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# Building Safety and COVID-19

Analysis of U.S. code department responses to the pandemic

July 1, 2020

## EXECUTIVE SUMMARY

The International Code Council surveyed building and fire departments to find out how code officials are coping with the professional challenges brought on by the COVID-19 pandemic.

As of April 1, 2020, at 12:00 PM, 1,158 respondents from all 50 U.S. states and the District of Columbia provided input. Respondents came from jurisdictions of all sizes ranging from 1,000 people to over 4.6 million.

The results of this survey show trends on how jurisdictions throughout the U.S. are keeping up with inspections, new building permits and new construction.



**1,158 RESPONSES**  
from jurisdictions  
of all sizes



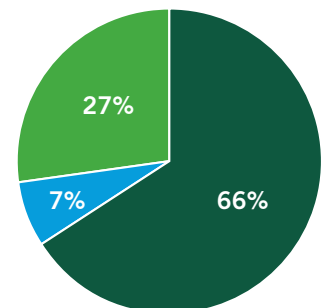
Participants from  
**50 U.S. STATES** and the  
District of Columbia



**1K–4.6M  
POPULATION**  
Size of jurisdiction

## THE MAIN FINDINGS ARE:

- The majority of departments surveyed (93%) are still performing inspections, either remotely or in-person. This falls in line with what the Code Council expected given that many areas have classified construction and code compliance activities as essential.
- More than half (65%) of respondents said that some or all employees that conduct plan review or inspections are working remotely.
- A large percentage of jurisdictions (**66%**) use a combination of electronic and hard copy versions of building safety codes, while a much smaller percentage of jurisdictions (**7%**) have advanced to using all electronic. **27%** of respondents said their jurisdiction used only hard copies. This could create challenges where hard copies are shared and departments do not have enough hard copies for each now-remote employee that needs them. In fact, 23% said their employees do not have access to needed hard copy code books.
- Many jurisdictions have made the switch to electronic services, but a large percentage still do have the capacity to go virtual. In particular:
  - » 40% do not have the capability to do electronic/remote plan reviews.
  - » 30% do not have the capability to do any aspect of electronic/remote permitting.
  - » 61% do not have the capability for electronic/remote inspections.
- To expand services to fight the coronavirus pandemic, many healthcare facilities are putting beds in alternative locations (like school gymnasiums, hotels, outpatient surgical centers), or in temporary structures in their parking lots. 26% of respondents have encountered requests for permits for temporary occupancy and/or temporary structures as a result of the COVID-19 pandemic.



## INTRODUCTION

In mid-March 2020, daily life in the United States changed to combat the spread of COVID-19. Social distancing was identified as an important measure to protect public health. Many state and local governments issued stay-at-home orders. Governments identified essential workers and activities that should continue—albeit with new requirements to protect their health and the health of those they may come in contact with.

Building, fire and plumbing safety professionals were recognized by the U.S. Department of Homeland Security (DHS) as part of the “Essential Critical Infrastructure Workforce” and no state has made a determination to the contrary.<sup>1</sup> That’s because building code and fire safety departments, and the building, fire, plumbing, electrical, fuel gas, and mechanical officials and inspectors that comprise them, along with planning/zoning and public works offices, conduct critical work. They enforce regulations that require disinfection of ventilation through mechanical systems in hospitals, adequate facilities to ensure handwashing, and safe and sanitary plumbing systems that mitigate the spread of contagions, including water, sanitary, drainage, and medical gas systems. They also ensure healthcare centers are structurally sound, a critical function given reports of a facility collapsing and the call for temporary healthcare facilities to create additional medical surge capacity.

Code officials and property maintenance officials inspect existing infrastructure, including plumbing, mechanical, electrical, ancillary, and fire and life safety systems to verify that they are being maintained in a safe and sanitary condition within their original design parameters. More broadly, code officials protect the health and welfare of building occupants by identifying dangerous or unsafe sanitary, air quality, structural, or electrical hazards. Code officials also have responsibility for addressing other national, state, and community priorities, including the implementation of energy efficiency requirements and the safe deployment of renewable energy technologies.

