



INTERNATIONAL
CODE
COUNCIL®

ROADMAP FOR CODE DEPARTMENT DIGITALIZATION



Code Official Digitization
and Efficiency Support

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ACRONYMS

AI	Artificial Intelligence
CODES	Code Official Digitization and Efficiency Support
CEO	Code Enforcement Officer/Official
DOE	U.S. Department of Energy
ICC	International Code Council
ICC CDS	ICC Community Development Solutions
RECI	Resilient and Efficient Codes Implementation
RVI	Remote Virtual Inspections

GLOSSARY

Digitization: The process of converting analog data to digital format.

Digitalization: The process of converting analog processes to digital workflows that result in greater efficiency (time savings, cost reductions), improved communication between parties, and reduced manual errors and paper waste.

Digital Transformation: The outcome after an organization undergoes and adopts digitalized processes that lead to new ways of doing business.

Municipal Administration Software: Any of the various software products designed to administer critical municipal functions, including but not limited to permitting, code enforcement, license applications, payment processing, and citizen service.

Pilot Communities: Jurisdictions that participated with ICC and the CODES team, to improve their code/building department through digital technology for improved code compliance. Pilot communities were located in New York State (3) and Pennsylvania (1).

CODES PROJECT BACKGROUND

The Code Official Digitization and Efficiency Support (CODES) project is a Department of Energy (DOE) Resilient and Efficient Codes Implementation (RECI) initiative designed to address challenges in small and under-resourced jurisdictions by reducing administrative burdens and freeing resources. Improvements made through digitalization allow code enforcement officials (CEOs) to dedicate themselves to their mission of advancing public safety and resiliency through the built environment.

For the CODES Project, the International Code Council (ICC) assembled a team with expertise spanning building code development, energy, resiliency planning, building design and construction, and education to work with several Pilot Communities to address the above challenges. The team included Clarkson University, New York Association of Towns, New York Department of State, +lab architect pllc., and Resource Refocus.

The project began with two hypotheses:

1. Digital processes for permitting, plan review, and inspections can enhance code implementation and enforcement.
2. Small and rural jurisdictions often do not have the resources to research and implement such tools and may have unique challenges in their jurisdictions.

The CODES project developed this roadmap to guide digitalization efforts for jurisdictions, with a supporting toolkit of digital tools and software, training, and resources for New York State that can also be applied to other jurisdictions nationally.

ROADMAP GOALS

The CODES Digitalization Roadmap's main objective is to guide a jurisdiction through digitalizing its building and code departments to serve its community and citizens better while enhancing code compliance, improving energy efficiency, and supporting resiliency in the community. The majority of US jurisdictions have populations smaller than 20,000. Building departments in these jurisdictions are generally understaffed and underfunded and often conduct business through paper-based forms and submissions. The target audience for this roadmap is the chief building official and IT director for jurisdictions as described above, and it is intended to provide clarity on transforming building departments and help achieve the following goals:

1. **Improve Community Services:** Create a robust, efficient, and functional digital ecosystem to support building and code department functions. This will increase the efficiency and productivity of CEOs by automating processes that enable CEOs to focus on important tasks such as decreasing project review backlogs, increasing review rates, or responding to code violations.
2. **Improve Code Compliance:** Confirm compliance with building codes for increased safety, energy efficiency, and community resilience through an improved understanding of building and energy codes within building departments to support project compliance through project reviews and inspections.

Digitization is the fundamental and most basic tier of digital improvements. It can be understood as converting analog data to a digital format. Digitization promotes the transfer of paper data to digital formats such as PDFs, worksheets, and other electronic documents.

Initial research into digitalization showed an important distinction between digitization, digitalization, and digital transformation that is fundamental to any project whose goal is to improve processes with digital tools and workflows.

Digitalization is the process of making analog workflows digital. Digitalization leads to more efficient, streamlined operations. The CODES Digitalization Roadmap includes researching, selecting, setting up, and implementing software for specific tools to enhance the capabilities of building and code departments and their staff. In the case of the CODES project, these tools include MuniCity5 and DigEPlan, but other similar tools are outlined in the accompanying Toolkit. These tools can include online forms, code review tools, digital plan review technologies, digital task management software, remote virtual inspection tools, etc.

