



COMMITTEE ON HOUSE ADMINISTRATION  
CHAIRPERSON ZOE LOFGREN (D-CALIF.)

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**STAFF REPORT ON**  
**FEASIBILITY OF REMOTE**  
**VOTING IN THE UNITED STATES**  
**HOUSE OF REPRESENTATIVES**  
**PURSUANT TO HOUSE RESOLUTION 965, § 5**

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*November 10, 2020 | 116th Congress, Second Session*

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# EXECUTIVE SUMMARY

As of November 9, 2020, the United States has more than 10 million confirmed cases of COVID-19, more than any other nation.<sup>1</sup> More than 237,600 Americans have died, more than in any other country.<sup>2</sup> As dramatic and far reaching as the pandemic’s impact has been for the U.S., according to experts, it will get worse before it gets better. In July 2020, the Director of the Centers for Disease Control and Prevention (CDC), Dr. Robert Redfield, said “the fall and winter of 2020 and 2021 are going to be probably one of the most difficult times that we have experienced in American public health.”<sup>3</sup>

Now, fall is here, and in a majority of states, cases are increasing, with 31 states setting new high marks for daily cases in October and 15 states reporting new high marks for deaths in a single day.<sup>4</sup> On November 4, 2020, the U.S. set a grim global record for the most new cases reported in a single day, with more than 100,000 new confirmed cases – beginning at least five straight days of more than 100,000 cases.<sup>5</sup> On October 26, former U.S. Food and Drug Administration Commissioner Dr. Scott Gottlieb warned, “We are likely to see a very dense epidemic. I think we are right now at the cusp of what is going to be exponential spread in parts of the country.”<sup>6</sup> The Institute for Health Metrics and Evaluation (IHME) at the University of Washington estimates that by February 1, 2021, deaths in the U.S. could reach nearly 400,000 – an increase of more than 166,000 deaths in less than three months.<sup>7</sup> IHME also estimates that if universal mask use was implemented immediately, more than 61,400 lives could be saved

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- 1 Kim Bellware, Wash. Post, *U.S. surpasses 10 million cases as Americans enter the worst phase of the pandemic yet*, Nov. 9, 2020, available at <https://www.washingtonpost.com/nation/2020/11/09/coronavirus-covid-live-updates-us/>; Johns Hopkins University, *COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)*, available at <https://coronavirus.jhu.edu/map.html> (last accessed Nov. 9, 2020); STAT, *The Covid-19 Tracker*, available at <https://www.statnews.com/feature/coronavirus/covid-19-tracker/> (last accessed Nov. 9, 2020); CDC, *CDC COVID Data Tracker*, [https://covid.cdc.gov/covid-data-tracker/index.html#cases\\_casesinlast7days](https://covid.cdc.gov/covid-data-tracker/index.html#cases_casesinlast7days) (last accessed Nov. 9, 2020).
  - 2 *Id.*
  - 3 Amanda Watts, CNN, *CDC director offers bleak public health outlook for fall and winter*, July 14, 2020, available at [https://www.cnn.com/world/live-news/coronavirus-pandemic-07-14-20-intl/h\\_0a1e9579c6acb8adc5a8cd454f221d59](https://www.cnn.com/world/live-news/coronavirus-pandemic-07-14-20-intl/h_0a1e9579c6acb8adc5a8cd454f221d59).
  - 4 Madeline Holcombe, CNN, *At least 31 states set their one-day coronavirus cases records in October*, Nov. 1, 2020, available at <https://www.cnn.com/2020/11/01/health/us-coronavirus-sunday/index.html>; Christina Maxouris, CNN, *Half of US states are reporting increased Covid-19 cases and some leaders push new measures*, Oct. 7, 2020, available at <https://www.cnn.com/2020/10/07/health/us-coronavirus-wednesday/index.html>; Noah Higgins-Dunn, CNBC, *U.S. reports uptick in daily coronavirus cases as outbreaks surge in Great Plains*, Oct. 8, 2020, available at <https://www.cnbc.com/2020/10/07/coronavirus-outbreaks-sweep-through-great-plains-states-as-wisconsin-activates-field-hospital-.html>; Amanda Watts, CNN, *27 US states are reporting an uptick in Covid-19 cases. Here's a look at where infections are rising*, Oct. 1, 2020, available at [https://www.cnn.com/world/live-news/coronavirus-pandemic-10-01-20-intl/h\\_882d06f7804ff5087f10ddfb54f27f7f](https://www.cnn.com/world/live-news/coronavirus-pandemic-10-01-20-intl/h_882d06f7804ff5087f10ddfb54f27f7f).
  - 5 Antonia Noori Farzan & Karla Adam, Wash. Post, *Coronavirus updates: U.S. shatters records with more than 100,000 new cases in a single day*, Nov. 5, 2020, available at <https://www.washingtonpost.com/nation/2020/11/05/covid-coronavirus-updates/>; Christina Maxouris, CNN, *The US just reported more than 100,000 new Covid-19 infections, the most cases in a single day since pandemic's start*, Nov. 5, 2020, available at <https://www.cnn.com/2020/11/05/health/us-coronavirus-thursday/index.html>; N.Y. Times, *Covid-19: U.S. surpasses 10 million Coronavirus Cases as Global Cases Top 50 Million*, Nov. 9, 2020, available at <https://www.nytimes.com/live/2020/11/08/world/covid19-coronavirus-live-updates#10-million-americans-have-tested-positive-for-the-coronavirus>.
  - 6 Will Feuer, CNBC, *Average daily new coronavirus cases in U.S. hit all-time high, Gottlieb warns of 'exponential spread'*, Oct. 26, 2020, available at <https://www.cnbc.com/2020/10/26/average-daily-new-coronavirus-cases-in-us-hit-all-time-high-as-health-officials-warn-exponential-spread-is-coming.html>.
  - 7 Institute for Health Metrics and Evaluation, *COVID-19 Projections*, available at <https://covid19.healthdata.org/projections> (last accessed Nov. 4, 2020).

