



Building Confidence, Building Community.

# Follow-up Survey: Building Safety and COVID-19

Analysis of code department operations in the United States  
during the pandemic

December 17, 2020

## INTRODUCTION

In March and April 2020, as COVID-19 public health orders came into effect, the International Code Council [surveyed](#) code departments across the country to better understand departments' virtual capabilities and to collect best practices that could help inform other departments' approaches. Nearly 1150 jurisdictions from every state across the country provided feedback. Read the analysis from this initial survey [here](#).

These responses guided the materials we have developed to support code departments and have informed and directed our advocacy. These efforts include:

- The [Coronavirus Response Center](#) with [webinars](#) in which industry experts share considerations for addressing capability needs and implementing virtual solutions.
- A series of [whitepapers](#) outlining these considerations.
  - » [Structures Used for Temporary Healthcare Use](#)
  - » [Considerations for Virtual and Remote Inspections](#)
  - » [Considerations for Moving Permitting and Plan Review Online](#)
  - » [Considerations for Reopening Following the COVID-19 Pandemic: Buildings in the Community and the Role of the Code Department](#)
  - » [Considerations for Reopening Following the COVID-19 Pandemic: Code Department Operations](#)
  - » [Guidance for the Disinfection of Building Water Systems Using the IPC](#)
  - » [Considerations for Converting Outdoor Spaces into Temporary Seating Spaces Based on the 2018 I-Codes](#)
- [Materials](#) that walk through how to advocate for and access federal CARES Act funding to address virtual needs.
- [Talking points](#) that make the case for why those investments are worthwhile.

The Code Council remains committed to assisting code departments as they navigate and overcome the challenges facing them during the pandemic. To that end, we prepared a follow up survey that builds upon the previous one to determine how departments have responded in the interim. What virtual needs still exist? What strategies have worked best? What additional resources could help? This survey's responses will inform our ongoing efforts to identify best practices and advocate for needed resources.

This follow up survey collected responses between August 11 through September 17, 2020 from more than 800 respondents from all 50 U.S. states and the District of Columbia. Respondents came from states as well as local jurisdictions that range in population size from 700 to 4 million.

Two-thirds of our responses came from building departments representing cities, towns and villages with a median population of 34,000. Twenty-seven state-wide agencies (3%) weighed in. Responses also came from county building departments (15%), fire departments (8%), third-party services (4%), and other stakeholders (4%). One-third of the responses came from those who participated in the first survey.



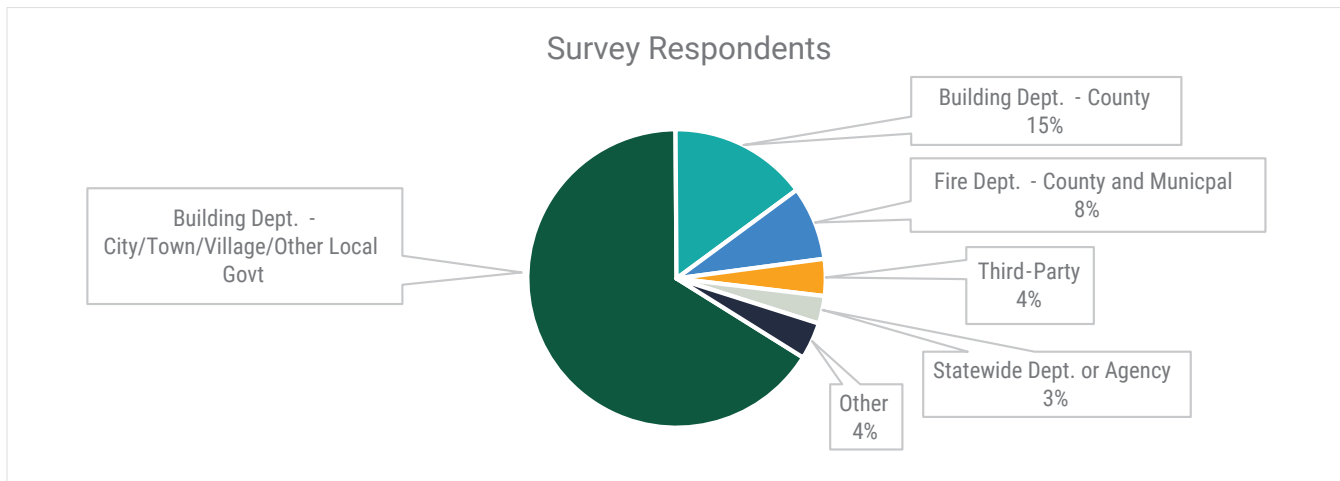
**800+ RESPONSES**  
from the U.S. and the  
District of Columbia



Respondents from states and  
local jurisdictions ranging  
from **700-4M people**