Digital Transformation is a foundational shift in how an organization operates, leveraging digitized data and optimized workflows/processes. This can include advanced technologies such as artificial intelligence (AI), big data, and cloud computing that can improve experience, business models, and capabilities.

The CODES Digitalization Roadmap is divided into three phases of activity to achieve these goals. These phases include (1) Scoping and Planning, (2) Development, and (3) Implementation. The Scoping and Planning phase includes the necessary actions jurisdictions should take in preparation for digitalization implementation. The Development and Implementation includes the bulk of the CODES project's direct effort working with the pilot communities. This phase is divided into four levels representing increasing digitalization outcomes: digitization, essential digitalization, advanced digitalization, and aspirational digitalization.

- Digitization is the foundational step in which jurisdictions move paper documents and data to digital forms. The tasks in this stage support later levels of digitalization.

- Essential Digitalization creates the basic digital workflows for jurisdictions' code/building departments, including project tracking, management, and application processes.
- Advanced Digitalization expands on the essentials, offering more specific digital processes that create more efficiency for code officials and department staff with project-specific tasks, including digital plan reviews and remote virtual inspections.
- Aspirational Digitalization offers further transformational strategies that offer advanced tools for use by jurisdictions, citizens, and other key stakeholders that can offer design planning resources, or artificial intelligence supported workflows.

The final phase, Code Compliance, Energy Efficiency, and Resiliency Improvement Implementation, provides additional resources and information to improve code compliance, energy efficiency, and resiliency on projects.

The CODES Digitalization Roadmap includes the steps needed to transition codes and building departments from paper-based processes to an integrated digitalized ecosystem. A graphical representation of the process is available at the end of this Roadmap. The primary components of this ecosystem include:

1. a municipal administration software that can manage parcel data, project applications, tracking, permitting, etc.,
2. a plan review software to enable collaborative, timely reviews of projects prior to permitting, and
3. an inspection tracking application to track progress on inspection workflows.

Implementing these systems requires a collaborative effort between the jurisdiction, the building department, the code enforcement team, and software developers on the front end to establish a sustainable ecosystem.

It should also be noted that beyond these primary digital tools, there are many software and digital resources integral to enhancing code compliance and community resilience that may not fall under the direct purview of the jurisdiction. These can range from energy modeling or compliance software used by engineers, architects, HERS raters, or verifiers to hazard mapping tools such as FEMA flood maps. These secondary tools are helpful throughout the project planning, design, and permitting phases to communicate important information to owners, design and construction professionals, and jurisdiction staff.

ROADMAP

Scoping and Planning

This section details the tasks and important considerations for a jurisdiction interested in digitalizing their building and code departments. Scoping is organized into sections of recommended tasks to prepare for implementing digital tools and workflows. The following tasks are designed to inform the jurisdiction of current challenges and needs and find potential solutions as they transition from paper to digital methods of working.

Working Group of Key Stakeholders

A jurisdiction interested in digital transformation of building and code departments must first gather key stakeholders who can provide input throughout the process. These stakeholders may include, but are not limited to, building and code department staff, jurisdiction general counsel, zoning and planning staff, fire department personnel, planning board members, IT staff, and elected officials. Each jurisdiction should also consider outside community stakeholders such as architects, engineers, contractors, and developers, as well as citizens in the working group. The stakeholders should provide input into the challenges faced with current jurisdiction policies and where improvements could be made to increase efficiency and compliance outcomes.

Goal Setting and Needs Assessment

The working group must understand the challenges it is trying to solve through digitalization. Current challenges can be ameliorated through more efficient digital processes. These challenges may differ from jurisdiction to jurisdiction; however, lapses in code compliance, project review backlogs, and overextended staff are common challenges that building and code departments face. During initial research, each jurisdiction should conduct a Needs Assessment to thoroughly assess its current policies, business operation, and practices to assess the challenges that digitalization can provide solutions for.

