paper against the actual requirements and see where we are.

MR. SANTOS:

I mean, I think from an -- architecturally, there's some big impacts in VVSG 2.0 to the manufacturers, and I can see it taking a significant amount of time to implement those. And, I mean, they're

the experts on their own systems and they know what their architectures are. I think that it's reasonable to take what they said, in terms of timelines.

COMMISSIONER MCCORMICK:

Okay. Thank you. Mr. Chair, I yield back to you in case we have time for another round of questions.

CHAIRMAN HOVLAND:

Thank you. I do think we've got time for a quick one for everyone. One other one that I had just, again, I understand that the manufacturers are -- that is their job, but from the standpoint of the labs and as experts on this technology, do you see, I guess, pieces of the puzzle that are missing from these requirements that would allow people to start designing and building from when we adopt these requirements, in the sense of is there -- there's clearly a demand out there to get this next generation of voting equipment available. Are there parallel tracks where we can gain time on the process? Is this sufficient information to start designing and building in your opinion, Mr. Cobb?

MR. COBB:

I would say yes, to start designing. It's not enough detail because we don't have the program manual that goes along with it. We don't have the test assertions to go along with it. But that doesn't stop you from starting.

CHAIRMAN HOVLAND:

Thank you. Mr. Santos?

MR. SANTOS:

Yeah, I agree with Jack. I think there's definitely a good -- a lot of information in place to get a good start on it, at least from an architectural point of view. You know, some of the things that I talked about earlier as far as ambiguities, there -- in the number of places in the VVSG 2.0 there's references to other standards, and they don't list the explicit version of the standard, so for me, that's a concern. Well, if you say, you know, standard A, but if there's four different versions, you know, which is the right one, you know? And if they're significantly different, that could be very impactful. And in other situations when you have the ambiguities of, you know, good enough or, you know, best industry practices, that could have a significant impact because what might -- what somebody might interpret as best industry practice for their product, if somebody else decides on a different industry best practice for an industry and if they're, you know, significantly divergent, then which is the right one?

You know, I think we really look to the EAC to make those determinations rather than, at least in my opinion, kind of just throwing it out as a best industry practice. I would like to see those really nailed down. But I think once those get nailed down, at least

the manufacturers have a concrete target to say, okay, this is what we have to do, and then they can really flesh out that architecture much more thoroughly.

CHAIRMAN HOVLAND:

Thank you, Mr. Santos.

Vice Chair Palmer, do you have a final question?

VICE CHAIR PALMER:

I do, Mr. Chair, thank you. My question is for both of you if you can. We heard some testimony earlier today about sort of lack of an innovation class in 2.0. And I think that you, Mr. Cobb, talked about a couple of circumstances where, you know, folks want to bring in different types of innovation but there may not be clarity or there may be gaps in the requirements or testing assertions. What is your -- you know, what's your recommendation to us, or the EAC as an agency, how we would design that innovation class to provide some clarity to you so we can continue to innovate in this field?

MR. COBB:

The innovation class that's in the current VVSG and the 1.1 I -- to my knowledge has never been used. I've been in some meetings with the EAC about possibly using it, but we never actually did anything with it. So, I don't even know how that would really work.

VICE CHAIR PALMER:

Do you have any suggestions? Do you have any suggestions on how we would make it work? Because obviously, that was the intent of the election community and stakeholders to have -- be their innovation class. If it's not working, we'd like to know how to make it work.

MR. COBB:

But in the past, what is happened is, is we didn't have Commissioners for one thing, so somebody had to make a decision on some of these innovative systems, on whether the EAC would put their name on it and certify it or not. I think it would work as written in the previous standards. It's just there -- a great example would be internet voting. Can we do internet voting? Well, that's innovative. Can I bring it into a program under the innovative class? I -- that's up to the program director and you guys more than it is, can we do it. It -- I think it would work right now, but some of these things have to be determined at a higher level than just us.

VICE CHAIR PALMER:

All right. If there's other -- Mr. Santos, do you want to weigh in on that? I mean, there's other types of innovation other than internet voting.