**1/3 OF RESPONSES**  
came from those who  
participated in the  
first survey



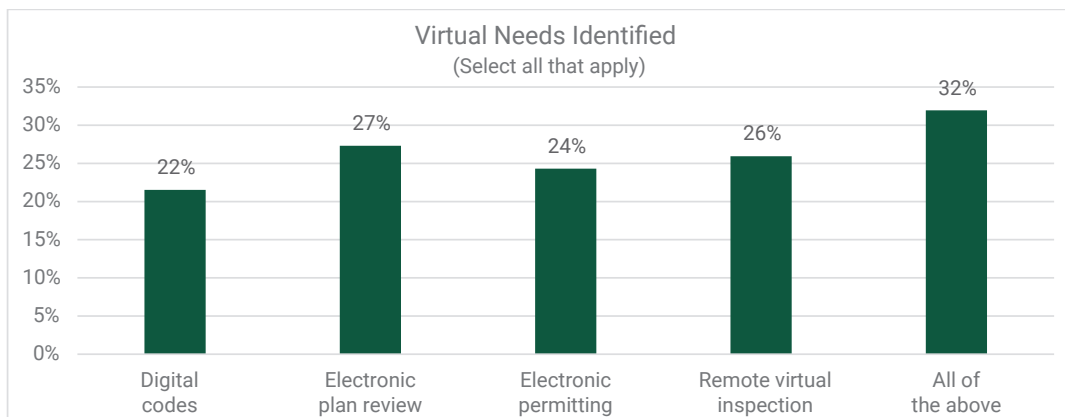
The main findings of our follow-up survey show:

- Nearly all departments surveyed are performing inspections (98% versus 93% in April) while nearly half still have key staff working remotely (47% versus 66% in April).
- The results show no improvements in e-permitting (30% lacking that capability, which tracks the 30% reported in April) and very small improvement in plan review capabilities (40% lacking that capability now versus 41% in April).
- There have been greater improvements in access to code materials (16% lacking access versus 25% in April) and the ability to conduct remote virtual inspections (53% lacking that capability versus 61% in April).
- Local laws and departmental practices can restrict the use of virtual capabilities, with a requirement for submittal of hard copy plans being the most common impediment.
- Jurisdictions seeking to address virtual capability needs in the near-term face significant budgetary hurdles—more than 4 in 10 respondents reported budget cuts this year—while a little less than half are expecting budget cuts next year.
- One in 10 respondents were able to access the \$150 billion Coronavirus Relief Fund (CRF) that the federal Coronavirus Aid, Relief, and Economic Security Act (CARES Act, H.R. 748), provided to aid state, local, tribal and territorial governments in response to this public health emergency.
- Jurisdictions are or would consider conducting plan review remotely by outsourcing it to third-parties or utilizing cloud-based software that can expedite permitting for certain projects.
  - » One in 5 respondents report using third-party plan review, and of those not currently using it, 3 in 10 would consider outsourcing their plan reviews.
  - » Nearly a third of respondents would consider establishing expedited online permitting for common types of more straightforward installations, like HVAC replacements (like-for-like equipment). About 1 in 5 respondents would consider using SolarAPP, software being developed by the National Renewable Energy Laboratory to automate plan review for solar installations.

This document provides further analysis and findings based on the follow-up survey results. Results in this document may differ slightly from the initial follow-up survey [snapshot](#), which covered responses provided August 11 through September 3<sup>rd</sup> as this analysis includes two additional weeks of survey results (through September 17, 2020).

## VIRTUAL READINESS

Consistent with results from the first survey, 70% of departments had some form of electronic permitting system in place and some were already trying to update systems before the pandemic hit. Three-quarters of all respondents reported trying to address one or more virtual need. However, many had yet to make the move to virtual solutions, often citing budgetary or policy constraints. This section looks at code and fire prevention departments' virtual capabilities, including electronic plan review, electronic permitting, digital codes and standards, and remote virtual inspections.



### Relevant Resources

- Whitepaper: [Considerations for Moving Permitting and Plan Review Online](#)
- Online course: [Moving Permitting and Plan Review Online](#)
- Website: [ICC Community Development Services](#)
- Free Webinar: [Use CARES Act Funds to Purchase Essential Digital Solutions](#)
- News Release: [ICC Community Development Solutions Partners with Inspected to Make Remote Virtual Inspections Easy and Keep Projects Moving](#)

### Plan Review

The follow-up survey results show that 6 in 10 respondents have the capability to conduct electronic plan reviews. The most common software used for electronic plan review include: Adobe Acrobat Pro, Avolve ProjectDox, Bluebeam Revu, BS&A, Citizenserve, CityView, CityWorks, EnerGov, Trakit, On Base, and Viewpoint Cloud.