during that same period, but even with that measure, more than 104,500 additional people will likely die from COVID-19 by February 1.<sup>8</sup>

In less than a year, a new virus that was previously unknown in the United States has become a deadly pandemic capable of impacting nearly every facet of American life, including the operations of government. At the state level, outbreaks among legislators have impacted the ability to conduct government business in a number of states. For example, in Mississippi, more than 60 legislators and staff – including at least 49 members – contracted the virus in July.<sup>9</sup> The Speaker of the House and the Lieutenant Governor, who presides over the Senate, were also both positive. That left the state government in limbo, with significant pending business unfinished.<sup>10</sup> In several other states, tragically, legislators have died.<sup>11</sup>

In Congress, more than 75 Members have publicly disclosed that they tested positive, self-quarantined, or had otherwise come in contact with someone else who was positive.<sup>12</sup> At one point, at least 22 Members of the House had either tested positive, were presumed positive, or were in self-quarantine because of exposure to someone who was positive.<sup>13</sup> In response to the outbreak and the fact that a number of Senators contracted the virus, in October 2020 Senate Majority Leader Mitch McConnell changed the legislative schedule in the U.S. Senate, and delayed floor activity for two weeks.<sup>14</sup>

In the early weeks and months of the COVID-19 pandemic, the U.S. House of Representatives modified its legislative operations to ensure that the House would be able to continue its critical work during the pandemic, while protecting the health and safety of all those who work in the House. For example, the House authorized committees to conduct virtual hearings, created an electronic hopper for the introduction of legislation, developed a system to electronically submit extensions of remarks, and took significant steps to swiftly expand the ability of its Members and staff to telework by distributing laptops and tablet computers and rapidly increasing the availability of online collaborative platforms for official work.

The House also authorized remote voting by proxy and directed the chair of the Committee on House Administration (Committee) to study the feasibility of using technology to conduct remote voting in the House. The Committee has studied this issue, including by conducting a public hearing. The witnesses at that hearing – itself conducted in a virtual online format – included a former Republican Speaker of the House and several technology experts. All conclud-

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8 *Id.*

9 Anita Lee, Sun Herald, *How many MS legislators did COVID-19 strike? Number has grown, with one related death*, Aug. 10, 2020, available at <https://www.sunherald.com/news/coronavirus/article244854672.html>; Bobby Harrison, Mississippi Today, *Legislators pay price for disregarding COVID-19 precautions at Capitol*, July 19, 2020, available at <https://mississippitoday.org/2020/07/19/legislators-pay-price-for-disregarding-covid-19-precautions-at-capitol/>.

10 Ivan Pereira, ABC News, *Mississippi statehouse shuttered for 2 weeks as dozens of lawmakers contract coronavirus*, July 9, 2020, available at <https://abcnews.go.com/Health/mississippi-statehouse-shuttered-weeks-dozens-lawmakers-contrast-coronavirus/story?id=71690136>.

11 Ballotpedia, *Government official, politician, and candidate deaths, diagnoses, and quarantines due to the coronavirus (COVID-19) pandemic, 2020*, available at [https://ballotpedia.org/Government\\_official\\_politician\\_and\\_candidate\\_deaths\\_diagnoses\\_and\\_quarantines\\_due\\_to\\_the\\_coronavirus\\_COVID-19\\_pandemic\\_2020](https://ballotpedia.org/Government_official_politician_and_candidate_deaths_diagnoses_and_quarantines_due_to_the_coronavirus_COVID-19_pandemic_2020) (last accessed Nov. 4, 2020).

12 GovTrack, *COVID-19 in Congress*, available at <https://www.govtrack.us/covid-19#legislators> (last accessed Nov. 4, 2020).

13 *Id.*

14 Chris Cioffi, Roll Call, *After Republican COVID-19 positives, Senate to remain out until Oct. 19*, Oct. 3, 2020, available at <https://www.rollcall.com/2020/10/03/after-republican-covid-19-positives-senate-to-remain-out-until-oct-19/>.

ed that remote voting is technologically feasible. This staff report concludes that operable and secure technology exists to permit the House to conduct remote voting and that such technology is already in use by legislative bodies in both the U.S. and other countries.

In light of the clear impact that COVID-19 can have on the ability of the federal government to conduct legislative business and the continuing surge of the pandemic within the U.S., it is imperative that Congress be able to continue its work safely and securely. This staff report concludes that operable and secure technology exists that would permit the House to conduct remote voting, and that such a tool could be developed to further establish the House's flexibility and resiliency to operate during the pandemic. The report puts this finding in context by reviewing the adaptations already made by the House; surveying the development of remote voting and other remote or virtual procedures in other legislatures, both by states and other nations; and discussing the Committee's review and public hearing.

# I. THE HOUSE ADAPTS

In response to the rapid spread of COVID-19 within the U.S. and the emerging pandemic, in the early Spring of 2020, the House of Representatives took a number of steps to ensure its continued ability to act during the crisis, including passing legislation and conducting oversight, while also protecting the health and safety of legislative branch staff. Although these are new tools for governing, they are within the House’s authority to implement and they are not intended to replace regular order. To the contrary, they represent prudent and responsible steps to ensure that the House can continue to lead during this crisis, and they are intended to be used only during extraordinary circumstances.<sup>15</sup>

A number of the changes increase the options for Members and staff to complete legislative tasks remotely, rather than requiring in-person contact. For example, in April 2020, the Speaker of the House directed the creation of an electronic hopper to permit the virtual submission of all Floor documents – including bills, resolutions, co-sponsors and extensions of remarks – via a dedicated and secure email system. Since the policy took effect, 2,445 measures have been filed electronically, while just 132 were filed using the old process.