MR. SANTOS:

Right. VVSG 2.0 is definitely kind of locked down innovation. As I think we heard a little bit earlier, we've seen in some of the proposed requirements that, you know, expressly forbid wireless. You know, I know there's been systems that have played with, like using Bluetooth or wireless in the polling place, and, you know, there's arguments probably on either side as to, is that secure enough or it's not secure enough. But, as time goes on and if the technology, you know, continues to advance, at some point there may be -- there was abilities to implement that kind of technology, but right now, the way it's written in VVSG 2.0, it's already expressly forbidden. So, how do we promote innovation, like, in terms of those types of technologies?

I think you probably have to look at a few specific requirements that are in this proposed standard and see if there's some way to loosen it up a little bit, you know, in terms of other types of innovations, various COTS products or, you know, manufacturers piggybacking off of somebody else, the system, you know -- there's a number of areas that I think we kind of need to look at, but it's a fairly difficult, and I think in-depth conversation, so I think it would be good to have a very specific meeting. You know, maybe it's EAC, VSTLs, manufacturers sitting down and really, at least, coming up with a basic agenda to make a determination of next steps for something like that. But it would be nice to see. I

think in order to promote innovation it would probably be pretty necessary.

CHAIRMAN HOVLAND:

Thank you, Commissioner Palmer.

VICE CHAIR PALMER:

Thank you, Mr. Chair.

CHAIRMAN HOVLAND:

Do you have a final question?

VICE CHAIR PALMER:

No, that's fine.

COMMISSIONER HICKS:

Yes, I -- yes, I do. We've heard a lot about moving things a little more quickly. Is there -- what are your thoughts on -- there's only two labs right now; there used to be three. What are your thoughts on labs participating in the process for various parts of the process, not necessarily doing an A-to-Z sort of certification, but maybe A-to-M or M-to-Z sort of thing, but leaving you as the final determination of that certification process?

MR. COBB:

I've spoken a few times about some of the things that have -- it's my belief we could do -- like the hardware testing that the VSTLs are in charge of, as the lead lab, that testing is done by an accredited lab that knows, like, electrostatic discharge. They know

all that stuff, and they do it. It would be easier to allow the manufacturers just to go and do the hardware testing and bring us a report and let us look at it. And then, there's a few other areas that you could also kind of subcontract out, but that -- you know, things could be going on in parallel.

COMMISSIONER HICKS:

Mr. Santos?

MR. SANTOS:

I think it's a good concept if it's, you know, properly implemented. I think, you know, hardware testing, usability and accessibility testing, sometimes I think it's probably better, you know, to go to the experts in those areas. You know, it would definitely have to be managed very tightly. My only concern there is, you know, if you break it out into many pieces and you become an integrator of sorts and, you know, you have to make sure that everybody's talking to each other and that nothing is being missed and that each different subcontractor that you might use is, you know, doing their testing to accepted standards.

So, there would definitely be more overhead, but at the same time I think, at least in specific areas, there's definitely things to gain. Usability, accessibility experts, you know, that's something that they live and breathe, and, you know, things that we might take

for granted not being -- you know, living and breathing those types of things, you know, would be well-served by that expertise.

COMMISSIONER HICKS:

Thank you. Mr. Chairman?

CHAIRMAN HOVLAND:

Thank you, Commissioner Hicks.

Commissioner McCormick, do you have a final question?

COMMISSIONER MCCORMICK:

I do. Thank you, Mr. Chairman.

We heard, in earlier testimony, that the requirements of VVSG 1.1 have been included in the 2.0 requirements. And, as you know, there were problems with 1.1 that prevented manufacturers from submitting systems to test to 1.1. Can you give us some visibility on this issue? And do you think, in your opinion, will it be a continuing problem with 2.0, having those same problem standards included, Mr. Cobb?

MR. COBB:

I'm not specifically sure of the requirement that they are talking about, as pulled from 1.1 that was causing problems. I know there are some of the 1.1 requirements that are pulled into 2.0, but I would assume that during this comment period if there are problems with them, the manufacturers, the labs are going to

submit comments for sure, and maybe we need to look at those to address those at that time.

