HOW TO MAKE A ZONING ATLAS 2.0:

THE OFFICIAL METHODOLOGY FOR THE NATIONAL ZONING ATLAS

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NATIONAL ZONING ATLAS

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I. INTRODUCTION

Zoning laws, adopted by upwards of 30,000 local governments across the country, are important. Because they dictate virtually everything that gets built in the United States, they have tremendous impact on our economy, environment, society, and even health. But no one — not even experts — knows enough about what they actually say because they are so decentralized, inconsistent, and convoluted.

We're building the National Zoning Atlas to unlock zoning's black box by centralizing, standardizing, and making accessible information about zoning. We believe if people understand zoning, they will be empowered to improve it. We think enabling apples-to-apples comparisons of cities and towns will promote understanding of regional and statewide trends. We hope that information about zoning will strengthen planning for housing production, transportation infrastructure, food security, and climate response.

This methodology, *How to Make a Zoning Atlas 2.0*, outlines the process by which the National Zoning Atlas is built. The process has two workflows – one involving analysis of zoning texts, the other involving analysis of zoning maps – the products of which are merged and published to our online, interactive map. This methodology tracks both workflows, giving zoning code and geospatial analysts instructions on how to collect, translate, and standardize zoning regulatory and geospatial information. It focuses on individual zoning districts, each of which distinctively regulates allowed uses, structures, and lots.

With that background in mind, we can proceed to the detailed instructions.

Part II explains how to structure geography-specific teams, use the Editor workspace, identify jurisdictions, find and upload jurisdictional files, and establish a division of labor. We strongly suggest that the full team work together to complete this Part before proceeding with later Parts.

Part III turns to the building blocks of any zoning atlas: zoning districts. For reasons explained below, the seemingly simple task of listing zoning districts is harder than it appears. The whole project team (including the geospatial analysts) should engage in the work of this Part.

Part IV tells zoning code analysts how to classify districts and analyze the regulation of uses, lots, and structures. It also explains how team leaders can create custom fields and finalize data entry.

Part V tells geospatial analysts how to prepare and upload geospatial data for both jurisdictions and zoning districts.

Part VI concludes with final publication instructions.

NOTE: This methodology is written for current National Zoning Atlas team members. People not officially associated with the National Zoning Atlas will not be granted access to the National Zoning Atlas Editor.

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II. SET UP

Every team – that is, every group of people working on a specific geography (a metropolitan area, a region, or a state) – must set up systems and processes that allow efficient and collaborative work. As background, the National Zoning Atlas initially grew in a decentralized fashion, onboarding a variety of external teams that identified geographies of interest. As the project has grown, more and more of the work is being and will be conducted by National Zoning Atlas staff. Whether external or internal, the team members building the Atlas must all adhere to this methodology.

This Part articulates team composition and ideal qualities for team members. It outlines how to get set up in the National Zoning Atlas Editor. It covers how to identify and claim the jurisdictions for a team, and to input and save the files associated with them. And it suggests how to divide labor based on information collected.

In this Part, you will fill out the following information:

- **Jurisdiction Name**: The name of the jurisdiction (e.g., a city, town, village, or submunicipal authority).
- **Does This Jurisdiction Have Zoning?**: A binary Yes/No entry indicating whether the jurisdiction has zoning.
- **Does This Jurisdiction Follow a County Zoning Code?**: A binary Yes/No entry indicating those rare circumstances where a jurisdiction follows a county zoning code instead of its own, jurisdiction-specific code.
- **Government Type**: The type of government used in the jurisdiction, using categories according to the official U.S. Census of Governments.
- **Parent Jurisdiction:** A larger jurisdiction (if any) within which a submunicipal jurisdiction sits.
- **Pages in Zoning Code**: The number of pages in the zoning code.
- **Link to Zoning Code**: The public link for the zoning code on the internet.
- **Link to Zoning Map**: The public link for the zoning map on the internet.
- **Link to Downloadable GIS Layers**: The public link for geographic information system (GIS) layer downloads on the internet.
- **Team Assignment (Zoning)**: The team member assigned to conduct the zoning analysis for the jurisdiction.
- **Team Assignment (Geospatial)**: The team member assigned to collect and clean geospatial information about the jurisdiction.
- **Staff Planner Name**: The name of a key planning/zoning staff member in the jurisdiction.
- **Staff Planner Email Address**: The email address of a key planning/zoning staff member in the jurisdiction.
- **Staff Planner Phone**: The phone number of a key planning/zoning staff member in the jurisdiction.

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You will also learn about these two fields, similar to the fields used for districts covered later:

- **Internal Notes**: A text field for analysts and team leaders only, intended to facilitate discussion and log decisions about interpretations made as the jurisdiction is created and reviewed.
- **Visible Atlas Notes**: A text field which explains or qualifies an entry in another field, using the fewest words possible to communicate the point, and which will be displayed on the **ATLAS MAP** when a public user selects the jurisdictions.

A. TEAM STRUCTURE

Building a zoning atlas requires a multi-disciplinary team of collaborators who have patience, are meticulous about detail, and can maintain a sense of humor. That is because the only way to create a zoning atlas currently is to manually sift through text and maps – a frustrating and repetitive task. (We are hoping to change that through a machine learning project with Cornell Tech.)

As noted above, most teams are internal, comprising National Zoning Atlas staff. Given a variety of logistical and technical challenges associated with our initial decentralized structure, we are only affiliating with new external teams that have: a half- or full-time paid team leader meeting the criteria below; full-time, paid, professional analysts; and a commitment to the public mission and long-term health of the National Zoning Atlas. Whether internal or external, teams should follow the composition and responsibilities laid out in this Section.

1. Team Leader(s)

Someone with deep knowledge about zoning must be in charge of coordinating all of the moving parts. This person should be able to work a minimum of half-time on the project.

The team leader should be ready to: manage all team members; handle queries about coding protocols (in coordination with National Zoning Atlas coordinators and deputy coordinators); check for data accuracy and completeness; oversee digital asset collection and uploads (including copies of zoning texts, copies of static zoning maps, and geospatial files); coordinate outreach to jurisdictions and regional or statewide bodies; and manage fundraising, publicity, and outreach.

For teams covering large geographic areas or complex jurisdictions, it may be necessary to break up the leadership activities among multiple people. A team may have a zoning team leader and a geospatial team leader. Or a team may have an internal leader (overseeing the data collection, analysis, accuracy, completeness, and upload) and an external leader (overseeing outreach, fundraising, publicity, and networking). Some teams covering large geographic areas also find it best to have leaders for specific geographic areas (e.g., one leader each for Long Island, New York City, and Erie County).

After establishing the initial team, the team leader's first task is to oversee the documentation of the jurisdictions described in Part II.C and to oversee the initiation of the file management system

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described in Part II.D. We strongly encourage the team leader to assign all team members (including both zoning code analysts and geospatial analysts) to work on these tasks. We have found that it takes about 45 minutes per jurisdiction to satisfactorily complete all of the steps outlined in those Parts.

The team leader's second task is to oversee the collection of zoning districts described in Part III. Again, we strongly encourage the team leader to assign all team members (including both zoning code analysts and geospatial analysts) to complete that task.

As team leaders complete the work they intended to complete, they will be recognized as the inaugural team leader.

2. Zoning Code Analysts

Zoning code analysts review zoning codes and input information about uses, lots, and structures into the Editor using this guide. They must closely and accurately read dense legal texts, and they must be the kind of person willing to ask many questions about interpretation. They work with the geospatial analysts to identify zoning districts, as described in Part III, and the bulk of their work is covered in Part IV.

3. Geospatial Analysts

Geospatial analysts prepare, create, clean, conform, and upload geospatial vector files (i.e., the types of files listed in Part II.D.3.c.). They first synchronize jurisdictional boundaries with each other and with state and county borders provided by the U.S. Census Bureau's TIGER/Line files. Then they ensure geospatial files depicting zoning layers are accurate, clean, and connected to the zoning code analysis. They work with the zoning code analysts to identify zoning districts, as described in Part III, and the bulk of their work is covered in Part V.

B. THE "EDITOR" WORKSPACE

The National Zoning Atlas Editor is the centralized workspace for all National Zoning Atlas activity. This Section explains how to create an account and provides an overview of the tabs in the Editor. View a related video tutorial, "Getting Started with the Editor," on our website.

1. Create an Account

Each team member must create an account and fill out a profile in the Editor. A team leader can send team members an invitation email by clicking on the **USERS** tab, then clicking on **INVITE NEW USER**. Alternately, a team member can navigate to the sign-up page themselves.

Editor users must create a full profile, answering information requested. Most of the fields are self-explanatory. For analysts, the "Your NZA Job Title" drop-down menu offers three title choices (zoning code only, geospatial only, and zoning code and geospatial). For team leaders, the "Your NZA Job Title" drop-down menu offers two title choices (State Director/Co-Director for those

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covering an entire state, and Regional/Institutional Project Director for those covering a particular region or from a particular institution).