While these essential functions must continue, the COVID-19 pandemic required many departments to adapt. The International Code Council launched a survey of code departments on March 22, 2020 to help understand (1) whether code departments were equipped to implement the changes necessary to ensure staff and public safety during the pandemic; (2) how they were adapting; and (3) areas where additional assistance would be needed. The survey concentrated on two specific areas—first, the department’s ability to function through remote and online processes and second, their role in the safety of temporary healthcare facilities.

The first set of results from the survey covering March 22 through April 1, 2020 were released on April 2, 2020 in the form of a summary.<sup>2</sup> The main findings from that summary are:

- The majority of departments surveyed (93%) were still performing inspections, either remotely or in-person. This falls in line with what the Code Council expected given that many areas have classified construction and code compliance activities as essential.
- More than half (65%) of respondents said that some or all employees that conduct plan review or inspections were working remotely.
- A large percentage of respondents (66%) were using a combination of electronic and hard copy versions of building safety codes, while a much smaller percentage of respondents (7%) were using all electronic. 27% of respondents said their jurisdiction used only hard copies. This could create challenges where hard copies are shared and departments do not have enough hard copies for each now-remote employee that needs them. In fact, 23% said their employees did not have access to needed hard copy code books.
- Many jurisdictions have made the switch to electronic services, but a large percentage of respondents reported that they did not have the capacity to go virtual. In particular:
  - » 40% did not have the capability to do electronic/remote plan reviews.
  - » 30% did not have the capability to do any aspect of electronic/remote permitting.
  - » 61% did not have the capability for electronic/remote inspections.

- To expand services to fight the coronavirus pandemic, many healthcare facilities have put beds in alternative locations (like school gymnasiums, hotels, outpatient surgical centers), or in temporary structures in their parking lots. 26% of respondents encountered requests for permits for temporary occupancy and/or temporary structures as a result of the COVID-19 pandemic.

In the two weeks following the snapshot of survey results reported, we received more than 200 additional responses. The overall results of the survey remain unchanged. The percentage of respondents performing inspections, using electronic codes, lacking e-permitting capabilities, and lacking remote inspection capabilities stayed constant. The percentage of respondents working remotely, using hard cover books only, lacking sufficient hard copy books for staff, lacking e-plan review capability, and encountering request for permits for temporary occupancy each increased by 1 percentage point or less.

This document provides further analysis and findings based on the survey's most recent results, which capture input from 1,370 respondents from all 50 U.S. states and the District of Columbia through April, 15, 2020. Respondents came from jurisdictions of all sizes ranging from 1,000 people to over 4.6 million.

The sections that follow provide additional insight into responses on e-permitting, electronic plan review, remote inspections, temporary occupancy/structure activity, and hard copy code needs. Where possible based on responses, these sections outline challenges and peer recommendations, and conclude with links to relevant Code Council whitepapers, resources, and services.

## PERMITTING

Many departments (70%) had the capability to do some form of electronic permitting leading up to the COVID-19 pandemic or within the first few weeks of transition. Jurisdictions without any electronic permitting capabilities ranged in population sizes from 1,000 to 3 million. Thirty-eight percent of departments reported that the electronic permitting software they used covered all aspects of the permitting process while 32 percent noted that their current software had deficiencies. Common shortcomings identified included:

- Lack of payment processing
- Limited types of permits included
- Customer facing aspects including the ability to communicate with customers through the software as well as a customer's ability to complete the required forms online, to check the status of their permit, and to schedule an inspection
- No remote access to the software outside of the office and/or an inability to share information with other departments
- Ability to print permits
- Lack of integration with plan review software
- Ability to collect signatures or stamp plans

Survey results show there are numerous permitting software solutions that are utilized across the United States. These permitting software solutions include custom built; in-house systems created by internal IT departments; customized solutions provided from a single permitting software provider; multiple independent software solutions being used for payments, permitting, etc.; off the shelf solutions that address limited aspects of the permitting process; and off the shelf solutions that address all aspects of the permitting process. The most cited permitting software solutions in the survey include Acella, ENERGOV, Muncity, Bluebeam, Citizen Serve, IWORQS, Viewpoint Cloud, Tyler Munis, Citizen Serve, TrakIt, and Incode.