Also in April 2020, Committee Chairperson Zoe Lofgren, in her capacity as Chairperson of the Joint Committee on Printing, directed the Government Publishing Office to accept, for publication in the Congressional Record, extensions of remarks submitted with a Member’s electronic signature. Under this new, more convenient system Members have filed 1,932 extensions of remarks by email.

On May 15, 2020, the House passed House Resolution 965, a resolution “authorizing remote voting by proxy in the House of Representatives and providing for official remote committee proceedings during a public health emergency due to a novel coronavirus and for other purposes.”<sup>16</sup>

Section 1 of House Resolution 965 provides that “at any time after the Speaker or the Speaker’s designee is notified by the Sergeant-at-Arms, in consultation with the Attending Physician, that a public health emergency due to a novel coronavirus is in effect, the Speaker or the Speaker’s designee, in consultation with the Minority Leader or the Minority Leader’s designee, may designate a period (hereafter in this resolution referred to as a ‘covered period’) during which a Member who is designated by another Member as a proxy in accordance with section 2 may cast the vote of such other Member or record the presence of such other Member in the

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15 Exploring the Feasibility and Security of Technology to Conduct Remote Voting in the House: Hearing before the Committee on House Administration, 116<sup>th</sup> Cong. (Opening Statement of Chairperson Zoe Lofgren).

16 Authorizing remote voting by proxy in the House of Representatives and providing for official remote committee proceedings during a public health emergency due to a novel coronavirus, and for other purposes, H.Res.965, 116<sup>th</sup> Cong. (2020).

House.”<sup>17</sup> The “covered period” terminates 45 days after the designation, and may be extended or terminated.<sup>18</sup>

The Speaker of the House, pursuant to section 1(a) of House Resolution 965 announced that a public health emergency existed and designated a “covered period” on May 20, 2020. This “covered period” was extended until August 18, 2020 and extended again until November 16, 2020.

Under the provision which permits proxy voting, the House has conducted 103 roll call votes that have included directed votes cast by proxy without incident. Nearly 4,000 individual votes have been cast by proxy, including by Members of both parties. In addition, several measures passed with proxy votes have been signed by the President and enacted into law.

Section 4 of House Resolution 965 provides authority for remote proceedings in House committees during a “covered period.” The Committee worked closely with the Committee on Rules, the Chief Administrative Officer (CAO), and House Information Resources (HIR) to develop options for holding committee proceedings on collaborative online platforms, such as Teams, Webex, and Zoom. Using these new options, House committees have:

- Held 151 entirely remote hearings;
- Held 117 hybrid hearings;
- Held 4 entirely remote markups;
- Held 26 hybrid markups; and
- Held scores of remote or hybrid briefings, forums, meetings, and roundtables.

The Committee also coordinated closely with CAO to ensure that Member and committee offices had the technology they would need to work remotely. That included getting thousands of laptops and tablets ordered, imaged, and delivered to offices at a time when there were significant issues with the supply chain. Using that hardware and the other technology tools available to House offices, Members and staff have been able to conduct a significant amount of work remotely, including:

- More than 6,400 Zoom meetings;
- More than 5,400 Webex meetings;
- More than 260,400 Teams calls or meetings; and
- More than 14.3 million Teams chat messages.

In addition to working with other House offices to advance the adaptations discussed above, the Committee has also worked with the Attending Physician, CAO, Architect of the Capitol, and other legislative branch offices to ensure that in circumstances when Members and employees need to work in person, their workplaces are as safe as possible. For example, to ensure that offices have access to appropriate personal protective equipment (PPE), the Committee has worked with the CAO and Architect to acquire and distribute, to D.C. and district offices,

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<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

more than 5,300 canisters of wipes, more than 34,500 bottles of hand sanitizer, more than 574,700 pairs of gloves, and more than 603,300 masks. The Committee has also worked with these offices to handle nearly 300 requests from offices for plexiglass, with delivery of more than 660 items.

The Sergeant at Arms announced new procedures specific to Floor activity and voting, developed in consultation with the Attending Physician and leadership.<sup>19</sup> These procedures include limiting access to the Floor during debate to those Members who are scheduled to speak during debate, conducting votes by groups of Members, and maintaining “safe social distancing at all times.”<sup>20</sup> In addition, the Sergeant at Arms and Attending Physician have specifically cautioned for at least six months that with respect to activity on the Floor, “**Members who are ill with respiratory symptoms or fever are discouraged from attending.**”<sup>21</sup>

These critical precautionary measures have been implemented to protect the safety of all who work in the Capitol. As a practical matter, however, this means that votes take longer than they would under “normal” conditions.<sup>22</sup> For example, each recorded vote can take 35 minutes or longer, and special cleaning protocols are in place between vote series.<sup>23</sup> This has an overall impact on the House’s efficiency, but can also impact the amount of time available for legislative activity, particularly on complex bills, which in turn has an impact on the House’s options for considering amendments.<sup>24</sup> It is of particular relevance to this discussion that a primary rationale in favor of adopting electronic voting in the House 50 years ago was to “significantly reduce the time required to vote,” as Members had long expressed concern about the time of Floor time spent simply taking votes, including roll call votes that could take 45 minutes.<sup>25</sup> If the House adopted a remote voting system, that could not only further protect the health and safety of legislative branch staff and Members, but improve House efficiency by reducing the amount of time needed to execute votes, as was the case when the House adopted electronic voting a half century ago.