COMMISSIONER MCCORMICK:

Thank you. Mr. Santos, do you have any visibility on that?

MR. SANTOS:

The best of my recollection, I can think of two requirements in 1.1 that were causing some heartburn with the manufacturers. And I believe one of them was in source code, the cyclomatic complexity requirement. I don't remember seeing it in VVSG 2.0. The other one was the usability/accessibility requirement or hands-free voting that once, you know, a voter put their ballot into, like, a ballot-marking device that it got processed on their own without any manual intervention by the voter. I believe that one is still in VVSG 2.0.

And in recent years we've seen some manufacturers that have implemented polling place devices to try to answer the mail on that requirement. We've had, in some instances, some subsequent issues come up with those devices. But I think there are workarounds for it or, you know, ways for manufacturers to accommodate that requirement, but it could be a significant effort, and that might be part -- one of those requirements that would lend itself to their lengthy development cycles.

COMMISSIONER MCCORMICK:

Okay. Good to know. Thank you very much. Thank you, Mr. Chairman.

CHAIRMAN HOVLAND:

Thank you, Commissioner McCormick.

And thank you to the speakers for joining us today. At this point we have public commenters. I'd like to now recognize Lauren Lochridge and Christopher Hughes of the Voting Methods Working Group, who requested to submit public testimony during today's hearing. Ms. Lochridge and Mr. Hughes requested to split five minutes. How you do that is up to you. Please go ahead. Thank you.

MS. LOCHRIDGE:

This is -- thank you, Chair, Vice Chair, and Commissioners for the opportunity to submit comment on the proposed VVSG 2.0 requirements. We respectfully request your consideration of our recommendations.

I think I'm -- apologies, but I think I'm still muted for video. I'm not sure if that's on your end, but I am on video if that's -- can be fixed.

CHAIRMAN HOVLAND:

Thank you for flagging that.

MS. LOCHRIDGE:

My name --

CHAIRMAN HOVLAND:

We can hear you. And hopefully --

MS. LOCHRIDGE:

Okay, great.

CHAIRMAN HOVLAND:

-- [inaudible] momentarily.

MS. LOCHRIDGE:

Hopefully, you will be able to see me as well.

So, my name is Lauren Lochridge. I'm the Co-Chair of the Voting Methods Public Working Group with NIST Interoperability. The Voting Methods Working Group officially kicked off in early 2015 after achieving approval to develop a voting methods standard as part of the IEEE SA and NIST Voting Standards Committee. We assembled a team of over 45 stakeholders representing a variety of interests and experiences of elections administrators and officials, manufacturers, and ISVs, organizations and individuals.

Our work product, Voting Methods and Tabulation Methods Standard Draft NIST SP1500-107, hereafter referred to as 107, provides rigorously and precisely defined specifications of voting and tabulation methods. The elements of this standard can be used by elections administrators to unambiguously specify

requirements for systems performing counting tabulations or other common operations on vote data sets.

107 enables manufacturers, vendors, and elections administrators to efficiently, accurately, and precisely communicate specifications in a common format to build the core parts of voting systems. Testing labs may benefit by knowing what functionality is intended to test. Legislators may find value in adopting our voting and tabulation method specification, as a standard text when authoring elections code. We propose that 107 may provide the VVSG 2.0 with similar benefits as one in the constellation of NIST CDF specifications. Further, we recommend that VVSG 2.0 casting and tabulation sections align with the voting methods and tabulation methods sections of 107.

107's core value proposition is in mitigating costs, overhead, and risks caused by unnecessary work of rediscovering anew precisely what stakeholders intend in technical specifications. Stakeholders may adopt and reference our standard specifications for each new version of their work product, whether that be a manufacturer's or ISV's new voting systems, an elections official's new RFP or L&A testing plans, a legislator's update to elections code, or a testing lab's development of testing plans for certification.