## **Recommendations on Implementing Remote Permitting**

Many respondents that have implemented remote permitting offered pointers for jurisdictions just beginning. One of the most common themes communicated by respondents is that jurisdictions should work to get all aspects of the permitting process online and move to a paperless workflow so that no applicant needs to come into the building department at any time. However, options should be made available for customers who do not have online capability. For example, a City Hall drop box, mail or call-in options for payments, should be provided.

### ***Communicating Internally and Externally***

When implementing a new electronic permitting process, respondents emphasized that consistent communication among all internal departments effecting the permitting process is key. Utilization of one software solution that spans across multiple departments is beneficial for a seamless electronic permitting process.

Communication to the public should be clear and simple. Information should be available through online sources and via telephone. Respondents recommend a dedicated email address for permit-related communications as well as a mechanism where all permit-related calls and voicemails go directly to permitting staff.

In addition, respondents suggest that building department websites should be easily accessible to homeowners and contractors as well as descriptive to make the permitting process straightforward. The website and information should be continuously updated both as the pandemic evolves and in general. Fluid documents that can be easily changed were recommended as well as PDF examples of how to walk customers through the online permitting process. Lastly, multiple respondents recommend offering training to customers/contractors on how to use the jurisdiction's online permitting system.

### ***Finding the Right Solution***

Multiple jurisdictions responded that their departments were in the process of and/or moving towards an online permitting application process when the pandemic struck. Others stated they have fast-tracked their online permitting system and are quickly trying to learn what functionalities they have and/or are missing as the software is still new to them.

Many others reported they must use multiple software platforms to complete online applications. For example, one respondent states, "Our current system requires 3 different programs to work. EDEN for permitting and collecting fees, Eprocess360 for tracking plan checks (all over the counter applications are handled through email and EDEN) and Bluebeam for review. We are in the selection process for a single complete system."

It is important to note some common themes among respondents that state their software completely addresses their electronic permitting needs. These respondents recommend selecting a single, cloud-based permitting software system where all aspects of the permitting process are handled and completed in one platform. In addition, they recommend systems that provide good technical support after installation. They stress the importance of understanding the limitations of a software system before committing to it. They also caution that all systems have flaws and suggest reaching out to jurisdictions who are using a specific system before purchasing it.

Lastly, respondents recommend using a uniform software platform across other departments and city offices. They recommend looking into different software options that can be customized to expand and connect the permitting process and other city functions but note that this type of platform may require discussion, time and an increased investment.

## Challenges to Implementing Electronic Permitting

Some departments who have yet to transition to remote processes, identified challenges with overcoming existing policy (either in the department itself or at the city, county or state level). For example, some jurisdictions require hard copies of plans, only accept paper plumbing and electrical permit applications for processing and will not accept payments via the internet. In addition, some jurisdictions reported that even if they have the functionality for electronic payments, their local policies prevent the payment of fees in excess of a certain dollar amount or the owner/contractor must still come to the office to pay and obtain the actual permit. Other respondents communicated that their jurisdictions will not accept permit applications online that have large engineer/architect sealed plans while others require original signatures for permits. As departments and state and local governments review lessons learned following the pandemic, it may be valuable to identify and recommend changes to policies that hinder the use of electronic permitting.

Lack of financing and staff to implement an online system were reported as a few of the main reasons why jurisdictions do not have the capability to do any aspect of electronic/remote permitting. It should be noted that the CARES Act passed by the U.S. Congress to support state and local government responses to the COVID-19 pandemic does allow emergency funds to be used for implementation of electronic solutions. Resources on accessing these funds are available on the Code Council's Coronavirus Response Center (<https://www.iccsafe.org/advocacy/coronavirus-response-center/advocacy/>). In addition, respondents communicated that they lack the laptops, including large screens, hardware, and electronic inspection devices as well as access to building department systems for work-from-home permit processing.