After someone creates an account in the Editor, they will be classified in one of three ways: unteamed, active, or retired.

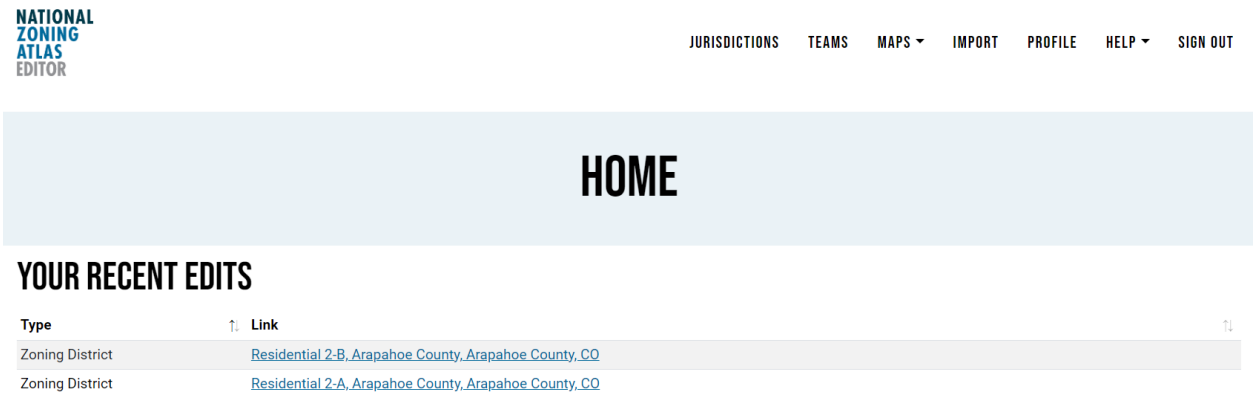
Users start off in unteamed status. In this status, a user has no access to any team information and may not use the Editor.

Users gain active status when they are added to a specific atlas team by a team leader or administrator. New team members should be sure that their team leader has the email address used to sign up for the account. The team leader will need this email address to assign an analyst to a team. National Zoning Atlas analysts dedicated to the machine learning project can confirm access to relevant content with their supervisors.

Users will fall into retired status when they are manually removed from a team, or when they are automatically deactivated after a period of non-use. Retired users may return to the Editor, but only after being manually reactivated by a National Zoning Atlas administrator and re-associated with a team. Retired users' contributions continue to be logged and attributed to the retired user (such as on activity logs or review status page), the same as any other user.

2. Get to Know the Editor

Now we'll briefly describe the key navigation feature in the Editor: the tabs in the menu across the top of the screen. The typical analyst view is as follows:

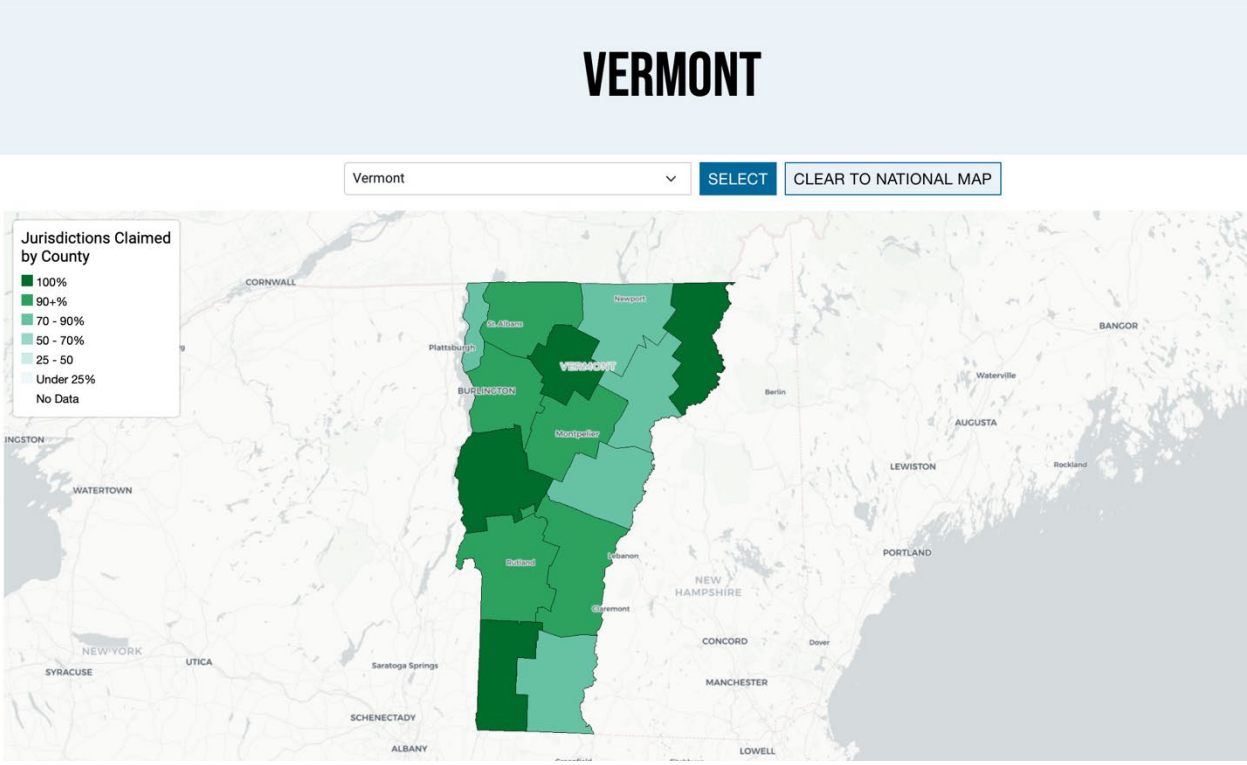


The **JURISDICTIONS** tab lists all of the jurisdictions covered by your team and identifies relevant characteristics, including the number of zoning districts that you have created, the status of zoning district GIS uploads, and the dates they were created and last updated. It also allows sorting by core-based statistical area (as determined by the U.S. Office of Management and Budget).

The **TEAMS** tab links to the team home page, containing details about your team's jurisdictions and roster, described in the next Subsection.

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The **MAPS** menu allows you to navigate to the **ATLAS MAP** and the **STATUS MAP**. The former links directly to the map the public sees. The jurisdictions published per Part VI.A. display on the **ATLAS MAP**. The latter is a behind-the-scenes, non-public map that shows the status of jurisdictions that teams have claimed, organized by state and county. Using the drop-down menu at the top, navigate to the state, then click on the county to see whether there is partial or full coverage by National Zoning Atlas teams. Note that the jurisdictions listed in the **STATUS MAP** necessarily evolve as you identify new jurisdictions with zoning that did not appear in our initial search for jurisdictions, which was conducted using public sources by the National Zoning Atlas team. The **STATUS MAP** will automatically update as you add jurisdictions in accordance with Part II.C. If you do not see jurisdictions you have added or encounter other errors, contact National Zoning Atlas staff. As an example, here's the status of the Vermont Zoning Atlas, showing the percentage of jurisdictions in each county that have been claimed by the team:



You can scroll down to find the number of jurisdictions, the number and percentage of claimed jurisdictions by county, the number and percentage of published jurisdictions by county, and the number of zoning districts identified:

Search:

County	Number of Jurisdictions	Number of Claimed Jurisdictions	% of Jurisdictions Claimed	Number of Published Jurisdictions	% of Jurisdictions Published	Number of Teams	Number of Zoning Districts
Addison County	23	23	100%	23	100%	1	171
Bennington County	20	20	100%	3	15%	1	151
Caledonia County	19	17	89%	0	0%	1	0
Chittenden County	20	19	95%	19	95%	1	291

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The **IMPORT** tab allows you to import data you have already collected to quickly establish the parameters of your team's atlas. On this page, you can import a list of jurisdictions your team intends to cover, as described in Part II.C.4., or jurisdiction attributes, as described in Part II.C.5. The **IMPORT** tab also allows you to import the names, geospatial attributes, and shapes of all of the zoning districts within those jurisdictions. Part III.B.2. provides instructions on importing the list of zoning districts and their attributes, while Part V provides instructions on how to import zoning shapes to the Editor. Note that you can always update and manage any imported information through the Jurisdictions page or through individual zoning district pages.

The **PROFILE** tab allows you to update your personal information and your preferences with regard to public materials and acknowledgements. Please keep this page up to date so that we can properly account for the diverse backgrounds, institutional affiliations, and external roles of our many National Zoning Atlas contributors.

The **HELP** menu allows you to send us an email, connects to this version of the *How To* guide, and directs you to our National Zoning Atlas Slack page, which is exclusively for active members of the research collaborative.

The **ACTIVITY LOG** tab (available in the team leaders' view only) lists the time and nature of major actions taken by your team and identifies who has taken each action. This tab tracks team member progress and can be used to identify jurisdictions seeing extra attention or being neglected. Clicking on the arrows next to each column header enables ascending/descending sorting. You can filter the results by state by using the **FILTER** dropdown menu.