The assessment should consider where weaknesses in processes create pain points or bottlenecks and subsequent backlogs.

The Needs Assessment should include the development of a benchmark, from which future digital tools and processes implementation can be measured. Metrics for benchmarking to evaluate process improvement success will depend on jurisdiction, but the following metrics are provided as examples:

- The number of permitting and/or inspection backlogs.
- The average time for plan reviews, or the time it takes from project application to issuance of permit.
- The number of permits issued per month.
- The number of inspections conducted per month.

The Needs Assessment should clarify what level of digitalization the jurisdiction's current processes consist of by answering the following questions: Does the jurisdiction conduct all business using hard copy paper? Does the jurisdiction use a mix of paper and some digital forms and basic submission tools such as file sharing, cloud storage folders (e.g., Dropbox, Box, Google Drive)? Does the jurisdiction use a mix of paper and digital based documents? What processes can be digitalized, or can be streamlined? Asking these kinds of questions can help narrow down solutions that might be the right fit for a jurisdiction. It should not be expected that a jurisdiction primarily paper-based will be able to jump from paper to a more advanced digitalized process without first developing the essentials.

The level of digitalization necessary for a jurisdiction will vary based on its size and number of permits administered each year. Advanced digitalization may not be the appropriate answer for small jurisdictions that process few permit applications each year or that expect to have limited growth for the foreseeable future. If these jurisdictions are paper based, developing basic digital systems such as PDF forms and submission and review processes may be the appropriate level of digitalization required. However, if a jurisdiction is experiencing growth and is struggling to manage a backlog of applications, reviews, and inspections, then implementing a more holistic and more advanced suite of digital tools can offer more streamlined workflows that can reduce backlogs and free up staff time for critical work.

Data Gathering

Once the working group and the jurisdiction identify their digitalization goals, the stakeholders should survey the available software and tools that can offer solutions to the jurisdiction's challenges. The working group and jurisdiction will need to review features, receive demonstrations, review cost structures, and engage with multiple providers to determine which software solutions will meet their needs and best integrate with existing systems.

If not already in use, the jurisdictions should look for municipal administration tools to be a one-stop-shop for jurisdiction staff. This software can manage parcel data, track permit applications, code violations, and can even work with other jurisdiction departments that handle business license registrations. While these are only some of the features of this type of tool, not all software will have the same features and capabilities. Therefore, it is critical that all potential users of any new software are able to review and assess products before final selection.

Development

Digitization

Depending on the needs of the jurisdiction, digitization can be the outcome or goal for a jurisdiction, or it may be the stepping stone to a further level of digitalization. As stated in the section on Goal Setting and Needs Assessment, simple digitization may be appropriate for very small jurisdictions that do not see a critical mass of applications. A basic transition from paper-based workflows to digital documents and file submissions, cloud storage, and digital reviews can provide a more streamlined process adequate for smaller numbers of total applications. If digitization is part of a larger digitalization effort, it serves as the foundational step to prepare data, forms, and documents for integration into a digitalized ecosystem. Regardless of the end goal, digitization will likely include the following efforts:

Discovery

For any level of digitalization, jurisdiction staff work with the software provider(s) to gather legacy data and paper-based forms and review current software, processes, and reports that are necessary for integration with selected software/processes. This includes review and assessment of existing overall permitting process for inefficiencies as well as identification of changes or opportunities to streamline form content prior to software configuration.

Initial Configuration

Jurisdiction staff work with municipal administration software providers to begin configuring software and process needs.

Legacy Data Conversion

The jurisdiction staff and software provider development team convert confirmed data to digital format for integration with software solutions.

Digitize Planning, Property Data, Zoning Ordinances and other Applicable Codes

Jurisdiction staff create digital resources for citizens, applicants, and municipal staff to make codes readily available online if they are not already available. The jurisdiction will need to maintain these documents over time as they change, and update documents, forms, and data available online. Codification services exist to support jurisdictions in managing the publication and update of their codes.