Respondents recommended a minimum of two large screens for plan review. Many also recommended using large television screens at home workstations where computer monitors were not available. Respondents stressed the importance of allowing for electronic submittals, requiring single file submissions, thoroughly vetting software systems, allowing time to plan training and implementation of plan review software, developing a digital signature policy, securing ample digital storage, and coordinating with IT staff. Additional recommendations from respondents in implementing electronic plan review include:

- Think through an internal process for intake and return.
- Get buy-in from the construction community.
- Make sure everyone in the review queue can see everyone else's comments.
- Set achievable review and turn-around times and stick with the schedule.

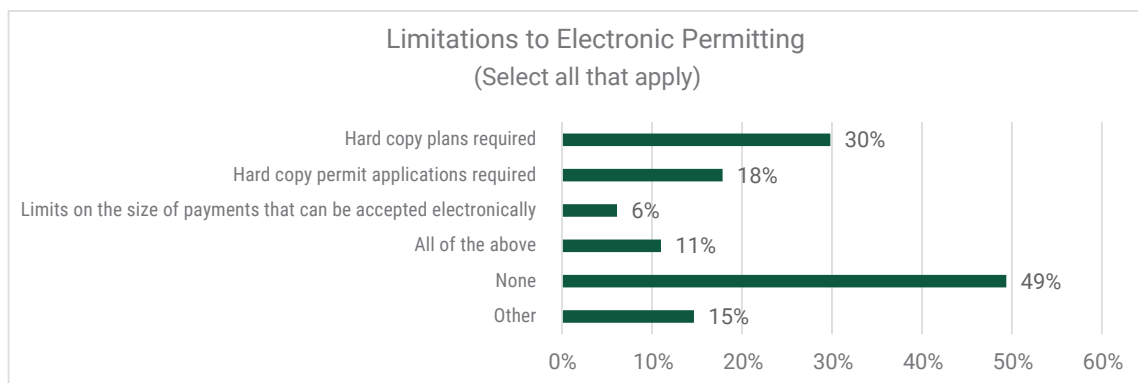
- Require a PDF or scanned images of documents and do not accept photos of documents.
- View plans on one screen and a digital version of the codes on a second screen.
- Use video meetings (Zoom, GoToMeeting, Microsoft Teams) to communicate with designers.
- Be flexible as it is difficult for any process to work for every type of request.
- Develop a customer-focused process and consider creating “how-to” videos for submittals.

### Relevant Resources

- Website: [International Code Council Plan Review Services](#)
- Website: [LaserFiche Digital Records Management](#)

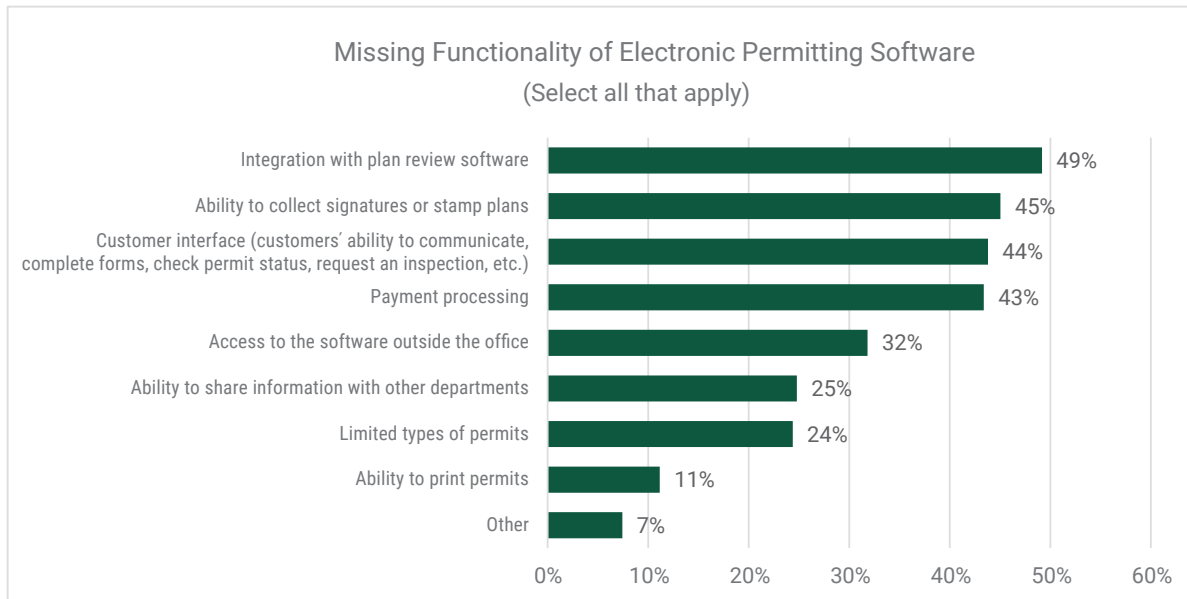
### Electronic Permitting

Despite feedback from jurisdictions that were able to successfully update or integrate more services with their electronic permitting platform, 30% still lack any e-permitting capabilities. The April survey identified several themes in barriers to e-permitting, which this survey considered in more detail.