For those situations when someone must physically be in the office, the Attending Physician has devised and recommends use of a simple self-screening inventory to be completed at home, before someone goes to the workplace. In addition, it has been, and remains, critical that people who are physically in the Capitol and House buildings wear a mask. The Attending Physician continues to emphasize that wearing a mask “is one of the simple, basic things all Americans must do.”<sup>26</sup> The Attending Physician has said clearly, “I expect all of you in the

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19 See e.g. Dear Colleague from Sergeant at Arms Paul D. Irving and Attending Physician Dr. Brian P. Monahan, “*Procedures for Friday March 27, 2020*,” Mar. 26, 2020.

20 *Id.*

21 *Id.* (emphasis original).

22 See e.g. Noah Wofsy, *Remote Control: How the Legislative Counsel and the House of Representatives Operate During the Pandemic in Lawmaking Around the World in the Time of COVID-19* (2020), available at <https://www.youtube.com/watch?v=G4f1MsxZ8mA&feature=youtu.be>.

23 *Id.*

24 *Id.*

25 Jacob R. Straus, *Cong. Res. Svc., Electronic Voting in the House of Representatives: History and Usage*, June 13, 2011.

26 Dr. Brian P. Monahan, COVID-19 update (Sept. 17, 2020), Office of Attending Physician Intranet Website, available at <https://cha.house.gov/coronavirus>; Dr. Brian P. Monahan, Mask update (Oct. 27, 2020), available at <https://cha.house.gov/coronavirus>.



workplace – any time you are inside, in the company of another person – that you are wearing an approved face covering.”<sup>27</sup>

Finally, in addition to all of the other adaptations above, House Resolution 965 also provides that the “chair of the Committee on House Administration, in consultation with the ranking minority member, shall study the feasibility of using technology to conduct remote voting in the House, and shall provide certification to the House upon a determination that operable and secure technology exists to conduct remote voting in the House.”<sup>28</sup> This review is focused specifically on the question of whether it is feasible to use technology for the House to conduct remote voting; it is not a review of the constitutionality of remote voting, the specific situations in which it might be employed, or individual products or platforms for remote voting.<sup>29</sup> If the Chairperson does make a certification that such technology exists, “On any legislative day that follows the date on which the chair of the Committee on House Administration provides the certification described in subsection (a), the chair of the Committee on Rules, in consultation with the ranking minority member, shall submit regulations for printing in the Congressional Record that provide for the implementation of remote voting in the House.”<sup>30</sup> This report discusses the results of such study.

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<sup>27</sup> *Id.*

<sup>28</sup> H.Res.965, *supra* note 16.

<sup>29</sup> Comm. on Rules, *Authorizing Remote Voting by Proxy in the House of Representatives and Providing for Official Remote Committee Proceedings During a Public Health Emergency Due to a Novel Coronavirus, and For Other Purposes*, H. Rep. 116-420, 116<sup>th</sup> Cong., 2d Sess. (2020).

<sup>30</sup> *Id.*

## II. PRACTICES OF OTHER LEGISLATIVE BODIES

A key part of the Committee’s review under House Resolution 965, Section 5, was an examination of what other legislative bodies, both in the U.S. and around the world, have done with respect to providing for remote activity, whether in response to the pandemic or not. Like the House, a significant number of legislative bodies have adopted provisions to permit some form of remote or virtual legislative activity. This section of the staff report provides an overview of some selected practices.

### STATE GOVERNMENTS

At present, fully half of the states and the District of Columbia have enacted or are close to enacting provisions authorizing remote voting or meetings in some form or fashion. These states include:

- Arizona<sup>31</sup>
- Arkansas<sup>32</sup>
- California<sup>33</sup>
- Colorado<sup>34</sup>
- Delaware<sup>35</sup>
- D.C.<sup>36</sup>
- Georgia<sup>37</sup>
- Hawaii<sup>38</sup>
- Indiana<sup>39</sup>
- Kentucky<sup>40</sup>
- Louisiana<sup>41</sup>
- Massachusetts<sup>42</sup>

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31 [MIS005, 2020 Leg. Reg. Sess. \(Az. 2020\).](#)

32 [H.R. 1001, 92<sup>nd</sup> Gen. Assemb., Ext. Sess. \(Ar. 2020\).](#)

33 [H.R. 100, 2019-2020 Leg., Reg. Sess. \(Ca. 2020\); S.R.86, 2019-2020 Leg., Reg. Sess. \(Ca. 2020\).](#)

34 [H.R. 1002, 72<sup>nd</sup> Gen. Assemb., Reg. Sess. \(Co. 2020\).](#)

35 [H.Con.Res. 85, 150th Gen. Assemb., Reg. Sess. \(De. 2020\).](#)

36 [B 23-718, Council Mtg. \(Dc. 2020\).](#)

37 [H.R. 1507, 2020 Leg., Reg. Sess. \(Ga. 2020\); S.R.1010, 2020 Leg., Reg. Sess. \(Ga. 2020\).](#)

38 [H.R. 188, 2020 Leg., Reg. Sess. \(Hi. 2020\); S.R.197, 2020 Leg., Reg. Sess. \(Hi. 2020\).](#)

39 [Res. 20-01, 2020 Leg., Reg. Sess. \(In. 2020\).](#)

40 [H.R. 133, 2020 Leg., Reg. Sess. \(Ky. 2020\).](#)

41 [S.R. 45, 2020 Leg., Reg. Sess. \(La. 2020\).](#)

42 [S.B. 2688, 191<sup>st</sup> Gen. Assemb., Reg. Sess. \(Ma. 2020\); H. 4676, 191<sup>st</sup> Gen. Assemb., Reg. Sess. \(Ma. 2020\).](#)

- Minnesota<sup>43</sup>
- Nevada<sup>44</sup>
- New Jersey<sup>45</sup>
- New Mexico<sup>46</sup>
- New York<sup>47</sup>
- North Carolina<sup>48</sup>
- Oklahoma<sup>49</sup>
- Pennsylvania<sup>50</sup>
- Rhode Island<sup>51</sup>
- Utah<sup>52</sup>
- Vermont<sup>53</sup>
- Virginia<sup>54</sup>
- Wyoming<sup>55</sup>

An additional three states – North Dakota,<sup>56</sup> Oregon,<sup>57</sup> and Wisconsin<sup>58</sup> – previously authorized some form of remote or virtual meetings, and several other jurisdictions have introduced or enacted legislation to otherwise alter legislative operations (e.g. changes in bill deadlines or recess periods). Eleven of these states have authorized remote voting through technology such as an app, videoconference, or teleconference.