Building and code department staff should be provided with a digital PDF version of codes at a minimum. It is recommended that jurisdictions provide digitalized cloud-based access to codes for better functionality and features for building and code department staff (see essential digitalization).

Ongoing Process Maintenance

Jurisdictions, building and code departments, and code officials, are responsible for maintaining digitized resources.

Essential Digitalization

Digitalized Codes Access

Provide jurisdiction staff with cloud-based codes access. This tool provides improved search, bookmarking, and copy and paste functions essential to building and code department staff work not available with a PDF version of codes.

Build Out Municipal Administration Software

The municipal administration software provider team develops a software ecosystem to support the jurisdiction's code/building department(s).

Digitalize Forms, Applications, Permits, and Payment Processes

The jurisdiction and software provider convert forms and/or develop application documents to web-based forms that integrate with municipal administration software.

Permitting related tasks at this stage are focused on User Portal or registration of applicants both internal and external to the department. Pre-filing Requirements, Various Applications and Work Types, and Checklists are typical. Include web-based forms for Signoffs and Certificates of Occupancy.

Payment Processes may be either a separate software or conducted within an adjacent department (i.e. Treasury Department). This process should be considered as part of the planning.

Digitalized Plan Review Process

Simple plan reviews can be conducted through a PDF viewer or markup software, an integrated function of a municipal administration software, or a separate product.

Process and Data Review

The municipal software provider and jurisdiction review gathered data and workflows to integrate with the municipal administration software.

Integrate the level or type of Plan Review envisioned at this phase. Associated Workflow and Process are integrated. For example: plan submittal as PDFs to be reviewed by examiner(s). Map out how inter-departmental communications and objections are conducted.

Integrate Permitting, construction related requirements such as Special Testing & Progress Inspections, and Post Approval Amendments.

Essentials - Tool Kit

CODES Project Tools

[Municipity](#) – Cloud-based Municipal Software

[Laserfiche](#) – Process Automation, Systems Integration

[Digital Codes Premium](#) – Cloud-based Digital Codes Access

Alternative Tools

[Citizenserve](#) – Cloud-based Municipal Software

[OpenGov](#) – Permitting & Licensing – Cloud-based Municipal Software

[Cloud Permit](#) – Cloud-based Permit Management Software

[GeoCivix](#) – Cloud-based Municipal Software

[Evolve Permitting](#) – Cloud-based Municipal Software

[Smart Gov](#) – Cloud-based License and Permit Management Software

Plan Review Tools

[Bluebeam](#) – Collaborative PDF viewer & markup for AEC industry

PDF Viewer / Markup Tools

Advanced Digitalization

Depending on the level of digitalization needs for a jurisdiction, additional specialized software can provide greater efficiency to specific building department tasks such as digital plan reviews. These software or applications may be an additional feature of municipal administration software or could be a one-off software solution that will need to be integrated into the building/code department's digital systems.

Advanced Digitalization encompasses more sophisticated workflow automation and tracking. Once disparate processes can now become connected for improved workflows. The most recent version of documents and data are maintained so all project stakeholders can stay up to date with the most recent version.

The jurisdiction will work with a software provider in a similar manner as outlined in the digitization and essential digitalization stages. It is important that the jurisdiction selects software that will meet the needs of the building department and can integrate with existing IT infrastructure.

Integration of additional or supportive software to Enterprise Software (if applicable).

- Digital or Electronic Plan Review across all applicable Departments (Zoning & Planning, Building, Fire, etc.)
- Integrate Progress & Final Inspection Software to track and document compliance between approved plans and as-built conditions and required inspections.
- Project Tracking through the Permitting Process conducted by Department Permit Technicians.