When asked about policies preventing the electronic issuance of permits, 30% reported a hard copy plan requirement, 18% a hard copy permit requirement, 6% a size limit on accepted electronic payments, and 11% all of the above. Nearly half of all respondents reported no official policy preventing electronic issuance of permits. Among those that reported “other” barriers, some responded that their jurisdiction’s existing office technology or outdated IT systems were the issue. More than a dozen responses pointed to policies against accepting electronic payments. One respondent offered this advice to those interested in introducing e-permitting: “Act now, during the pandemic, since over-the-counter interactions aren’t happening. It has been so seamless for our customers to still continue applying for and issuing permits due to having our permitting process online.”

Half of those utilizing e-permitting software were satisfied with their current system. The April survey identified common gaps in e-permitting software functionality which this survey considered in more detail. When asked about the most common missing functionality of electronic permitting software, 49% pointed to a lack of integration with plan review software, 45% to an inability to digitally collect signatures or stamp plans, 44% note deficiencies in the customer interface, 43% lack payment processing, 32% lacked access to software outside the office, 25% lacked the ability to share information with other departments, 24% noted limited types of permits, and 11% reported the inability to print permits. The majority of those reporting “other” (7%) explained that they were in the process of implementing or upgrading their systems.



The following is a sample of shared lessons learned and best practices that respondents identified in implementing electronic permitting software:

- Be aware of any statewide guidance or requirements as it relates to procurement and/or permitting processes.
- Take the initiative to educate those who make the final decisions on the advantage of electronic permitting.
- Fully research, vet, and test the software; go “all in” and find the most comprehensive program that covers everything. Software that integrates with other government systems will be most efficient. Hire or have access to a good full-time IT person.
- Use a web-based system with a client portal that allows input and access to plans and permits.
- Work with customers to understand their needs and capabilities to secure their, and consequently, management's, buy in. Then start the implementation and be prepared to modify what you thought was going to happen. Thoroughly test and train staff (e.g., permit techs, etc.) before going live. Keep your staff happy and upbeat and celebrate the little victories.
- Have online tutorials for permit applications to train builders/users.
- Consider creating a category of express permits that customers can get issued themselves online for electrical services, water heaters, furnaces and roofs. Those—except roofs—require one inspection and do not require plans. This saves time for staff and minimizes customer impatience.
- Have a process available for those who are unable to apply for e-permits due to individual technology limitations.

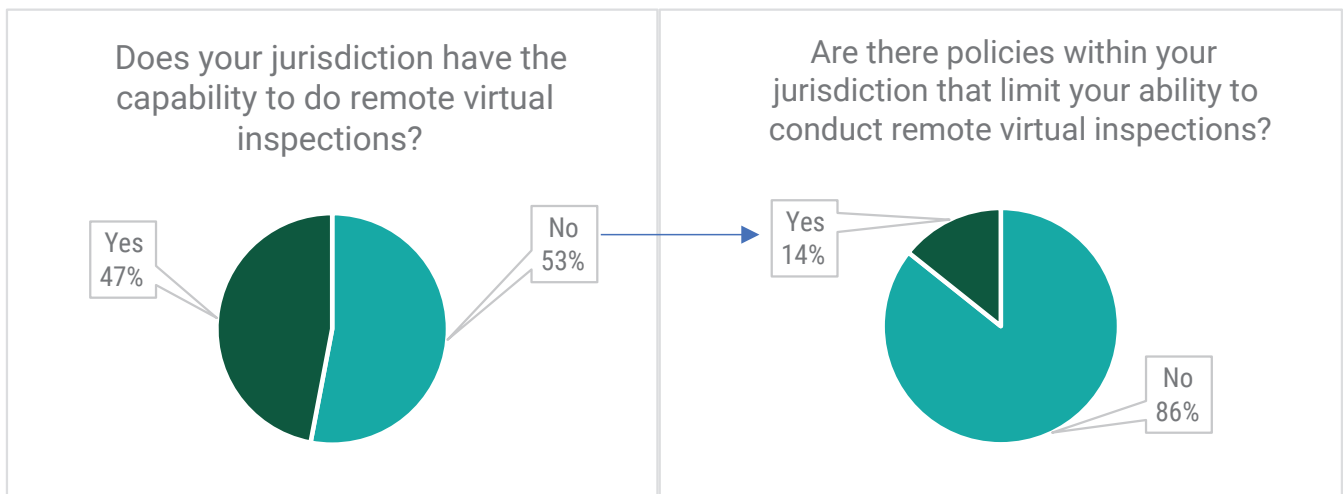
### Relevant Resources

- Website: [International Code Council Virtual Permitting Software](#)
- Whitepaper: [DO's and DON'Ts of Software Implementation Prepared by the International Code Council Major Jurisdiction Committee](#)

## Remote Virtual Inspections (RVI)

As many states began to lock down and limit in-person services, Remote Virtual Inspection (RVI) quickly became a priority consideration, even if only used in limited situations or as a temporary solution. Some jurisdictions (e.g., Arlington, VA, Austin, TX, and the State of North Carolina) swiftly developed and shared guidance, while some state regulations prohibit RVI.