Next, my colleague Chris Hughes will discuss more specifically with an example our proposed revision to VVSG 2.0. Thank you.

MR. HUGHES:

Thanks, Lauren, and thank you, Chairman Hovland and Commissioners, for the opportunity to submit comments on these proposed VVSG 2.0 requirements.

As mentioned, my name is Chris Hughes, and my focus with the Voting Methods Working Group has been on collecting, cataloging, and analyzing legal documents related to how voting methods and tabulation methods operate in practice. And, today, I'm going to briefly introduce our recommendations for revisions to VVSG 2.0 and provide a concise example of those revisions.

Overall, we recommend that the casting and tabulation sections, which are respectively 1.1.5 and 1.1.9 of the draft 2.0 requirements, be revised and reorganized to be more in line with our standard -- our draft standard 1500-107. Revising these sections, the casting and tabulation sections to add precision from our standard without increasing prescriptiveness or length to include references to our standard and to incorporate our standards' organization could significantly strengthen these sections and could enable stakeholders to produce accurate and precise voting systems.

Now for my example. Right now, 1.1.5-B reads N of M voting. For the N of M voting method, the voting system must be capable of gathering and recording votes in contests where the voter is allowed to choose up to a specified number of contest options from a list of contests. We see three challenges with this provision. First, the way votes are cast in N of M contests could be more precisely defined. Second, it's not clear that N of M actually encompasses a set of voting methods, including such methods as a plurality and limited voting. Third, the placement of this provision within 1.1.5 does not flow from the preceding sections in 1.1.5.

I'm not going to go into the details of our actual revision. I'll just talk about how we're thinking about these revisions, but it has four major components. First, we more precisely define how N of M operates. Second, we suggest referencing the voting methods that N of M encompasses, as I did earlier. Third, we recommend citing relevant provisions of 107 so a stakeholder can quickly find more detail. And fourth, we reorganize 1.1.5 so the section flows more logically for readers. And in this instance N of M would be grouped with voting methods that use a common tabulation method. These revisions would bring 1.1.5-B and the rest of 1.1.5 and 1.1.9 more in line with 1500-107 while making the whole sections more actionable for stakeholders.

We will provide in written comments the full set of our recommended revisions to these sections within the next two weeks. And thank you again for the opportunity to provide this synopsis of our comments on the VVSG 2.0. We believe that incorporation of our work will enhance the clarity and precision needed by election officials, vendors, and others in developing, testing, and implementing new and modern voting systems. Thank you.

CHAIRMAN HOVLAND:

Thank you, Ms. Lochridge and Mr. Hughes.

With that, we come to the end of this public hearing. On behalf of my fellow Commissioners, I would like to thank all the participants in today's hearing for their input and contributions to this discussion.

Our hearings this spring have brought together a wide range of perspectives that add to the discussions we heard during the earlier development of the VVSG 2.0. The next step in this process is to discuss the requirements of the Standards Board and Board of Advisors in June.

Also, as we've heard today and I'd like to remind everyone that the public comment period is open until June 22nd, and comments can be submitted on Regulations.gov. We really do want to hear from you, and we welcome any comments, both from

our participants today and the public and others. We cannot make this process or this program better without feedback telling us how. We are all operating in a unique environment right now, but the EAC is committed to continuing to move the approval process forward for the VVSG 2.0.

Thank you again to everyone who spoke today and in the earlier hearings, and thank you again to the many people who have contributed to getting us to where we are now.

With that, I'll take a motion to adjourn today's hearing.

COMMISSIONER HICKS:

I so move.

CHAIRMAN HOVLAND:

Is there a second?

COMMISSIONER MCCORMICK:

Second.

CHAIRMAN HOVLAND:

Thank you. It's been properly moved and seconded to adjourn the meeting.

All in favor, say aye.

[Chorus of ayes]

CHAIRMAN HOVLAND:

Opposed?

Hearing none, this meeting of the Election Assistance Commission is adjourned. Thank you.

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[The Virtual Public Hearing of the United States Election Assistance Commission adjourned at 3:35 p.m.]

bw/cms