3. Get to Know the Team Home Page

Team members can track progress by using the team home page. Among other information, it summarizes and displays the status of jurisdictions (including whether they have been published or are in progress), lists key characteristics of jurisdictions (including team assignments, presence of zoning, number of districts, and review status), identifies team members, and enables management of custom zoning district fields.

The header of the team home page contains links allowing easy navigation to different parts of the page. Here is an image from the Connecticut Zoning Atlas as it was being developed:

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CONNECTICUT ZONING ATLAS

Connecticut Zoning Atlas
Table of Contents: Team Information • Jurisdictions • Team Members • Custom Zoning District Fields

TEAM INFORMATION

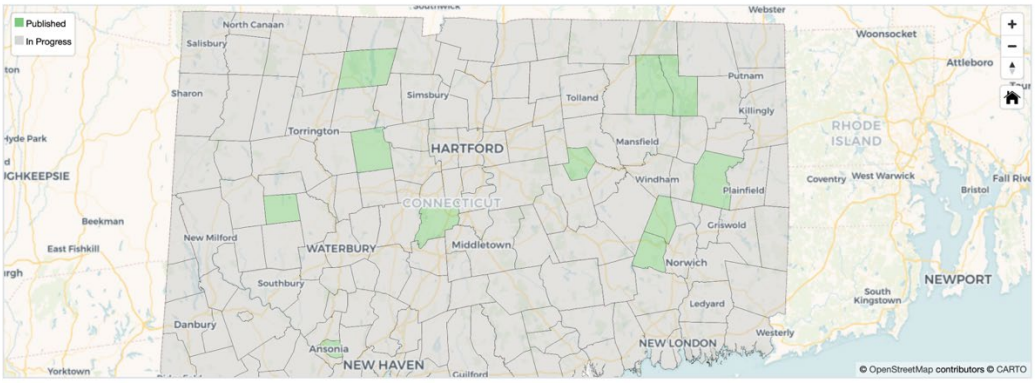
Team Name
Connecticut Zoning Atlas

SAVE CHANGES

JURISDICTIONS

CLAIM NEW JURISDICTION

183 jurisdictions
17 published
163 in progress
3 have no geometry



Show 25 entries

Search:

Name	State & County	Team Assignment (Zoning)	Team Assignment (Geospatial)	Has Zoning	Districts	Completed	Footprint	Review Status	Published	Updated	Created
Andover	Capitol Planning Region, Connecticut			Yes	6	100%	Yes	Needs Zoning Review	Published	Jun 12, 2023	Jan 3, 2023
Ansonia	Naugatuck Valley Planning Region, Connecticut			Yes	16	100%	Yes		Published	Apr 17, 2023	Jan 3, 2023
Ashford	Northeastern Connecticut Planning Region, Connecticut			Yes	4	100%	Yes		Published	May 25, 2023	Jan 3, 2023
Avon	Capitol Planning Region, Connecticut	Emanuel Garcia Flores		Yes	18	94%	Yes		No	Jul 20, 2023	Jan 3, 2023
Barkhamsted	Northwest Hills Planning Region, Connecticut	Emanuel Garcia Flores		Yes	9	100%	Yes		Published	Jul 18, 2023	Jan 3, 2023
Beacon Falls	Naugatuck Valley Planning Region, Connecticut			Yes	13	0%	Yes		No	Jun 16, 2023	Jan 3, 2023
Berlin	Capitol Planning Region, Connecticut	Emanuel Garcia Flores		Yes	34	100%	Yes		Published	Jul 10, 2023	Jan 3, 2023
Bethany	South Central Connecticut Planning Region, Connecticut			Yes	6	0%	Yes		No	Jun 21, 2023	Jan 3, 2023
Bethel	Western Connecticut Planning Region, Connecticut			Yes	21	0%	Yes		No	Jun 21, 2023	Jan 3, 2023
Bethlehem	Naugatuck Valley Planning Region,			No	0		Yes		Published	Apr 17, 2023	Jan 3, 2023

The arrows at the top of each column can be used for sorting. A team leader can also filter the jurisdictions by using drop-down menus at the *bottom* of three columns: "Has Zoning" (shown

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below), “Review Status,” and “Published.” These filters can be very helpful in tallying progress for the team, and for identifying which jurisdictions might be low hanging fruit for quick completion.

Name	State & County	Team Assignment (Zoning)	Team Assignment (Geospatial)	Has Zoning	Districts	Completed	Footprint	Review Status	Published	Updated	Created
Mount Airy	Carroll County, Maryland	Joanna Kaufman	Liam Anthony	Yes	14	100%	Yes		Published	Mar 20, 2024	Aug 17, 2023
New Windsor	Carroll County, Maryland	Joanna Kaufman	Liam Anthony	Yes	11	100%	Yes		Published	Mar 20, 2024	Aug 17, 2023
Queen Anne's County	Queen Anne's County, Maryland	Joanna Kaufman	Liam Anthony	Yes	27	22%	Yes	Needs Zoning Review	No	Mar 15, 2024	Aug 17, 2023
Queen Anne (Town)	Queen Anne's County, Maryland	Joanna Kaufman		No	0		Yes		Published	Mar 20, 2024	Aug 17, 2023
Sudlersville	Queen Anne's County, Maryland	Joanna Kaufman	Liam Anthony	Yes	8	100%	Yes		Published	Mar 20, 2024	Aug 17, 2023
Sykesville	Carroll County, Maryland	Joanna Kaufman	Liam Anthony	Yes	12	100%	Yes		Published	Mar 20, 2024	Aug 17, 2023
Taneytown	Carroll County, Maryland	Joanna Kaufman	Liam Anthony	Yes	10	100%	Yes		Published	Mar 20, 2024	Aug 17, 2023

✓ Yes
No
Unknown

Showing 1 to 25 of 180 entries

Previous 1 2 3 4 5 … 8 Next

CLAIM NEW JURISDICTION

The team leader’s version of the home page also has a list of zoning districts needing review. A team leader may sort these districts by the name of the assigned analyst, relevant jurisdictions, or amount of time the district has been waiting for review, like this example showing districts in the queue from Florida:

136 ZONING DISTRICTS PENDING REVIEW

Show 25 entries

District	Residential Status	Jurisdiction	Team	Team Assignment (Zoning)	County	State	Updated
B-1, B-1 — Business District	Mixed with Residential	Bay Harbor Islands	Florida Zoning Atlas	Taimaisu Ferrer Sin	Miami-Dade County	Florida	Jan. 12, 2024
G, G — Gateway District	Mixed with Residential	Bay Harbor Islands	Florida Zoning Atlas	Taimaisu Ferrer Sin	Miami-Dade County	Florida	Dec. 19, 2023
RM-1, RM-1 — Multiple-Family District (Waterfront Lots)	Primarily Residential	Bay Harbor Islands	Florida Zoning Atlas	Taimaisu Ferrer Sin	Miami-Dade County	Florida	Dec. 19, 2023
RM-2, RM-2 — Multiple-Family District (Non Waterfront Lots)	Primarily Residential	Bay Harbor Islands	Florida Zoning Atlas	Taimaisu Ferrer Sin	Miami-Dade County	Florida	Dec. 19, 2023
RM-3, RM-3 — Multiple-Family District	Primarily Residential	Bay Harbor Islands	Florida Zoning Atlas	Taimaisu Ferrer Sin	Miami-Dade County	Florida	Dec. 19, 2023

C. JURISDICTIONS

A team is defined by the jurisdictions in the area (e.g., the county, region, or state) it has committed to cover. Getting the jurisdiction names right is important because each name appears on the public **ATLAS MAP**, and because each name is used to calculate the completeness of jurisdictions in the internal **STATUS MAP**.

At this step, a team must list all jurisdictions within the area it intends to cover, whether they have zoning or not. View a related video tutorial, “Identifying, Naming, & Claiming Jurisdictions in the

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Editor," on our website. At a later stage, analysts will enter information in the Editor about which jurisdictions have zoning and which do not.

This Section first defines what we mean by "jurisdiction" and how we treat unique types of jurisdictions. It offers a tour of the home pages for each jurisdiction. It explains how to write each jurisdiction's name in the Jurisdiction Name field. It covers the two different ways to claim jurisdictions in the Editor: the more common bulk import method and a supplemental manual entry method. Finally, the Section covers the two different ways to fill out the other jurisdiction attribute fields: the more common manual entry method and a rarely-used bulk import method.

1. What is a Jurisdiction?

The National Zoning Atlas defines a jurisdiction as any governmental or nongovernmental entity that has the potential to exercise zoning authority. State legislatures decide which types of entities have zoning powers. Every state gives municipal governments (e.g., cities, towns, or villages) authority to zone. The bulk of jurisdictions included in the National Zoning Atlas are municipal governments.