As of September 17, our follow-up survey showed that 53% of all respondents did not have the capability to perform RVI. Of those without RVI capability, only 14% reported an official policy limiting their ability to perform RVI.



Many respondents did not have confidence in the efficacy of a virtual inspection. Some code officials stressed the need for a 360-degree view of any space and voiced concern with the risk of fraud or alteration of videos and photos. For many others, it was too soon to offer lessons learned since the RVI process is new, jurisdictions are learning the technology, and it is unknown whether RVI may become a permanent offering in their jurisdiction.

## Suggestions for successful RVI

- Use RVI only for “small” or “simple” inspections such as water heater and furnace installations in occupied buildings.
- Know your limitations and be clear what you can and can’t inspect virtually (i.e., large or complex projects, soil conditions).
- Give instructions to the contractor or homeowner one to two days prior to the inspection.
- Keep in mind that some people are not as tech savvy as others.
- Ensure inspectors have access to more than one platform for video calls (Zoom, WebEx, Teams, Skype, FaceTime, etc.).
- Use live video and view on a large screen. Reliable internet connection or cell service at the job site is critical.
- Require evidence or verification of the correct job site. This can be achieved by sharing a GPS location from an electronic device (e.g. phone, tablet).
- Continue to do in-person inspections for new construction.

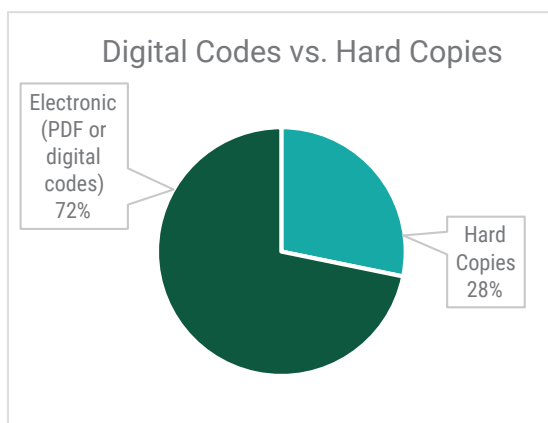
## Relevant Resources


- Whitepaper: [Recommended Practices for Remote Virtual Inspection](#)
- Whitepaper: [Considerations for Virtual and Remote Inspections](#)
- Online course: [Options for Virtual and Remote Inspections](#)
- Building Safety Journal article: [The digital touch: Miami County Building Department expands its Virtual Inspection Program](#)
- Building Safety Journal article: [Virtual home inspections allow home sales to safely continue in Belleville](#)
- Building Safety Journal article: [North Las Vegas' Evans tackled yet another obstacle, and kept the city moving safely](#)
- News Release: [ICC Community Development Solutions Partners with Inspected to Make Remote Virtual Inspections Easy and Keep Projects Moving](#)

## Access to Codes

One of the most notable changes in virtual capabilities reported between the first and second surveys was how people accessed codes (16% lacked access in September versus 25% in April). Improvements in access to code materials since April was greater than improvements in any other virtual capability gap surveyed.

Three-quarters of respondents reported accessing codes through digital means. More than half of respondents accessed digital codes through the Code Council's website. Nearly half of respondents indicated that they are actively working to address digital code needs.



 **53%** report accessing digital codes through the Code Council's website.

 **48%** working to address digital code needs.

## Relevant Resources

- Free webinar: [Online Access to Codes and Standards](#)
- Website: [Digital Codes Premium](#)