Advanced – Tool Kit

CODES Project Tools

- [Municipity](#) – Cloud-based Municipal Software
- [Laserfiche](#) – Process Automation, Systems Integration
- [DigEPlan](#) – Process Embedded Electronic Plan Review
- [Digital Codes Premium](#) – Cloud-based digital codes access

Alternative Municipal Software

- [OpenGov](#) – Permitting & Licensing – Cloud-based Municipal Software
- [Cloud Permit](#) – Cloud-based Permit Management Software
- [GeoCivix](#) – Cloud-based Municipal Software
- [Evolve Permitting](#) – Cloud-based Municipal Software
- [Smart Gov](#) – Cloud-based License and Permit Management Software
- [EPlansoft](#) – Cloud-based Municipal Administration, Plan Review, and Citizen Portal Software Bundle
- [Citizenserve](#) – Community Development Software

Alternative Plan Review Software

- [EPlansoft](#) – Cloud-based Municipal Administration, Plan Review, and Citizen Portal Software Bundle
- [BlueBeam Studio](#) – Collaborative PDF Markup Software
- [ActiveDraft](#) – Enterprise PDF Markup and Collaboration Tool

Aspirational Digitalization

Through the CODES team’s research on digital tools for municipal administration and codes, several advanced tools provide compelling benefits for jurisdictions. The following measures could add value to jurisdictions that have successfully transitioned to advanced digital processes.

Remote Virtual Inspection (RVI)

RVI provides opportunities to reduce travel time for jurisdiction staff and streamline approvals and verifications. RVIs are not appropriate for all types of inspections, especially those that have significant life safety repercussions, but they can be a tool for specific inspections such as domestic hot water tank replacements. Jurisdictions that choose to develop RVI capabilities also need to develop clear policies guiding the use of RVI, and make those policies available to staff, contractors, and community members.

The International Code Council has developed several resources to support jurisdictions in implementing RVI including “[Recommended Practices for Remote Virtual Inspection](#)” and a [checklist](#) for using RVI with the residential provisions of the 2018 and 2021 IECC.

Artificial Intelligence & Data Mining Solutions

Several software companies are developing sophisticated applications that use AI-augmented processes to solve challenges in code enforcement, permitting, design, and construction. Recent developments in AI have led to several industry-specific programs that can augment the plan reviews, permitting, and early zoning reviews.

Aspirational Plan Reviews

[CivCheck.Ai](#), is a plan review and code compliance software that speeds up permitting for applicants and city reviewers.

Aspirational Permitting

[Symbium](#), is a government relationship management software with AI-powered permitting and instant permitting for installations such as residential solar and batteries, and accessory dwelling units (ADUs).

Aspirational Preliminary Zoning Studies & Interactive Parcel Data

[Symbium Build](#), while still limited to mostly California, provides a free online tool for homeowners to study if an ADU is allowed on their property, what size and shape fits on their property and in an easy-to-use interface that provides predesigned solutions and contacts for ADU manufacturers.

Aspirational Tools
Remote Virtual Inspection Tools Inspected – Remote Virtual Inspection Software Municipity – Cloud-based Municipal Software
Plan Review Tools CivCheck.Ai – AI guided plan review platform CodeComply.Ai – AI-Powered Plan Review Assistant Build Check – Intelligent plan review for project design teams
Other Tools Symbium – AI Property and Permit Information Portal

Implementation

Once the jurisdiction and their software providers build out the digitalized systems, the following common activities will take place at all phases of digitalization, and for every application and process developed.

Testing & Rework

The jurisdiction and the software provider test the functionality and processes of the software ecosystem and make changes as needed.

Training and Go Live

As the jurisdiction works with the provider of specialized software on implementation, the software provider trains jurisdiction staff, providing time for users to learn the software, new processes, and test functionality. The software provider will then transition to a support role for the jurisdiction.

Go-Live Project Support

Jurisdictions and their software provider(s) initiate a support plan for a set period, likely outlined in the contract between the jurisdiction and the provider. Early support is likely provided on a regular basis but then transitions to a traditional help desk.

Ongoing Process Maintenance

Jurisdictions, building and code departments, and code officials, are responsible for maintaining digital processes and resources.