However, there are also three unique jurisdiction types that sometimes exercise zoning authority: submunicipal jurisdictions, counties or county equivalents, and subcounty jurisdictions. These are most likely to be found when you have identified all of the known jurisdictions in your atlas's chosen geography but have "holes" in the GIS files that appear to be blank and unzoned. In Connecticut, we added 14 new submunicipal jurisdictions after inspecting the geospatial files. In other states, we have added counties and subcounty jurisdictions as well. A brief word about each of these jurisdiction types should prepare you to address related quirks in analyzing them.

a. Submunicipal Jurisdictions

A submunicipal jurisdiction is a jurisdiction that is not a municipality, is smaller than a municipality, and is located entirely within the boundaries of a municipality. A submunicipal jurisdiction may be a public or private entity; it may be created by the municipality, county, or state.

When logging the name of a submunicipal jurisdiction, include only the name of the submunicipal jurisdiction, *not* the name of the municipality in which it is located. For example, the Short Beach Civic Association is a private association with zoning authority, located within the boundaries of Branford, Connecticut. Its Jurisdiction Name should be entered as "Short Beach." The Editor will combine the submunicipal name with the parent jurisdiction name for the purposes of displays. So on the **ATLAS MAP** and in lists of jurisdictions displayed in the Editor, this example would be automatically combined by the Editor to display as "Branford – Short Beach."

For each submunicipal jurisdiction, fill out the Parent Jurisdiction field, per Part II.C.5.d.

b. Counties as Jurisdictions

Counties or "county equivalents" may also exercise zoning authority. Sometimes, a county and city come together to form a consolidated government. When they have merged their zoning

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powers, we count them as one jurisdiction. Examples include: Denver City and County, Honolulu City and County, Juneau City and Borough, Indianapolis-Marion County, Kansas City-Wyandotte County, Louisville-Jefferson County, and Nashville-Davidson County.

County equivalents are US Census/TIGER-defined supermunicipal authorities that are not counties, including:

- Alaska: boroughs and census areas (in lieu of counties)
- Connecticut: councils of government (in lieu of counties)
- Louisiana: parishes (in lieu of counties)
- Maryland: the City of Baltimore (in addition to Baltimore County)
- Missouri: the City of St. Louis (in addition to St. Louis County)
- Nevada: the Consolidated Municipality of Carson City (in lieu of any county in the Carson City area, but Nevada has other counties outside of the Carson City area)
- Virginia: 38 independent cities

Anywhere we say "county" in this document, assume we also mean to include these county equivalents.

A county may use zoning authority to govern land use in "unincorporated" areas that do not belong to a city or town. This is particularly common in the South and the West.

If a county exercises zoning authority, include the county's name and the appropriate type of government in the Jurisdiction Name field: e.g., Lincoln County or Jefferson Parish. Do not list, *as jurisdictions*, counties that do not have zoning authority.

c. Subcounty Jurisdictions

A subcounty jurisdiction is a jurisdiction that is not a municipality or a county, is smaller than a county, and is located entirely within the boundaries of a county. A subcounty jurisdiction may be a public or private entity; it may be created by a county or by the state.

There may be one or multiple subcounty jurisdictions within a county. A single distinct political subdivision (for example, a regional land management special district) may exercise zoning authority over some, but not all, land within a county. In this case, log the special district as a special district in the Government Type field, create GIS boundaries for the area governed by the special district, and generally treat it as a separate jurisdiction.

Creating a new subcounty jurisdiction should not happen when the county itself exercises zoning authority over some, but not all, land within a county. In Nevada, for example, one county has a *county department* called the regional planning commission which oversees a regional planning district with a zoning code governing certain unincorporated land within the county. Because county government exercises the authority here, we logged the county as the jurisdiction, and recognized through the GIS files that some of the county has zoning and some does not.

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NOTE: If the subcounty jurisdiction is not staffed by the county but follows the county zoning code (meaning that it does not have its own code), maintain the subcounty jurisdiction as a separate jurisdiction and follow the instructions for zoning analysts per Part II.C.5.b. and for geospatial analysts per Part V.D.3.f.

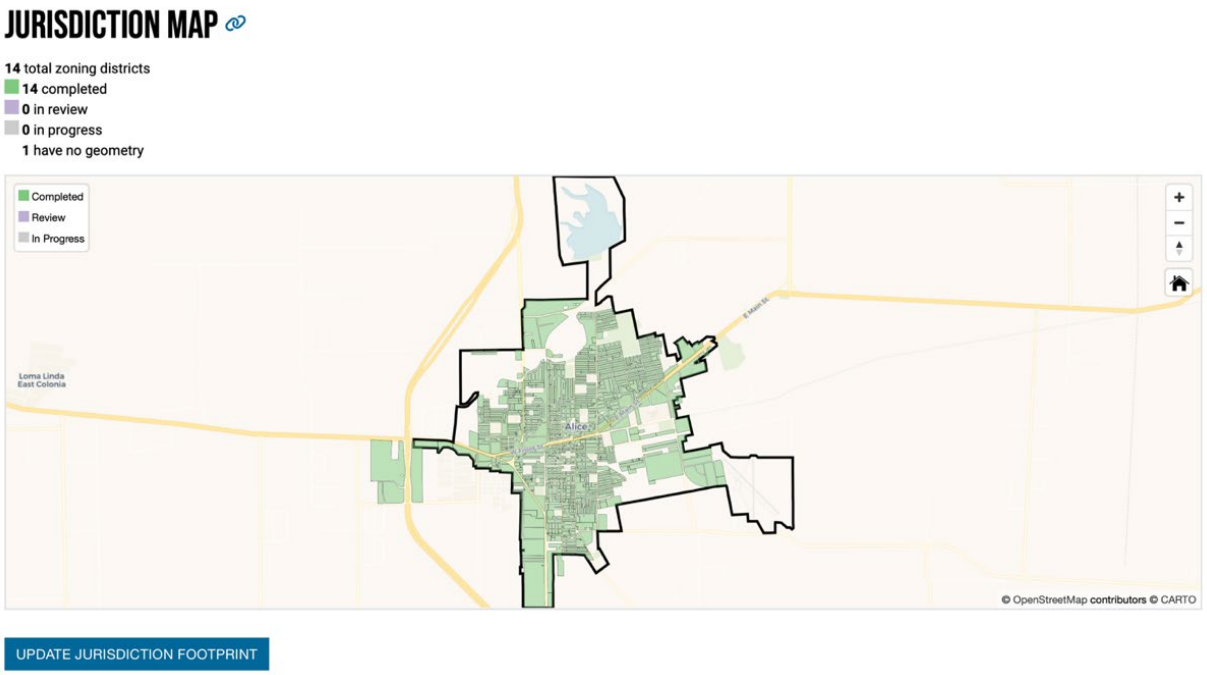
2. Get to Know the Jurisdictions Home Page

Each jurisdiction home page captures information about the jurisdiction. Here is the header for the jurisdiction home page from Alice, Texas:



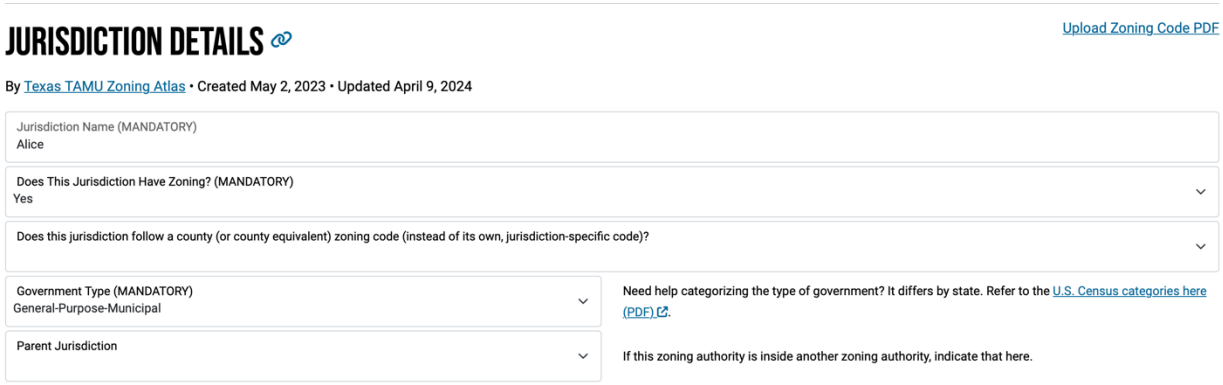
The header contains links allowing easy navigation to the different parts of the Jurisdiction home page.