Although many of the state legislatures that have authorized remote voting have recessed without utilizing such authority, several states have held successful remote votes. Among the most successful states to implement remote voting is Vermont. The Vermont House of Representatives leverages the commercially available software it uses for its emergency communications to hold secure remote votes.<sup>59</sup> The system sends alerts to Members' phones and e-mail

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43 [S.R. 229, 91<sup>st</sup> Gen. Assemb., Reg. Sess. \(Mn. 2020\)](#).

44 [A.R. 2, 2020 Leg., Spec. Sess. \(Nv. 2020\)](#); [S.R. 4, 2020 Leg., Spec. Sess. \(Nv. 2020\)](#).

45 [A.B. 3852, 2020 Leg., Reg. Sess. \(Nj. 2020\)](#).

46 [H.R. 1, 2020 Leg., Spec. Sess. \(Nm. 2020\)](#); [S.J. 2020 Leg., Spec. Sess. \(Nm. 2020\)](#).

47 [A.B. 854, 2020 Leg., Reg. Sess. \(Ny. 2020\)](#); [S.R. 3108, 2020 Leg., Reg. Sess. \(Ny. 2020\)](#).

48 [H.R. 1044, 2020 Leg., Reg. Sess. \(Nc. 2020\)](#).

49 [H.R. 1032, 2020 Leg., Reg. Sess. \(Ok. 2020\)](#).

50 [H.R. 834, 2020 Leg., Reg. Sess. \(Pa. 2020\)](#); [S.R. 318, 2020 Leg., Reg. Sess. \(Pa. 2020\)](#).

51 [S.B. 2846, Leg., Reg. Sess. \(Ri. 2020\)](#).

52 [S.J.R. 16, 2020 Leg., Reg. Sess. \(Ut. 2020\)](#).

53 [H.R. 17, 2020 Leg., Reg. Sess. \(Vt. 2020\)](#); [H.R. 18, 2020 Leg., Reg. Sess. \(Vt. 2020\)](#); [S.R. 10, 2020 Leg., Reg. Sess. \(Vt. 2020\)](#); [S.R. 11, 2020 Leg., Reg. Sess. \(Vt. 2020\)](#); [S.J.R. 48, 2020 Leg., Reg. Sess. \(Vt. 2020\)](#).

54 [H.R. 515, 2020 Leg., Spec. Sess. \(Va. 2020\)](#).

55 [Joint Rules of the Wyoming House and Senate, Rule 23-1\(o\) \(Wy. 2020\)](#); [Pol. 20-02, Mgmt. Council \(Wy. 2020\)](#).

56 [House Rule 102 and Senate Rule 102](#) require physical presence except in the case of committee meetings, where remote participation is allowed.

57 [Or. Const. Art. 10-A](#) allows the legislature to convene outside of the capitol in case of a disaster and allows participation by electronic means.

58 [Wisconsin Statute 13.42](#) outlines virtual meetings of the legislature generally and committees during in an emergency.

59 Senate Homeland Security and Government Affairs Committee, Permanent Subcommittee on Investigations. *Staff Memorandum Re: Continuity of Senate Operations and Remote Voting in Times of Crisis*. April 30, 2020, available at <https://www.hsgac.senate.gov/imo/media/doc/2020-04-30%20PSI%20Staff%20Memorandum%20-%20Remote%20Senate%20Process%20-%20Final.pdf>.

addresses, and Members respond to those alerts to vote.<sup>60</sup> The technology allows Members to take a photograph of themselves and their vote to confirm their identity.<sup>61</sup> According to a report issued by the Senate Homeland Security and Government Affairs Committee, during the first session using the remote technology, 90 percent of Members were able to submit their votes within 63 seconds.<sup>62</sup>

The Vermont State Senate also established a remote voting procedure. Unlike the House, however, the Senate utilizes videoconferencing technology to conduct votes.<sup>63</sup> To participate, Senators must be present and visible on camera.<sup>64</sup> The Senate has taken roll call votes using this process.<sup>65</sup>

## FOREIGN GOVERNMENTS

Outside the United States, national legislatures have made strides to maintain operations without requiring all lawmakers to travel and physically convene. Some bodies, including the legislatures of France and New Zealand, have implemented proxy voting procedures similar to those implemented by the House in House Resolution 965. Others, as will be described below, have established remote voting procedures utilizing technology. Several bodies have utilized a combination of these approaches.

The United Kingdom House of Commons is an example of a body that has implemented remote voting procedures that include both proxy voting and technology based electronic voting. In April 2020, during the height of the pandemic in the United Kingdom, the House of Commons began holding hybrid proceedings in which Members of Parliament (MPs) could participate either in person or virtually. The procedures allowed for wholly virtual voting by MPs.<sup>66</sup> As the public health situation improved, the House of Commons moved to a system under which MPs could participate virtually and vote by proxy if required.<sup>67</sup> According to MP Karen Bradley, the Chair of the Procedure Committee, these changes to House of Commons procedure were “the biggest changes to [the] proceedings in 700 years.”<sup>68</sup>

Notably, the United Kingdom’s House of Lords, a chamber of significantly greater size than the House of Commons and with Members of a significantly higher median age, continues to use a remote voting system.<sup>69</sup> Using this system, Members are able to vote on smartphones, laptops, or other electronic devices.<sup>70</sup> According to Lord John McFall, Chair of the Lords Pro-

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60 *Id.*

61 *Id.*

62 *Id.*

63 *Id.*

64 *Id.*

65 *Id.*

66 Standing Committee on Procedure and House Affairs, Canada House of Commons, *Carrying Out Members’ Parliamentary Duties: The Challenges of Voting During the COVID-19 Pandemic*, 43d Parl., 1<sup>st</sup> Sess. (July 2020), available at <https://www.ourcommons.ca/Content/Committee/431/PROC/Reports/RP10833363/procrp07/procrp07-e.pdf>.