Code Compliance, Energy Efficiency, and Resiliency Improvement in the Permitting Process

Opportunities to enhance energy efficiency while undergoing digitalization

Incorporating energy efficiency planning early in the project development and permitting process can enhance project sustainability and cost-effectiveness. A range of federal and state programs offer technical assistance and certifications for residential and commercial developments. Resources are also available for homeowners to retrofit their new or existing homes with energy-efficient upgrades.

At the federal level, [ENERGY STAR](#), administered by the U.S. Environmental Protection Agency (EPA), offer programs and certifications that can improve energy performance in residential (single-family and multifamily homes) and commercial buildings. ENERGY STAR supports both new and existing buildings through energy efficiency standards and certified products designed to reduce energy use.

In New York State, NYSERDA (New York State Energy Research & Development Authority) offers energy management tools tailored to different building types. The [NYSERDA Home Energy Efficiency Programs](#) offer free or low-cost home energy audits, helping homeowners identify cost-effective improvements. For commercial, mixed-use and multi-family developments, [NYSERDA Energy Management Solutions for Building Typologies](#) provides energy management solutions aligned with industry standards, such as ASHRAE 90.1 and ENERGY STAR. In addition to cost savings through energy efficiency, many of these programs include tax credits and financial incentives.

The resources listed above are not exhaustive, as federal and state programs may vary, and each jurisdiction may have its own energy code requirements. These examples highlight some of the available programs to raise awareness about energy management and the assistance provided to help applicants incorporate it early in the permitting process. Additional federal, state and local incentive programs can be found in the [Database of State Incentives for Renewables & Efficiency \(DSIRE\)](#). Planning for energy efficiency from the start can support the development of more sustainable, high-performing buildings.

Energy Efficiency Tools & Resources

Energy Efficiency:

Leadership in Energy and Environmental Design (LEED)

Passive House Institute US (Phius)

ENERGY STAR

Enterprise Green Communities

DOE Zero Energy Ready Homes

New York State & New York City Resources

NYSERDA Home Energy Efficiency Programs

- Has an online tool to identify the program that best suits the location and number of people in a dwelling
- Offers free or cost-effective assessment with a list of recommended improvements
- Incentives and financial assistance information is also available online
- Potential cost-effective improvements may include adding insulation and energy-efficient lighting, upgrading your heating system to an energy-efficient heat pump, or switching to ENERGY STAR® certified appliances.

NYC Local Law 97/87/84 Compliance

- Buildings over 25,000 square feet: The law applies to individual buildings that have more than 25,000 gross square feet of floor area.
- Buildings on the same tax lot: If there are two or more buildings on the same tax lot that together exceed 50,000 gross square feet, they are also covered under LL97.
- Condominium buildings: Two or more buildings governed by the same condominium board that collectively exceed 50,000 gross square feet are subject to the law.

Tools

[NYC Accelerator](#) is the website the NYC Mayor's Office of Climate and Environmental Justice has created to share information on technical assistance, funding and retrofit guides to comply with LL97 starting in 2025

- Provides free one-on-one assistance
- The application and permitting will be under the Department of Buildings (DOB) and can be submitted online through their online portal
 - Report their GHG emissions annually to the New York City Department of Buildings (DOB). This report must be submitted through the DOB's online portal
 - Emissions data must be verified by a qualified professional, such as a licensed engineer or architect
 - If a building exceeds the emissions limits, the owner must implement energy efficiency retrofits, a list of which will be provided by DOB

Software Support: The DOB existing online portal will be updated to include the application and permitting for new energy efficiency laws in New York City.

Opportunities to enhance energy code compliance through digitalization

Recent model energy codes, such as the 2024 IECC and ASHRAE 90.1 2022, are increasingly complex and impact more building components than previous code cycles. At the same time, more municipalities, depending on if the state allows it, are voluntarily adopting their own building and energy codes that are more stringent than the state codes. Sometimes these codes use a published voluntary code or appendix, such as NYStretch or 2024 IECC Appendix RC Zero Net Energy Building Provisions. To keep up with these increasingly complex and geographically varied codes and ensure clean, efficient buildings, builders and code officials can utilize energy modeling and compliance software. As more builders opt to use performance paths rather than prescriptive paths for compliance, such as ASHRAE 90.1's

Appendix G or IECC's Energy Rating Index (ERI) pathways, both builders and code officials must understand the inputs and outputs of the software used to show compliance with these paths, which may require training and more documentation. Digitalization of other building department workflows can help improve communication around these modeling tools and their outputs.