The Jurisdiction Map section of the jurisdictions home page displays a map showing the jurisdiction boundaries. In addition, this section displays a log of the total number of zoning districts and identifies how many have been completed, are in review, or are in progress. The Texas Zoning Atlas team has listed 14 zoning districts for Alice. Here's a screenshot of their progress (which, unusually, shows some of the land within Alice's boundaries to be unzoned):

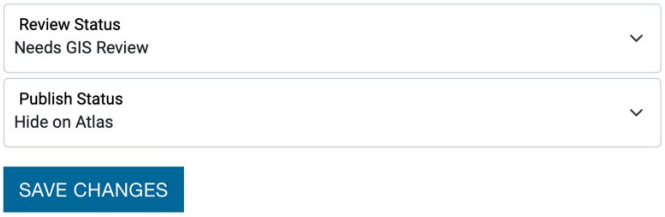


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The Jurisdiction Details section of the home page contains the Jurisdiction Name field and the other jurisdiction attributes fields. Here's a snapshot of some of those fields for Alice:

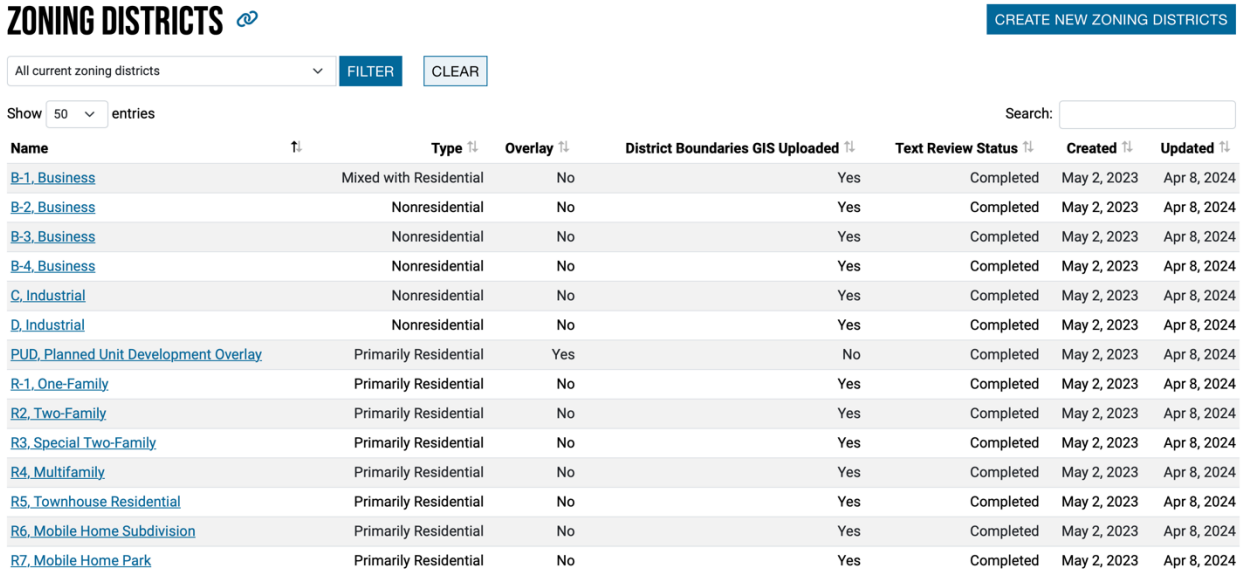


Part II.C.5 describes how to fill out these and other jurisdiction attributes. In addition, the Jurisdiction Details section includes a Review Status field and a Publish Status field. These two fields enable the team to flag jurisdictions for review and to manage publication of the atlas, as further described in Part VI.



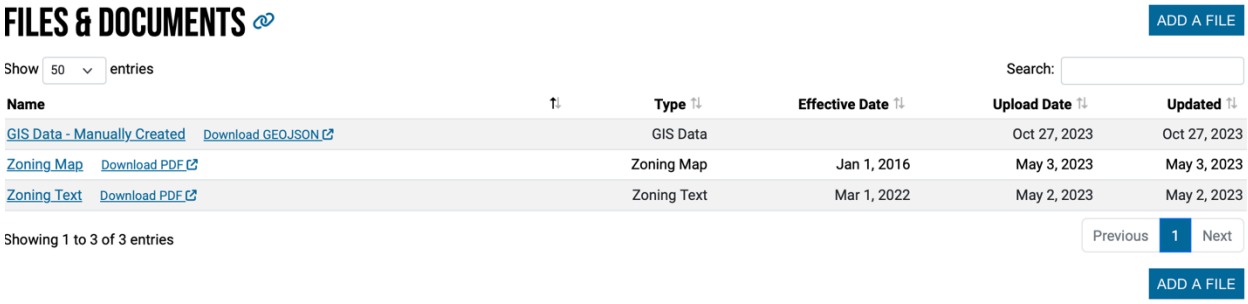
The Zoning Districts section of the home page lists all of the zoning districts in the jurisdiction. Use the links to navigate quickly to each zoning district. This section also categorizes zoning districts by type, shows whether the zoning district boundaries are uploaded, and reveals the status of each zoning district, further discussed in Part III.D. And it has a **CREATE NEW ZONING DISTRICTS** button, discussed in Part III.B. Here's a snapshot of this section for Alice:

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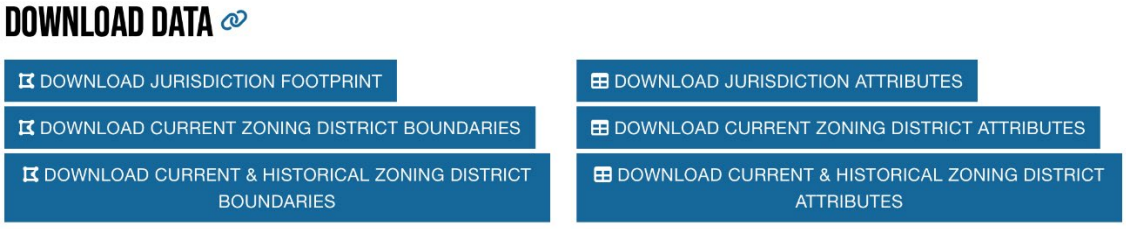
Name	Type	Overlay	District Boundaries GIS Uploaded	Text Review Status	Created	Updated
B-1, Business	Mixed with Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
B-2, Business	Nonresidential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
B-3, Business	Nonresidential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
B-4, Business	Nonresidential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
C, Industrial	Nonresidential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
D, Industrial	Nonresidential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
PUD, Planned Unit Development Overlay	Primarily Residential	Yes	No	Completed	May 2, 2023	Apr 8, 2024
R-1, One-Family	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R2, Two-Family	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R3, Special Two-Family	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R4, Multifamily	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R5, Townhouse Residential	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R6, Mobile Home Subdivision	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024
R7, Mobile Home Park	Primarily Residential	No	Yes	Completed	May 2, 2023	Apr 8, 2024

The Files and Documents section includes uploaded documents relevant to the jurisdiction, which you will upload per Part II.D.4. This section allows you to easily see the type of document uploaded, the effective date of the document, and the upload and update dates. The team in Alice has uploaded the zoning map and text, and they have manually created GIS files for the atlas (because the town of Alice did not have public GIS files available for download):



Name	Type	Effective Date	Upload Date	Updated
GIS Data - Manually Created Download GEOJSON	GIS Data		Oct 27, 2023	Oct 27, 2023
Zoning Map Download PDF	Zoning Map	Jan 1, 2016	May 3, 2023	May 3, 2023
Zoning Text Download PDF	Zoning Text	Mar 1, 2022	May 2, 2023	May 2, 2023

The Download Data section contains a variety of buttons intended to enable you to download information you have inputted and uploaded. Here's what that section looks like:



One last thing! To save any work on the jurisdiction, regularly use the **SAVE CHANGES** button that appears in both the upper left of the page and in the Jurisdiction Details section.

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3. Jurisdiction Name Field

Previously, individual analysts were expected to input the names of jurisdictions into the Editor. Now, National Zoning Atlas staff takes care of most of this inputting.

National Zoning Atlas staff use a few protocols that may be worth your knowing. First, we remove all type-of-government descriptors such as "Town of," "Village of," and "Borough of" at the beginning or end of jurisdiction names. For identically-named jurisdictions within a particular county, a type-of-government descriptor is used in parentheses after the shared name. For example, in Cortland County in New York State, there are two places called "Marathon" with zoning: the town of Marathon and the Village of Marathon. They have been entered as follows:

Marathon (Town)	Cortland County, New York
Marathon (Village)	Cortland County, New York

To ensure consistency in entering jurisdiction names, the team follows the naming conventions used by the U.S. Census. For example:

- "Mc" names are always big M, little c, big next letter, no space (e.g., McAllen)
- "Mount" is never abbreviated (Mount, not "Mt.")
- "Saint" is always abbreviated with a period (St., not St or Saint)

As noted in Part II.C.1., you may find submunicipal jurisdictions, counties or county equivalents that exercise zoning, and subcounty jurisdictions. Enter names for these unique jurisdictions as instructed in Part II.C.1. and using the protocols described above. Contact National Zoning Atlas staff if you have questions.