67 *Id.*

68 *Id.*

69 United Kingdom Parliament. *Online voting introduced in House of Lords*. June 10, 2020. Available at <https://www.parliament.uk/business/news/2020/june/lords-online-voting/>.

70 *Id.*

cedure Committee, “The introduction of online voting is another significant step forward for the House of Lords. It will enable all our members to carry out their vital duty of checking, challenging and holding the Government to account as well as shaping new laws in these unprecedented times.”<sup>71</sup>

In addition to the United Kingdom, the European Parliament has been a leader in remote convening and voting. In the early days of the pandemic, the European Parliament established a successful email voting procedure.<sup>72</sup> Under that procedure, Members of the European Parliament (MEPs) follow plenary sessions via web streaming and take votes by e-mail. The voting list, ballot form and opening/closing time of the vote are e-mailed to MEPs, who then return e-mails containing scanned ballots that had been physically signed. Only official European Parliament e-mail addresses could be used. Notably, an October 2020 plenary session of the European Parliament was changed from a planned in-person session to a remote session due to a COVID-19 resurgence in Europe.<sup>73</sup>

Brazil passed a resolution enabling its Parliament to work remotely using videoconferencing and other virtual management tools.<sup>74</sup> More specifically, the Brazilian Chamber of Deputies updated its internal “Infoleg” app to offer new presence and voting functionality. To access this new functionality, each MP is required to register their mobile device on the Parliament’s intranet. Vote data is collected by the Infoleg app and sent via the internet directly to the Chamber of Deputies databases. Data is encrypted and no cloud service is used.<sup>75</sup> The Infoleg system shows all phases of the legislative process, including amendments, vote results, speeches, schedule, and agenda. MPs utilize the Infoleg system in conjunction with a commercially available videoconferencing platform.<sup>76</sup> They vote by entering a password on their device. Infoleg then integrates the votes and the MPs presence with the Chamber of Deputies’ existing legislative system.<sup>77</sup>

Similarly, in Belgium, the Belgium House of Representatives allows Members to be considered “present” at committee and plenary meetings even when not physically in the chamber, and to vote electronically or via e-mail.<sup>78</sup> In plenary sessions, voting is achieved through a digital voting system custom built by the institution.<sup>79</sup>

The above examples, while representative, are not exhaustive. Indeed, as noted by the House Committee on Rules in the Report accompanying House Resolution 965, “Many other countries have also implemented remote voting in their legislatures, including Argentina, Azerbaijan...China, Mexico, Norway, Philippines, Portugal, Romania, Spain [and] Taiwan...”<sup>80</sup>

71 *Id.*

72 Natasha Lomas. Tech Crunch, *EU parliament moves to email voting during COVID-19 Pandemic*, March 23, 2020, available at <https://techcrunch.com/2020/03/23/eu-parliament-moves-to-email-voting-during-covid-19/>.

73 Samuel Petrequin, Associated Press. *European lawmakers won't be back in Strasbourg this month*, Oct. 15, 2020, available at <https://apnews.com/article/virus-outbreak-emmanuel-macron-france-belgium-brussels-e5522c1bf4ba48f4082b4a3bae85c289>.

74 Inter-Parliamentary Union. *Country compilation of parliamentary responses to the pandemic*, available at <https://www.ipu.org/country-compilation-parliamentary-responses-pandemic> (last accessed Nov. 4, 2020).

75 Brazil Chamber of Deputies, *Virtual Plenary Strategy and Architecture*. 2020. Available at <https://www.ipu.org/file/9013/download>.

76 *Id.*

77 *Id.*

78 Inter-Parliamentary Union, *supra* note 74.

79 *Id.*

80 H. Rep. No. 116-420 (2020), *supra* note 29.

### III. COMMITTEE REVIEW OF AVAILABLE TECHNOLOGY

To inform its feasibility study on the use of technology to conduct remote voting in the House, the Committee held a hearing entitled “Exploring the Feasibility and Security of Technology to Conduct Remote Voting in the House” on July 17, 2020, and engaged subject matter experts from the public sector, private sector, intelligence community, and academia. The consensus among these experts is that it is technologically feasible to conduct remote voting in the House in a secure, reliable manner. Key to this conclusion is the fact that unlike public elections, remote voting for House Members does not require a secret ballot.<sup>81</sup> This section will highlight the rationale underlying these conclusions and describe the technological capabilities necessary to ensure a remote voting system is secure and reliable.

A remote voting system must meet four fundamental requirements:

1. Only eligible voters can vote, at most once each;
2. Votes are cast as intended;
3. Votes are collected as cast; and
4. Votes are counted as collected.<sup>82</sup>

To meet these fundamental requirements, the House must identify potential security threats and establish practices and principles to address these threats. According to cybersecurity and electronic voting experts, the primary threats to an electronic voting system in the House include the following:

1. An attacker compromises a Member’s voting device and forges votes from that Member;
2. An attacker forges communication from a Member without compromising their devices;
3. An attacker compromises the back-end system that receives and tabulates votes and records votes incorrectly; and
4. An attacker launches a targeted and selective denial of service attack against a Member’s network, preventing them from voting on a particular matter.<sup>83</sup>

These threats can be neutralized with relatively standard security practices. These security practices contribute to what is known as the “CIA Triad.”<sup>84</sup> The CIA Triad categorizes capabil-

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81 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. David Wagner, Dr. Aviel Rubin, and Dr. Ron Rivest).