Multiple respondents expressed that remote access is not available to them due to dated technology and older systems that are not designed to operate in a remote environment. They are struggling to adapt these systems to a remote format. The website <https://remotepc.com> was suggested as an easy solution that IT Departments can quickly set up. Weak internet connections were also cited as a major issue preventing electronic or remote permitting as well as the inability to remotely connect to city and county systems. In addition, respondents that reported that their software does not address all aspects of electronic permitting/remote permitting, stated they cannot intake large projects online as their servers won't allow it and emails get blocked for security.

Another common theme expressed by respondents is that their systems work very slowly and take a long time to upload information, especially large projects. Due to the long lag time, respondents risked losing connectivity and being forced to repeatedly reload information.

Jurisdictions need to be aware that software providers charge processing fees for credit card transactions; therefore, these costs will need to either be passed on to the customers or internal budgets will need to be adjusted. To this end, to address economic hardship, respondents recommend that drop box, mail, or call-in options for permit payments still be provided as an option if possible. One respondent reported that the State of Oregon raised the state surcharge fee to 4% to cover a state-run permitting program called EPermitting through the Accela software program.

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## Relevant Resources

- [Considerations for Moving Permitting and Plan Review Online](#)
  - Online Course: [Moving Permitting and Plan Review Online](#)
  - [ICC Community Development Services](#)
  - [ICC Coronavirus Advocacy Resources for Accessing CARES Act Funding](#)
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## PLAN REVIEW

Nearly 60 percent of the survey respondents indicated that their jurisdictions had the capability of conducting electronic/remote plan reviews. As one respondent indicated, “100% of our plan review is done electronically. All of our plan checkers are working from home. They check-in 1st thing in the morning with their supervisor and provide an outline listing project goals for the day, and at the end of the workday they provide a list of project goals accomplished. Our phone answering machine directs the industry to our website where we communicate through email (inspection requests, plan check, planning and code enforcement, etc.).”

A couple dozen respondents indicated that the pandemic and orders to social distance hit soon before their offices had switched to electronic plan review systems. For employees working from home, respondents cited challenges with adequate technology including large computer monitors, laptops, and access to software licenses. One recommendation was for employees to use their television as a monitor. Several respondents said their offices outsource plan review to third party experts.

The most cited brand of electronic plan review systems, volunteered by 31 respondents, was Bluebeam software. Two respondents said the staff had been building a plan review software in-house. Other brands cited were Adobe Document Creator, ProjectDocs, CityInspect, EnerGov, Avolve ePlans, MyGov, and PDFs. Transmitting plans involved, most commonly, flash drives and emails, also EnerGov, GoogleDocs, SharePoint, Dropbox and other cloud programs. Respondents said conferencing about plan submissions would involve software and platforms like Teams, Zoom, FaceTime, and WebEx to minimize personal exposure.

Some departments reported reliance on non-technical solutions to continue their essential functions. Examples given include: “our Treasurer has a drive-up window to accept payments” and “an outdoor drop box for permit and plan submittals.”

While some local jurisdictions are moving towards all electronic processing, some still face internal challenges. As one respondent noted, “Even though everything could be reviewed electronically, I have to ask for paper copies because, when I get audited by the [state Labor & Industry Department], which is every five years, the auditor is looking for architect’s stamps and signatures along with the information that I put on the paper copies.”

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### **Relevant Resources**

- [Considerations for Moving Permitting and Plan Review Online](#)
  - Online Course: [Moving Permitting and Plan Review Online](#)
  - [International Code Council Plan Review Services](#)
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## INSPECTION

Thirty-nine percent of respondents indicated that their jurisdiction “has the ability to do electronic/remote inspections.” The majority of these respondents used video for these inspections, including Facetime (16%), Skype (10%), Zoom (4%), and Duo (2%).

Other platforms mentioned include WhatsApp, Microsoft Teams, Blitzz, Google Hangouts, Accela, Energov, Dropbox, Viper, and MyCity. Twenty percent of respondents reported using photos or pictures for remote inspections.

If inspections are being performed in-person they are typically exterior inspections and conducted practicing social distancing. Most respondents indicated that they are not performing in-person inspections in occupied spaces. There were also indications that a significant amount of virtual or remote inspections are being performed for “minor” or “basic” projects only.