Energy Code Compliance Tools & Resources
Energy Compliance Software: REScheck and COMcheck Ekotrope HERS Rating Software

Opportunities to enhance resiliency while undergoing digitalization

Integrating compliance standards within digitalization is available through various processes, resources, and use of tools. Diverse federal and state codes and resources that are aimed at enhancing overall property and community resilience, while protecting environmental impacts, should be considered as part of the process.

Federal - Hazard Mapping and Vulnerability Assessment Tools.

One example is the FEMA Flood Maps and Flood Insurance Rate Maps (FIRMs) communicating different levels of flood risk, helping communities understand collective risk. These maps help set and enforce minimum building requirements.

State and Local - Resource Guides: Recommendations and Best Practices – “Beyond Code”

Many jurisdictions offer various materials and directories, such as the [NYS Department of State: Resilience Planning Assessment](#) providing reference to state, regional, or local resources for applicants and design professionals during pre-planning and design phases. These include valuable instruments, in particular, “Beyond Code” Initiatives, which involve going above and beyond minimum code requirements, often with the goal of achieving greater efficiency, sustainability, or resilience. Measures such as freeboard are required to enhance and provide an extra measure of resilience related to flood mitigation.

Additional Resources, including those related to environmental impacts can be found below:

Resiliency Tools and Resources
Buildings – New York State Climate Impacts Assessment Buildings Chapter New York State Climate Hazards Profile Climate Resilience Strategies for Buildings in New York State
New York State Resources NYS Department of Environmental Conservation- Environmental Assessment Form Mapper (EAF Mapper) Generates location-based parcel scale reports needed for Part 1 of the environmental assessment form by NYS NYS Department of Environmental Conservation- Environmental Resource Mapper & Permit Shows the natural environment resources around the site and has a link to permits. The map is interactive, each feature when clicked on has an informational fact sheet and classification type. NYS Department of Environmental Conservation- Stormwater Interactive Map & Permit Shows state regulated wetlands, waterbody inventory, areas vulnerable to sea level rise and information on permits. The map is interactive, each feature when clicked on has an informational fact sheet and classification type.

Conclusions and Opportunities for Future Study

The advancement of digital technologies can provide solutions to building and code departments that enable more efficient workflows and improved connectivity. However, the number of choices when it comes to software providers is immense, from well-established companies to more recent startups that seek to disrupt the industry with new tools that incorporate artificial intelligence. For jurisdictions that want to move from paper-based to digital processes, the solution is not one-size-fits-all, and great care is needed in phasing in digital tools and workflows. A digital transformation, particularly for building and code departments, is not linear and can be conducted in different sequences depending on the needs of a jurisdiction.

The speed at which technology continues to advance inherently makes digital transformation an ongoing process. As new advancements are made in software and computing (e.g., AI) and new features that incorporate these advancements are added to the suite of products offered by software providers, jurisdictions, code officials, and other stakeholders will continually need to learn and adapt to changing technological ecosystems. As municipalities and jurisdictions continue the digital transformation of their building and code departments, it offers an opportunity to reconsider the permitting process for a completely digital workflow.

Historically, this process has been relatively linear as projects seek approvals, go through application and reviews to permit issuance, to construction and inspections that then lead to substantial completion and occupancy. This is the model workflow that developed from analog working methods and from which many current digital tools were developed to enhance. The advancement of software, AI, and blockchain technology presents an opportunity to remake this process for the 21st century. Future studies should consider what a fully digital process might be as an alternative to the current analog-derived one.

Digitalization Roadmap – Process Solutions