4. Jurisdiction Name Entry Methods

There are two methods for entering jurisdiction names and "claiming" a jurisdiction or jurisdictions on behalf of your team. The first involves a cut-and-paste import for larger numbers of jurisdictions, which teams should use to start jurisdiction name entry. The second is a manual entry method which should be used to supplement the first method as new jurisdictions appear.

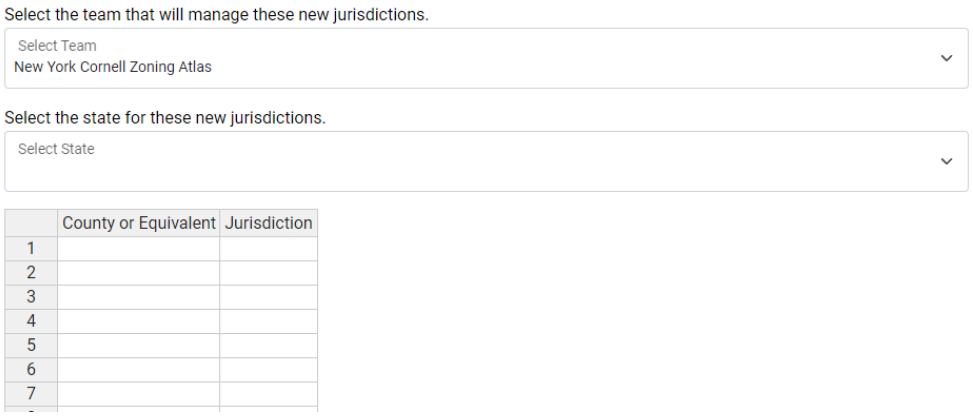
a. Entry Method #1: Import Lists

This method for importing jurisdiction names is used by all new teams, especially teams covering areas with a large number of jurisdictions (usually, those that have claimed a region or state).

The National Zoning Atlas team has collected the names of jurisdictions in every county in every state. This list of jurisdictions is based on a combination of our reviews of state zoning enabling laws and state agency lists. Use this list as a starting point for your import. Do not delete jurisdictions you know lack zoning. Import these jurisdictions regardless. (Later, log "No" in the Does this Jurisdiction Have Zoning? field, as instructed in Part II.C.5.a.)

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To import the list, navigate to the **IMPORT** tab in the Editor. Then click on **CLAIM NEW JURISDICTIONS**, which yields these fields:



Select the name of your team and the state in which these jurisdictions appear. Then manually enter or cut and paste separately collected data (e.g., from Google Sheets or Excel) directly into the two-column table listing the County or Equivalent and the Jurisdiction. Up to 500 rows will be automatically added if you attempt to paste more than 25 entries.

For the upload to work correctly, each jurisdiction can only be assigned to one county. If a jurisdiction is in multiple counties, list the county assigned to most of the land mass in the jurisdiction. For example, Austin, Texas, overlaps Travis, Williamson, and Hays Counties, but the majority of Austin is in Travis County. So the team covering Austin has selected Travis County. If you need help identifying the county with the greatest overlap, reach out to National Zoning Atlas staff, who have a list of jurisdictions pre-assigned to the right county.

Pay attention to these common inputting errors:

- Invalid or misspelled County or Equivalent name
- Duplicate jurisdiction (e.g., a jurisdiction of that name in that state and county already exists, was inputted twice in your attempted upload, or has been claimed by another team)
- Jurisdiction name exceeds 100 characters

Contact National Zoning Atlas staff if you have issues addressing these inputting errors, or if the **STATUS MAP** does not automatically update as you add jurisdictions.

As noted above, you will likely find additional jurisdictions that have zoning authority (such as those described in Part II.C.1.) but were not included in the National Zoning Atlas-provided list. Manually add these jurisdictions to your team using the methods described in Part II.C.4.b.

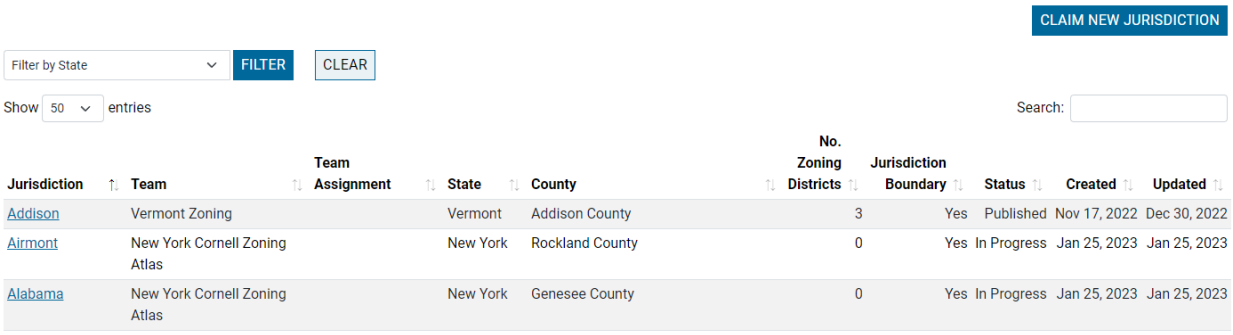
To add a list of zoning districts, follow Part III.B.

b. Entry Method #2: Manual Entry

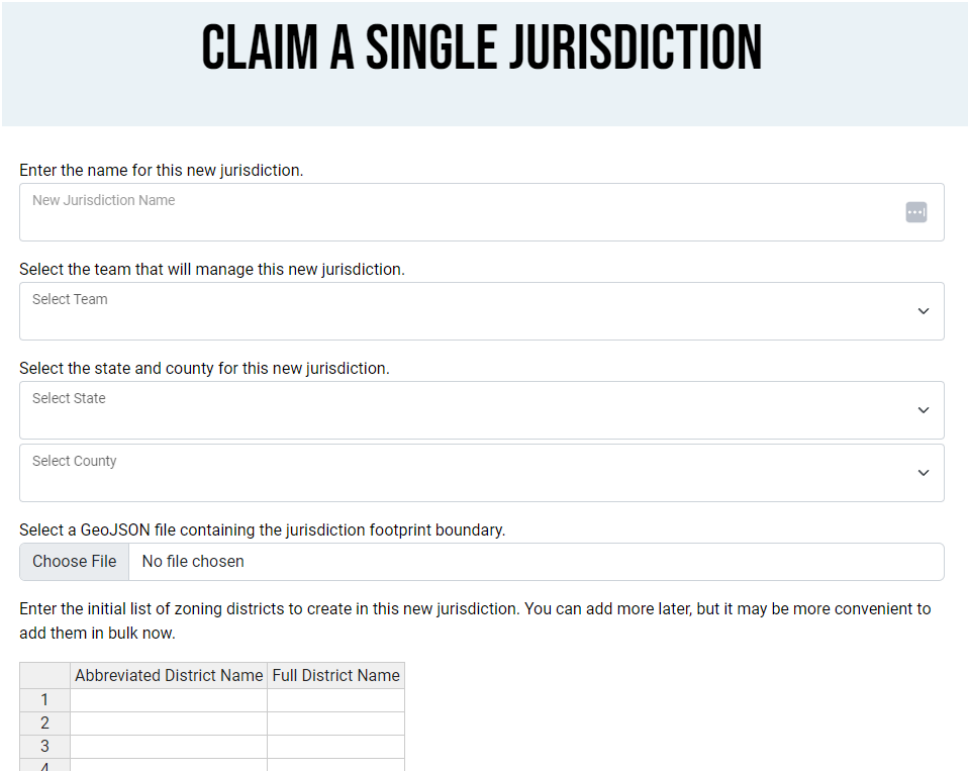
This method can be used to add a jurisdiction to an existing team.

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For this method, navigate to the **JURISDICTIONS** tab (or the **TEAM** page) in the Editor. Add a single jurisdiction by clicking the **CLAIM NEW JURISDICTION** button on the upper right:



The following fields will appear:



Enter the jurisdiction name using the same protocols the National Zoning Atlas staff uses, per Part II.C.3. Select your team from the drop-down menu. Select the state from the drop-down menu. Select the county from the drop-down menu. If a jurisdiction is in multiple counties, list the county assigned to most of the land mass in the jurisdiction. For example, Austin, Texas, overlaps Travis, Williamson, and Hays Counties, but the majority of Austin is in Travis County. So the team covering Austin has selected Travis County. If you need help identifying the county with the greatest overlap, reach out to National Zoning Atlas staff, who have a list of jurisdictions pre-assigned to the right county.

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At this stage, you have the option to also upload the GeoJSON file containing the jurisdiction footprint boundary, but the National Zoning Atlas staff already has boundary files for all municipal and county jurisdictions. You or we only need to upload jurisdiction boundaries if you discovered a jurisdiction that was not included in the National Zoning Atlas-provided list. You or we can upload jurisdiction boundaries after coordinating with each other, per Part V.A.

You also have the option to add a list of zoning districts if they are ready to be added, but you can also do this later per Part III.B.

5. Jurisdiction Attributes Entry

Now that you have the names of your jurisdictions in the Editor, you can enter descriptive attributes for each jurisdiction.