82 *Id.*

83 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. Aviel Rubin).

84 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

ities and controls to achieve positive security outcomes.<sup>85</sup> The three elements of the CIA triad are confidentiality (i.e. information can only be accessed by those who need to access it), integrity (i.e. the information is trustworthy, consistent, accurate, and originated from the correct person), and availability (i.e. a Member is able to cast a vote during the period that voting is open without interference).<sup>86</sup>

Fortunately for the House, models already exist for highly secure remote access. For example, the National Security Agency has worked with the private sector on an architecture program known as “Commercial Solutions for Classified.”<sup>87</sup> This program is used by the Department of Defense, Intelligence Community, Department of Energy, law enforcement, and others to connect classified systems and devices over Wi-Fi, cellular networks, and the public internet using commercially available information technology products.<sup>88</sup>

The Committee has learned of several specific security elements and best practices that are important for a remote voting system and that would help satisfy the elements of the CIA Triad. These security elements and best practices are as follows:

- Secure remote network connectivity should be provided using a layered approach to ensure Members do not connect to malicious or compromised networks. The Commercial Solutions for Classified program described above is an example of a layered approach.<sup>89</sup>
- Dedicated voting devices (e.g. smartphones or tablets) should be issued to each Member of Congress and used only for voting.<sup>90</sup> Dedicated voting devices can be made secure and hardened more easily than a device with extraneous software, such as a standard smartphone with a general-purpose operating system and many apps.<sup>91</sup>
- Multi-factor authentication and end-to-end encryption should be used to ensure that the Member is the person casting a vote and to protect against man-in-the-middle attacks and digital spoofing.<sup>92</sup> An effective multi-factor authentication system would be based on at least two of the following three inputs: something known by the Member (e.g. a PIN), something possessed by the Member (e.g. a phone) or something specific to the Member (e.g. biometrics). Examples of ways to achieve end-to-end encryption are VPN and Transport Layer Security.<sup>93</sup>
- To the extent possible, the remote voting system should rely on internet-based

85 Naomi Lefkowitz, Ellen Nadeau, Larry Feldman and Greg Witte. *Building the Bridge Between Privacy and Cybersecurity for Federal Systems*. National Institute of Standards and Technology, Information Technology Laboratory, April 2017, Available at <https://csrc.nist.gov/CSRC/media/Publications/Shared/documents/itl-bulletin/itlbul2017-04.pdf>.

86 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

87 National Security Agency. *Commercial Solutions for Classified Program*. Available at <https://www.nsa.gov/resources/everyone/csfc/#:~:text=NSA%2FCSS's%20Commercial%20Solutions%20for,fielded%20in%20months%2C%20not%20years> (last accessed Oct. 25, 2020).

88 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

89 *Id.*

90 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green and Dr. David Wagner).

91 Hearing Before the Committee on House Administration, *supra* note 15 (Responses to Questions for the Record of Dr. Aviel Rubin).

92 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of William Crowell, Jon Green and Dr. David Wagner).

93 Hearing Before the Committee on House Administration, *supra* note 15 (Responses to Questions for the Record of Jon Green).

applications rather than the public telephone network because telephony cannot adopt protections like multi-factor authentication and end-to-end encryption as easily or effectively.<sup>94</sup>

- The remote voting system should create immutable logs of all votes, documents, and actions.<sup>95</sup>
- Policies and processes that support cybersecurity should be established so that the system achieves the principle of “software independence.”<sup>96</sup> This means that an undetected change or error in the voting system’s software cannot cause an undetectable change or error in the outcome of the vote.<sup>97</sup> For example, a process should be established so that if a Member notices that their vote was not recorded accurately, the Member can contest it and correct the record of their vote. This should include a manual system of vote verification to counter against concerns surrounding vote tallying systems and to mitigate against denial of service attacks, and could take the form of a simple solution such as monitoring the vote on C-SPAN.<sup>98</sup> This would necessitate a change in reporting the recording of votes to require the vote of each Member to be publicly reported as their vote is cast.
- The system should involve votes being made public immediately so that Members and staff can ensure they were accurately recorded. Such verification defends against both security risks and other technology failures.<sup>99</sup>
- The remote voting system should allow for Members to be “lost in a crowd” such that their internet traffic appears indistinguishable from others.<sup>100</sup>
- Processes should also be established to address potential technology issues leading to a Member being unable to cast their vote.<sup>101</sup>
- The House should identify a technology partner with cybersecurity experience to assist with an independent security evaluation of technology products and solutions, analyze the security risks of each option, offer advice on secure deployment, and provide a red-team penetration test of the resulting system.<sup>102</sup>
- The House should regularly test the remote voting system for security vulnerabilities throughout its useful life.<sup>103</sup>

The security features described above are most likely to be found in a purpose-built software package that incorporates all the attributes associated with the legislative process.<sup>104</sup> According to experts, several such software packages already exist in the commercial marketplace.<sup>105</sup>

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94 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. David Wagner).

95 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of William Crowell).

96 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. Ron Rivest).

97 Ron Rivest and Madars Virza. *Software Independence Revisited*. CRC Press (2016), available at <https://people.csail.mit.edu/rivest/pubs/RV16.pdf>.

98 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

99 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. David Wagner).

100 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

101 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. David Wagner).

102 *Id.*

103 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of William Crowell).

104 *Id.*

105 *Id.*



Based upon the principles described above, the expert witnesses at the July 17, 2020 hearing agreed that operable and secure technology exists to conduct remote voting in the House.