## THIRD-PARTY PLAN REVIEW AND EXPEDITED ONLINE PERMITTING

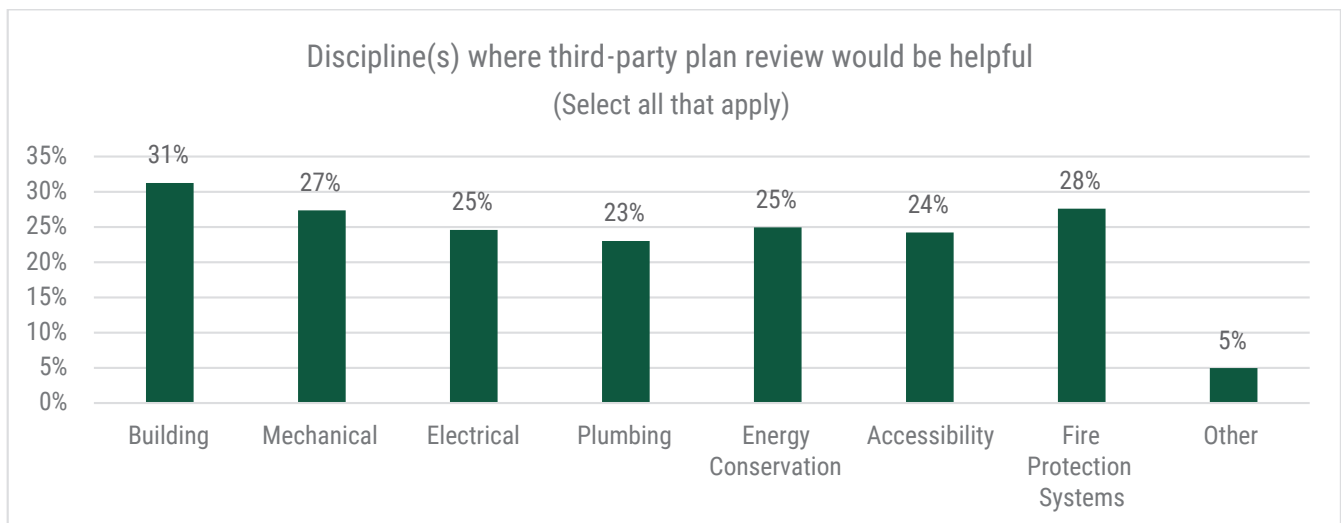
### Third-Party Plan Review

During the pandemic, more people are spending time at home. The way in which we view our living spaces is changing. The need to spruce up outdoor living space and find multiple “home office” spaces for both adults and school-aged children, is causing [a boom](#) for newly-built single family-homes and home improvement projects. In November, the National Association of Home Builders (NAHB)/Wells Fargo Housing Market Index (HMI) [reported](#) four consecutive record breaking months of builder confidence, the highest in the rating’s 35-year history. “Traffic remains high and record-low interest rates are keeping demand strong as the concept of ‘home’ has taken on renewed importance for work, study and other purposes in the COVID-era,” [said](#) NAHB Chairman Chuck Fowke.

Houzz, an online home remodeling platform, via the [New York Times, reported](#) residential renovations are up 58% annually. In various webinars, Code Council members and code officials have commented on the sharp increase in residential permits.

In some cases, the demand may outpace permit office capabilities. One option to meet the demand during the pandemic, and during future spikes in construction activity, is by using a third-party plan review service.

Twenty-percent of survey respondents report using third-party plan review, while 30% of those who do not currently use third-party services would consider it. Survey respondents indicated that plan review assistance would be valuable across all disciplines, including building, mechanical, electrical, plumbing, energy conservation, accessibility, and fire protection. Respondents also identified value for third-party plan review in commercial, structural, special hazards (e.g., seismic retrofits), “very large” and/or complex projects (e.g., new high rises, mixed use, hospitals, and schools), solar battery storage, and elevators. Seventy-six percent of respondents would be more likely to outsource commercial plan reviews. Six in 10 found “10-14 days” to be the most reasonable turnaround time for outsourced projects.