Previously, we allowed external teams who had data in the Spreadsheet described in the original *How to Make a Zoning Atlas* to upload their zoning data by an import. We are no longer supporting this method of import.

a. Does this Jurisdiction Have Zoning? Field

The Does This Jurisdiction Have Zoning? field is the threshold question for the rest of your work. Start with the list of jurisdictions collected and entered into the Editor and review each entry on the list one by one.

To figure out whether a jurisdiction has zoning, follow these steps:

- Do an Internet search following the steps in Parts II.D.1. and II.D.2. (including searching the jurisdiction's website and third-party aggregators of local laws) to find the zoning code itself.
- Do an Internet search of the jurisdiction's website to find reference to a zoning commission, zoning administrator, zoning code, or zoning decisions (even if you cannot find the zoning code itself, online).
- Call the jurisdiction and ask them if they have zoning; try the office of any code enforcement officer or the office of a town clerk if there is no office devoted to economic development, planning, housing, or real estate.
- Email the jurisdiction and ask them if they have zoning, using any email addresses you can find from individuals in the various offices.

Log the date of each contact, the type of contact (such as phone or email), and the contact information (the name of the person if known, and/or a phone number or email), in the Internal Notes field for the jurisdiction.

If you do not find the zoning code online, do not see a reference to zoning on the jurisdiction website, and have not heard back after both calling and emailing the jurisdiction, mark "No." If this field is marked "No," then the Pages in the Zoning Code field and Link fields disappear. Before you save your entry for the jurisdiction, fill out the Government Type field. After completing that

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field, skip to Part VI.A. to publish the jurisdiction to the **ATLAS MAP**. Publishing jurisdictions without zoning shows that they have been reviewed and found to not have zoning.

If a jurisdiction has zoning, mark "Yes" and continue on to the next Subsection. Mark "Yes" even if a jurisdiction only zones some of its land, but not all of its land. Some municipalities in New Hampshire and some counties with zoning authority in Montana, for example, only zone some of the area within their boundaries.

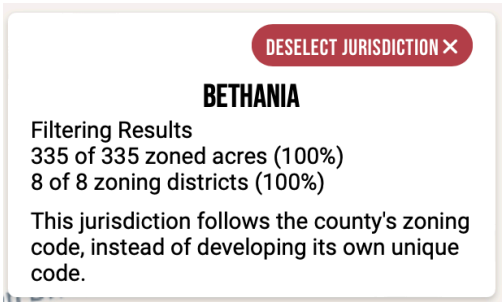
b. Does this Jurisdiction Follow a County Zoning Code? Field

The Does This Jurisdiction Follow a County Zoning Code? field is an optional field that tracks situations where an incorporated political subdivision such as a city, town, township, village, or borough, which is not a county, adopts a zoning code created by county or a county commission(s). Only some states allow incorporated political subdivisions that are not counties to choose to be, or to be subject to, a county zoning code.

In those rare circumstances in which a jurisdiction follows a county zoning code instead of its own, jurisdiction-specific code, mark "Yes" in the Does This Jurisdiction Follow a County Zoning Code? field. If not, you may mark "No" or leave the field blank, as the Editor will read a blank entry as a "No" entry. Mark "No" for counties that exercise zoning authority, discussed in Part II.C.1., because the Does This Jurisdiction Follow a County Zoning Code? field is intended to capture non-county jurisdictions that use a county zoning code. Mark "No" for subcounty jurisdictions with zoning authority (such as regional plan commissions governing unincorporated land) discussed in Part II.C.1., if these subcounty jurisdictions have their own zoning code that is distinct from the county zoning code.

The incorporated political subdivision, which is not a county, must be retained as a separate jurisdiction in the Editor; do not attempt to combine the jurisdiction into the county or delete the subcounty jurisdiction. Geospatial analysts should follow instructions in Part V.D.3.f.

NOTE: The Editor will automatically add a Visible Atlas Note for each jurisdiction that follows a county zoning code. Bethania, North Carolina, is one such jurisdiction:



NOTE: For jurisdictions that follow a county code, the Bulk Edit function described in Part IV.F.2.c. can be very useful. Analyze the county code first. Then create the subcounty jurisdiction's zoning districts. Finally, use the Bulk Edit function to copy details from the county zoning district into the duplicate local districts.

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c. Government Type Field

The Government Type field tracks the types of governments that have enacted zoning, and it is mandatory (whether a jurisdiction has zoning or not). Entries in this field must accord with the official Census of Governments, conducted by the U.S. Census Bureau. The Census of Governments classifies local jurisdictions into the following four categories: general-purpose county governments; general-purpose municipal governments; general-purpose township governments; and special districts. An explanation of these categories and how to classify local governments on a state-by-state basis can be found here.

Please do not assume that you know how to classify local governments, because the classifications are not necessarily intuitive! In many states, for example, towns are considered general-purpose municipal governments. However, in New York, towns are considered general-purpose *township* governments, while villages and cities are considered general-purpose municipal governments.

As you continue to fill out your atlas, you may find governmental special districts that have been granted zoning powers. These special districts have fewer powers than general-purpose governments, as they usually focus on specific types of activities, such as water, public utility, fire management, educational, or land-conservation activities. For example, a public fire district in Connecticut is one of several submunicipal districts in the state that have zoning powers. If you find a special district, choose "Special District" from the drop-down menu.

You may also find private entities that have been granted zoning powers. That is why, the drop-down menu for the Government Type field includes a "Private Entity" option, in addition to the four categories from the Census of Governments. In Connecticut, for example, the legislature has given zoning powers to several private homeowners associations in beachfront communities.

d. Parent Jurisdiction Field

The Parent Jurisdiction field should be used to indicate the larger jurisdiction, if any, within which a smaller jurisdiction you're coding sits. This field is relevant only if you find a small zoning authority that sits entirely within the boundaries of a larger municipality, i.e., a "submunicipal" zoning authority. These small zoning authorities may themselves be governments carved out of the larger municipality, or they may be private entities to which the state legislature has granted zoning authority. You will rarely use this field, but accurately tying a submunicipal jurisdiction to its parent jurisdiction will be helpful for us in ensuring that both **ATLAS MAP** and the **STATUS MAP** display properly. Part II.C. explains how to name submunicipal jurisdictions in the Jurisdiction Name field.

For a jurisdiction that follows a county code, you need not enter the county in the Parent Jurisdiction field, because the Does This Jurisdiction Follow a County Zoning Code? field covers such instances. A parent jurisdiction must have a distinct zoning code from the smaller jurisdiction.

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e. Pages in the Zoning Code Field

The Pages in the Zoning Code field logs the number of pages of zoning code text contained in the file (preferably PDF, in 8.5"x11" format) you have uploaded to the Editor. This field is mandatory, and you cannot save your jurisdiction data page without an entry in it.

We require collection of this entry because it provides a snapshot of the scope and complexity of zoning jurisdictions nationally, as well as enables state-to-state comparisons. For example, this field in the Massachusetts Zoning Atlas shows that as the team neared completion of the state, it had read over 46,000 pages of zoning codes in 312 jurisdictions, for an average of 147 pages of code per jurisdiction. The New Hampshire Zoning Atlas team read 23,000 pages of zoning codes in 244 jurisdictions, for an average of just 94 pages per jurisdiction.

f. Link Fields

The Link to Zoning Code, Link to Zoning Map, and Link to Downloadable GIS Layers fields ensure that your team can retrace the steps of the person originally assigned to the jurisdiction.

Please include a link to the landing page for the zoning code, if the code is available online. Try to avoid inserting a URL that leads to a PDF or other static file (e.g., Word document or PNG), for two reasons. First, a direct link to the zoning code text or map may become obsolete once the code or map is updated. Second, direct links will throw future users off from finding the "home" page with a more updated code or map. Preferred options for the Link fields are links to the chapter in the municipal ordinance (e.g., a wiki) or links to a landing page that contains links to PDFs or other static files containing the text and map.

The team leader should skim over the links inputted by analysts to identify any clear errors, such as links to zoning codes of towns with the same name but in another state.

g. Team Assignment Field

The Team Assignment fields should show the team member most recently assigned to a particular jurisdiction, on the zoning code side and the geospatial side. You should be able to find your team member's name from the drop-down menu. The name of the person assigned to the jurisdiction may change at various points in the process, including after dividing labor as described in Part II.E or after doing a round of updates.

h. Staff Planner Fields

The Staff Planner Name, Staff Planner Email Address, and Staff Planner Phone fields are intended to smooth the process for the entire team in obtaining information, and later, in finding and verifying information collected. Include here the jurisdiction staff planner's name, email address, and phone number. These fields are not mandatory, but they really should be included at the outset to save trouble down the line.