For example, according to Dr. Ron Rivest:<sup>106</sup>

[T]here are indeed suitable secure voting technologies available. The important reason why that is true is that House votes are not secret. Voting in the House is not based on secret ballots. That makes all the difference, as manipulation or alteration of votes can be detected and corrected.<sup>107</sup>

Dr. David Wagner<sup>108</sup> reached a similar conclusion:

My message today is that it is technologically feasible for the House to conduct roll-call votes remotely, if it chooses to do so. This comes with some risk, but I believe the technical risks can be managed. In short, I do not see any technology barrier to voting remotely, though considerable work will need to be done to secure the process.<sup>109</sup>

Dr. Aviel Rubin<sup>110</sup> echoed this sentiment:

[I]t is possible to design, build and deploy a reasonably safe and secure remote voting capability for House members that meets [technical] requirements, provided that certain procedures are followed.<sup>111</sup>

Jon Green<sup>112</sup> also felt that using technology to conduct remote voting in the House was feasible:

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106 Dr. Ron Rivest is an Institute Professor at the Massachusetts Institute of Technology. He is a member of the Electrical Engineering and Computer Science Department and the Computer Science and Artificial Intelligence Laboratory (CSAIL). He is a founder of the Cryptography and Information Security research group within CSAIL. He is well-known as a co-author of the textbook *“Introduction to Algorithms”* (with Cormen, Leiserson, and Stein), and as a co-inventor of the RSA public-key cryptosystem (with Adleman and Shamir). He is a co-founder of RSA and of Verisign. He has served on the Technical Guidelines Development Committee (advisory to the Election Assistance Commission), in charge of the Security subcommittee. He is a member of the CalTech/MIT Voting Technology Project, on the Board of Verified Voting, and an advisor to the Electronic Privacy Information Center.

107 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. Ron Rivest).

108 Dr. David Wagner is a professor in the Computer Science Division at the University of California Berkeley. His areas of expertise include electronic voting, computer security, systems security, smartphone security, and wireless security. He serves on the editorial board for the Journal of Election Technology and Systems and is a member of the ACCURATE Center, a multi-institution voting research center funded by the National Science Foundation. He is also a member of the TRUST Center, an organization whose mission is to design, build and operate trustworthy information systems, and the UC Berkeley Security Group.

109 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. David Wagner).

110 Dr. Aviel Rubin is a professor of computer science, technical director of the Johns Hopkins University Information Security Institute. He is recognized throughout academia, the computer science industry and government for his expertise in computer security and applied cryptography. He was the first person to expose the vulnerabilities of electronic voting in his book, *Brave New Ballot: The Battle to Safeguard Democracy in the Age of Electronic Voting*, and has briefed Congress and the Department of Defense on election tampering and other issues of national security.

111 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Dr. Aviel Rubin).

112 Jon Green is responsible for providing technology guidance and leadership for all security matters at Aruba Networks, a Hewlett Packard Enterprise company. Mr. Green specializes in network infrastructure security and has worked with the Department of Defense and the Intelligence Community to secure classified information using commercially available technology. Mr. Green also manages Aruba Networks' Product Security Incident Response Team and Aruba Threat Labs, an internal security research group.

I believe that should you decide to move forward, remote voting is technically feasible, can be enabled for a reasonable cost, and can be done with an appropriately high level of security. Once built, such a system can be easily modified should similar emergencies arise in the future to create the need for remote voting.<sup>113</sup>

From an institutional standpoint, Clerk of the House Cheryl Johnson explained that she was confident in her office's ability to implement the decision made with respect to remote voting.<sup>114</sup> This confidence was buttressed by former Speaker of the House Newt Gingrich, who, after hearing testimony from other witnesses in the hearing, explained:

I was very impressed with the witnesses, and I have no doubt that if the House decides it is wise, that you can develop a very solid system. And I concur with Clerk, Cheryl Johnson, that she could easily, I think, develop and guarantee the integrity of that kind of a system.<sup>115</sup>

Similarly, Ranking Member Rodney Davis stated, "I am confident that there is a technology that exists to support remote voting. I also have confidence in the Clerk and her staff's ability to execute if directed."<sup>116</sup>

In addition, the Committee has consulted with the General Accounting Office (GAO). While GAO continues to review this topic, it has identified a number of private vendors with existing products currently available in the commercial marketplace. Without addressing the specific merits or features of individual products, the range of products available today further supports the general conclusion that remote voting is technologically feasible.

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113 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Jon Green).

114 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Hon. Cheryl L. Johnson).

115 Hearing Before the Committee on House Administration, *supra* note 15 (Testimony of Fmr. Rep. Newt Gingrich).

116 Hearing Before the Committee on House Administration, *supra* note 15 (Opening statement of Ranking Member Rodney Davis).

## IV. CONCLUSION

The COVID-19 pandemic has led to a devastating loss of life in the United States and impacted every aspect of American life. Given the clear impact that COVID-19 can have on the ability of the federal government to conduct legislative business and the continuing surge of the pandemic within the U.S., it is imperative that Congress be able to continue its work safely and securely.

The House has already taken several steps to ensure its continued ability to act during the crisis, including passing legislation and conducting oversight, while also protecting the health and safety of legislative branch staff. The authorization of directed proxy voting by Members on the Floor is one important step the House has taken to protect the health and safety of all legislative branch staff and Members. However, other important safety protocols, such as voting in groups and limiting the number of Members on the Floor at one time, have increased the amount of time it takes to conduct Floor votes. Remote voting could both provide additional health and safety benefits – both for those Members and staff in Washington, D.C., and those who may be in their districts – while improving House efficiency.

In light of the findings described above, including witness testimony from a former Speaker of the House and highly qualified technology experts, as well as a review of procedures adopted by other legislative bodies, this staff report concludes that operable and secure technology exists to permit the House to conduct remote voting, and that such a tool could be developed to further establish its flexibility and resiliency to operate during the pandemic.



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