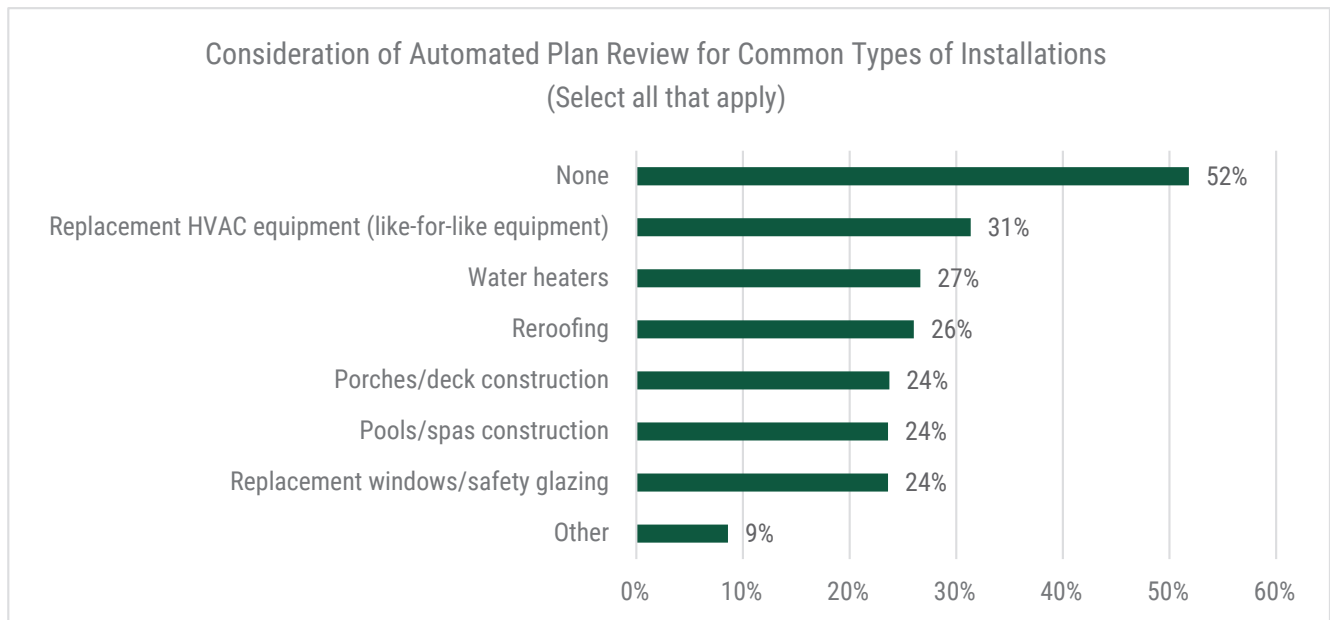
### Relevant Resources

- Website: [ICC Online Plan Review](#)

## Expedited Online Permitting

Expedited online permitting review can reduce in-person contact during the pandemic and, more broadly, help reduce demand on permit offices. Our survey queried departments on their interest in expedited online permitting, which saw a mix of support and opposition. Expedited online permitting uses a series of inputs from the permit holder to determine if the plan meets code requirements. Automated plan review relies on computer-based analysis. In either case, the AHJ can then verify compliance at inspection. While expedited permitting for, or automated review of, common designs can save time and promote consistency, many code officials were skeptical.

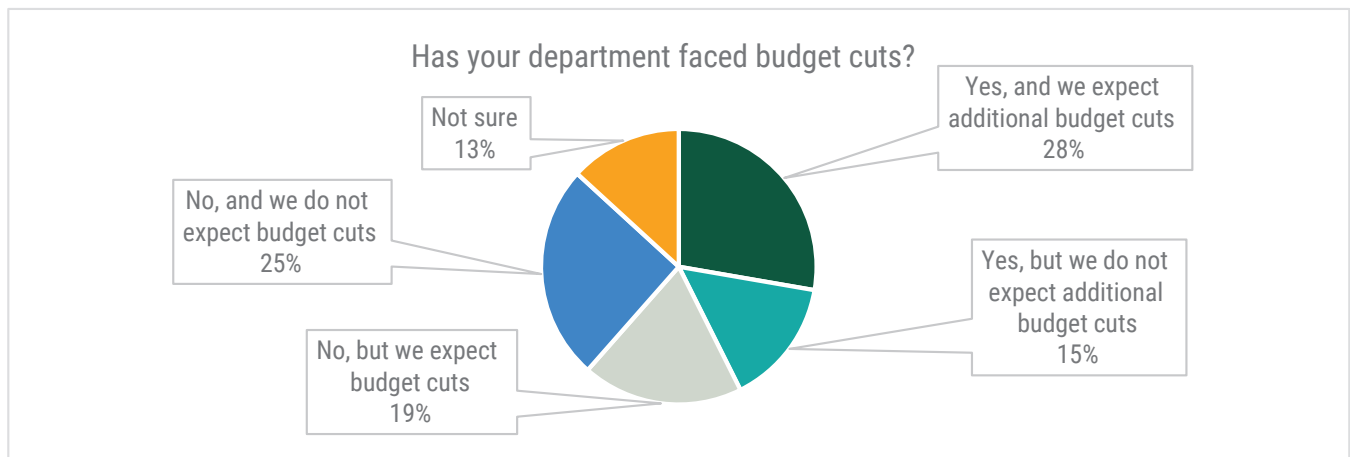
In the survey we asked if automated plan review would be useful for a series of routine activities. The majority of respondents said “no” while remaining respondents voiced interest in several listed options, including replacement HVAC equipment (like-for-like equipment) (31%), water heaters (27%), reroofing (26%), and tied at 24% – porches/decks, pools/spas, and replacement windows/safety glazing. Of those who responded “other,” most replied that they were unsure whether they would find it useful or had further questions on how it would work. Other suggestions included automated review for electrical panel upgrades, small (between 120 – 1,000 sf) unheated accessory structures, braced wall panels, and zoning.



We also asked respondents for feedback on plan review software the National Renewable Energy Laboratory (NREL) within the U.S. Department of Energy (DOE) is currently developing called Solar Automated Permit Processing platform (SolarAPP). SolarAPP will be a web portal that is designed to conduct expedited online permitting for certain common types of residential solar installations based on a series of inputs from the permit holder. One in 5 respondents would consider using SolarAPP, with a median population of 31,000, while slightly more than half were unsure if their jurisdiction would use it. The Pacific and Northeast regions had interest in SolarAPP that exceeded the 1 in 5 nationwide average.