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### ***Relevant Resources***

- [Recommended Practices for Remote Virtual Inspections \(RVI\)](#)
- [Considerations for Virtual and Remote Inspections](#)
- Online course: [Options for Virtual and Remote Inspections](#)
- [The digital touch: Miami County Building Department expands its Virtual Inspection Program](#)
- [Virtual home inspections allow home sales to safely continue in Belleville](#)
- [North Las Vegas' Evans tackled yet another obstacle, and kept the city moving safely](#)

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## **TEMPORARY STRUCTURES AND CHANGES IN OCCUPANCY**

Twenty-seven percent of respondents indicated that they were seeing requests for Temporary Certificates of Occupancy or Temporary Uses. Of those respondents that did see such requests, most were for tents (9%), hospitals (6%), shelters (5%), “drive-thru” facilities (5%) and clinics (2%).

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### ***Relevant Resources***

- [Structures Used for Temporary Healthcare Use](#)

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## **ACCESS TO CODES**

A large percentage of jurisdictions (67%) use a combination of electronic and hard copy versions of building safety codes, while a much smaller percentage of jurisdictions (7%) are using all electronic codes. 27% of respondents said their jurisdiction used only hard copies. This could create challenges where hard copies are shared and departments do not have enough hard copies for each now-remote employee that needs them. In fact, 24% said their employees do not have access to needed hard copy code books.

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### ***Relevant Resources***

- [ICC Digital Codes Library](#)
  - [Recorded Webinars on Online Access to Codes](#)
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## CONCLUSIONS

The COVID-19 pandemic has caused code departments to re-examine how they continue to deliver important public safety functions where physical contact with customers is severely curtailed and access to department offices is limited. For many departments this meant transitioning to remote processes and greater reliance on technology.

Some departments had already implemented electronic processes. One respondent provided insight into their entire electronic system and the benefits they have seen from its implementation, “We have been performing electronic plan review for years. We have a centralized email that applications are made to. The Permit Technicians, upon determining the submission packet is complete, attach the plans to our ‘project’ within our permitting software. From there the plans examiner can extract, review and approve those plans and reattach approved stamped set to the project. The permit technicians email the approved plans and permit to be posted back to the applicant once payment is made. They are also available for the public through our online portion of our permitting software. We are very rural, so we developed these processes years ago to avoid excess travel for the end user. Plus, if plans are removed or destroyed from job sites the [general contractor] can reprint an approved stamped set whenever they need to.”

While some code departments have had to implement remote processes “on-the-fly,” they already recognize the benefits and look to make many of these new procedures permanent. According to one respondent, “COVID-19 is reshaping how we process applications and acting as a driving force to take in everything electronically. Many of the practices we’ve implemented over the last few weeks will continue when the virus is ultimately contained.”

The information provided by this survey has been instrumental in the development of new resources that are identified throughout this summary. In addition, the Code Council has been actively working on identifying how code departments can access financial resources to help cover their COVID-19 related expenses and to assist in the transition to remote work.

The Code Council will continue to monitor how code departments are evolving and provide resources and services that support the achievement of safe, sustainable and resilient buildings and communities. We are also preparing to resurvey past survey respondents to capture the extent to which departments have addressed virtual capabilities needs.

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### ***Additional Relevant Resources***

- [Health and safety considerations for building safety professionals during COVID-19](#)
  - [Coronavirus: FEMA reimbursement eligibility for emergency protective measures](#)
  - [CARES Act Federal Funding for Building and Fire Prevention Departments](#)
  - [Jurisdictions with Populations < 500,000: Guidance on seeking CARES Act funding for virtual needs](#)
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1. [https://www.cisa.gov/sites/default/files/publications/Version 3.0 CISA Guidance on Essential Critical Infrastructure Workers 3.pdf](https://www.cisa.gov/sites/default/files/publications/Version%203.0%20CISA%20Guidance%20on%20Essential%20Critical%20Infrastructure%20Workers%203.pdf)
2. <https://www.iccsafe.org/wp-content/uploads/Code-Official-Survey-White-Paper.pdf>

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