## BUDGETARY CONCERNS

A September 2020 [report](#) from the Brookings Institute, a non-partisan think tank, projects that as a result of the pandemic, state and local income tax revenues will decline 4.7% in 2020, 7.5% in 2021, and 7.7% in 2022 – \$22 billion, \$37 billion, and \$40 billion, respectively. Building and fire prevention offices have not been immune to budgetary cuts with the follow-up survey showing 43% already experienced cuts, while 47% expect future cuts. This economic downfall puts a greater strain on departments seeking out virtual solutions to carry out essential code compliance activities.



## CARES ACT

On March 27, 2020, Congress passed the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) (PL 116-136). The CARES Act established the Coronavirus Relief Fund (CRF), which provided \$150 billion in direct relief payments to state, territorial, tribal and local (STTL) governments. The U.S. Treasury Department’s [CRF guidance](#) lists as eligible “Expenses to improve telework capabilities for public employees to enable compliance with COVID-19 public health precautions,” and “Any other COVID-19-related expenses reasonably necessary to the function of government that satisfy the Fund’s eligibility criteria.” This clarification has ensured that building and fire prevention departments are able to leverage the CRF to address virtual capability needs.

In early April 2020, the Code Council Government Relations (GR) field team sent tailored letters using state-by-state statistics taken from the first survey to every state governor requesting the use of CRF monies for code department virtual needs. On May 1, the Code Council sent letters to Congressional leadership, FEMA, and the National Security Council, encouraging they direct additional federal resources to help code departments develop virtual capabilities. [Fifty-three organizations](#) and businesses supported these efforts, representing state and local governments, residential and commercial contractors, building owners and managers, manufacturers, insurance, housing, energy efficiency, renewable energy, engineering, design, and resilience interests.

Upon the release of direct CRF monies to localities with populations over 500,000, GR matched 150+ jurisdictions to survey responses for a targeted outreach effort. Using survey data, we connected Code Council members with decision makers in more than 50 communities based on the virtual needs identified.

As states began to pass through funding to local governments, the GR team tracked funding [opportunities](#) and [informed members](#) on available funding and relevant state guidance. The Code Council led a series of CARES Act webinars in which members and Code Council staff helped attendees navigate the mechanics of this funding opportunity.

Eleven percent of survey respondents reported using CRF monies to purchase hardware (e.g. larger computer screens, laptops, digital plan review tables, tablets, and smart phones) and to purchase or upgrade software (e.g. electronic permitting and review software, Digital Codes Premium, electronic records management software, like Laserfiche) to continue working remotely. An additional one-third of respondents showed interest in using CRF monies. The Code Council reached out to each of these respondents to provide additional information.

## Relevant Resources

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- Free webinar: [Use CARES Act Funds to Purchase Essential Digital Solutions](#)
- Free webinar: [Using Federal CARES Act Funds: A Panel of Code Officials' Success Stories](#)
- Table: [State-by-State Distribution of CARES Act Funding to Local Governments](#)
- Code Council Fact Sheet: [Federal CARES Act CRF Funding for Code Departments](#)
- Jurisdictions with Populations < 500,000: [Guidance on seeking CARES Act funding for virtual needs](#)
- Code Council Talking Points: [Why Governments Should Provide CARES Act Funding for Code Department Virtual Needs](#)
- ICC Pulse Podcast: [Federal Assistance under the CARES Act](#)
- Code Council Fact Sheet: [CARES Act Federal Funding for Building and Fire Prevention Departments](#)
- [Joint Letter to Congressional Leadership Supporting Virtual Capabilities for Code Departments](#)
- [Joint Letter to FEMA/NSC Supporting Virtual Capabilities for Code Departments](#)

## Future Relief Packages

Unfortunately, to date, Congress and the Administration have been unable to agree on a subsequent relief package. Though there is consensus that there will be another stimulus or relief deal, Congress remains divided on what should be incorporated. Led by the National Governors Association, STTL governmental organizations including the National Council of State Legislatures, National Association of Counties, U.S. Conference of Mayors, and the National League of Cities, have been vocal in their [request](#) to Congress for at least \$500 billion in additional funding to STTL governments, with no exclusions based on population. The Code Council added its support to a similar [request](#) from the National League of Cities, along with 170 other organizations and continues to advocate for additional state and local assistance.

## CONCLUSION

The Coronavirus pandemic is permanently changing the way we think about the built environment. Attitudes and uncertainty towards learning and implementing new technology in code and fire departments are shifting and inspiring fresh and productive conversations about building safety, plumbing and sanitation considerations, and innovative virtual solutions such as automated plan reviews. As changes we have experienced in 2020 will likely have a long-lasting impact on the industry, the Code Council is developing a taskforce on pandemics to leverage the expertise of our members and stakeholders.

The Code Council will continue to effectively advocate for additional financial resources to cover departments' COVID-19 related expenses, help innovate new virtual solutions, and work with members and partners on developing or adapting standards to best address the ongoing situations and future challenges.

The report was prepared by:  
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