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i. Visible Atlas Notes Field

The Visible Atlas Notes field transmits information explaining data for the whole jurisdiction, using the fewest words possible to communicate the point, to the **ATLAS MAP**. It appears when the jurisdiction is selected on the map:

The Visible Atlas Notes field for jurisdictions can be used for a variety of purposes, including communicating:

- Recently-enacted changes or pending changes not reflected in the Atlas.
    - For example, a state legislative change may not yet be reflected in the written regulations of the local jurisdiction. If the state overrode local zoning relating to accessory dwelling units; input: "In [year], the state legislature adopted [Bill Name or Number], which [legalized/required local jurisdictions to/prevented local jurisdictions from… and other relevant content]. Local rules may not yet reflect this state law change."
    - As another example, a local legislative change may not yet be reflected on the zoning map. In such a case, input: "In [year], the jurisdiction rezoned to [explain the scope and content of the rezoning] to [legalize/allow with conditions/prohibit… and other relevant content]. The map does not yet reflect this change."
- An unusual code, including codes with unlimited combinations of districts.
    - For example, Bastrop, Texas, Parma, Ohio, and Sanibel, Florida have districts defining different regulations (uses, height, design, and so on). In such a case, input: "This jurisdiction's unusual regulatory scheme includes districts separately regulating use and design." Or, "Area districts and height districts allow for a multitude of possible development combinations - too many to map in the Atlas."
    - As another example, Arcola, Texas, is marked as lacking zoning. It has a "zoning code" that regulates signage but does not have mapped districts. The Visible Atlas Note for that jurisdiction says: "A 'zoning code' exists, but it lacks a district map and primarily covers signage."
    - As another example, Broomfield, Colorado, has more than ten legacy districts from surrounding counties from which it annexed land. The Visible Atlas Note for that jurisdiction says: "Land annexed from four neighboring counties retains legacy zoning classifications from such counties"
- A mismatch between map and text, or within texts, that Atlas users should be aware of.
    - For example, Mustang Ridge, Texas, has 20 districts in the zoning code and only 5 districts in its map. The Visible Atlas Note for that jurisdiction says: "There is a serious mismatch between the zoning text and map, with little overlap between them."
    - As another example, East Hill, New York, seems to have inconsistent treatment within its zoning code. The Visible Atlas Note for that jurisdiction says: "Note that there seem to be some inconsistencies between the bulk table and the rest of the code text."
- The existence of time-limited or tentative regulations.

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    - For example, at the time analysts were coding Medley, Florida, annexation had occurred but zoning regulations for the annexed land had not been enacted. The Visible Atlas Note for that jurisdiction says: "The Atlas does not include the zoning treatment of recently-annexed land, because no zoning information was yet available."
    - As another example, some jurisdictions have temporary regulations or have moratoria. Temporary regulations and moratoria should not be logged in the Atlas. In such cases, the Visible Atlas Note should say: "The Atlas does not reflect temporary regulations/moratoria enacted on a time-limited basis."
- The fact that an overhaul or comprehensive reform is in progress.
    - In such cases, the Visible Atlas Note should say: "The Atlas does not reflect a comprehensive overhaul underway in [year]."
- Housing-specific provisions that transcend zoning district boundaries.
    - For example, some jurisdictions may have a cap on amount of construction of housing units per year in the jurisdiction. In such cases, the Visible Atlas Note should say: "This jurisdiction caps the number of housing units per year to X/[type]."
    - As another example, some jurisdictions have affordable housing regulations outside of zoning, which you may become aware of over the course of your analysis. In such cases, the Visible Atlas Note should say: "Affordable housing [density bonuses/inclusionary zoning mandates/other] that [describe terms] are applied by [state/local] laws other than the zoning code."

The Visible Atlas Notes field should not be used to duplicate information that is already collected in the Editor. Do not use it to log information you have inputted into the various fields. Do not use it to identify whether a jurisdiction follows a county zoning code. (As noted above, the Editor will automatically add a Visible Atlas Note for such jurisdictions.)

There is also a Visible Atlas Notes field for specific zoning districts. Do not use the Visible Atlas Notes field for jurisdictions to log information relevant just to one or two zoning districts.

j. Other Notes Field

The Other Notes field transmits information explaining data for the whole jurisdiction to other users of the Editor. The Other Notes field can be used for a variety of purposes. For example, if the jurisdiction is complicated or large (e.g., a very large city) and multiple team members are assigned to analyze it, include their names in this field. As another example, if you have two staff planners' contact information, put the second planner's contact information in the Other Notes field. You can also include information about quirks in the way the jurisdiction keeps records, organizes its zoning code, or deals with districts, which would be useful for other analysts (including future analysts) to know.

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6. Delete a Jurisdiction

In rare circumstances, you may come to believe that a jurisdiction should be deleted altogether from the Editor. In this case, please contact National Zoning Atlas staff.

In general, we will only delete a jurisdiction if the jurisdiction never existed in the first place or if we have inadvertently added a duplicate jurisdiction.

We will not delete a jurisdiction if jurisdiction boundaries change (e.g., if the jurisdiction annexes new land or if two cities, or a county and town, merge). If there is a jurisdiction boundary change, simply upload new jurisdiction boundaries.

We will also not delete a jurisdiction if the jurisdiction's zoning changes. If there is a zoning code or map change, simply upload or update new information for the jurisdiction. We can keep track of such changes longitudinally for research purposes only by maintaining jurisdiction-specific records, even as they and their zoning districts change.

D. FILES

Once your jurisdiction names and attributes are entered into the Editor, you can start collecting and uploading the files used to create your atlas.

Zoning codes consist of both a text, explaining how each district within a given jurisdiction is regulated, and a map, showing the boundaries of each district. For this project, you *must* upload one copy of the zoning code text, and you *must* upload two versions of the map: first, a PDF or image of the official map, and second, corresponding geospatial files (if any have been provided by the jurisdiction). In addition, every time the zoning code (text or map) changes and your team analyzes an updated version, you must upload the amended code or stand-alone amendment – without deleting prior versions. That said, if you are conducting an initial review of a jurisdiction, please complete the initial review using the zoning code at a single point in time; do not incorporate any amendments that may occur while you are coding until after you have completed the initial review and can log the changes as an amendment in accordance with Part VI.B.2.

NOTE: Files uploaded in accordance per this Section are stored for archival and reference purposes. Any geospatial files uploaded here will not be used for the **ATLAS MAP**. (The **ATLAS MAP** will use those geospatial files prepared and uploaded per Part V.)

In sum, there are 3 key files to collect for each jurisdiction you intend to cover:

- the zoning text,
- the zoning map, and
- the zoning geospatial (GIS) files.

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1. Starting Point: The Internet Search

You have to start looking for these 3 key files somewhere. First, try your luck with an internet search for "[Jurisdiction Name] Zoning Code" and "[Jurisdiction Name] Zoning Map." Often, the zoning map and zoning text will be found online, most frequently in PDF format. Your internet search may lead you straight to a PDF of the zoning text, and an image and GIS repository of the zoning map. If that is the case, you've struck gold! Skip to Part II.D.4 to understand how to save the documents.

You can also try navigating to the websites of any of the following entities for your jurisdiction, which tend to maintain copies of both the zoning text and the zoning map:

- Zoning Commission
- Planning Commission
- Planning and Zoning Commission
- Department of Development, Economic Development, or Community Development
- Department of Licenses and Inspections
- Department of Buildings, Real Estate, or Land Use

If no such entities exist or have websites, you will have to look separately for the text and map.

2. Zoning Text Search Tips

If you have not found the zoning text in an internet search, your next best bet is to navigate to the official website containing all local ordinances and regulations. This website may have any of the following titles:

- City Code or Municipal Code
- Ordinances or Code of Ordinances
- Laws
- Regulations
- Bylaws

NOTE: You may see an option to navigate to the town charter. It is unlikely that a town charter will contain a zoning code. The charter may dictate the basic structure, operation, or composition of the zoning commission administering the zoning code. As these characteristics are not logged in the zoning atlas, it is unlikely the charter will be a useful resource in creating your atlas.

If the jurisdiction does not maintain a website with its own laws, search for the name of the jurisdiction in one of these three leading online local law databases:

- Municode: library.municode.com
- eCode360: generalcode.com/library/
- American Legal: codelibrary.amlegal.com

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If the jurisdiction you seek appears in one of these three databases, then search the jurisdiction's laws for the term "zoning." Scan for the appearance of this keyword in a section title, and you will very likely have found the section where the zoning code is located.

If you cannot find the zoning text online, contact the jurisdiction's staff by phone and email. In smaller towns, the code enforcement officer or town clerk may be your best bet. In very small towns, some staff only work one day a week and may take a week or two to respond; plan accordingly. Log the date of each contact, the type of contact (such as phone or email), and the contact information (the name of the person if known, and/or a phone number or email), in the Internal Notes field for the jurisdiction.

A handful of jurisdictions may only distribute the zoning code to you in paper copy for a fee, or may require you to come to the office to make your own physical copy. In these cases, you may do one of several things. First, contact the regional planning agency, if any, or the county, to ask for an electronic copy of the missing document(s). If that does not work, put out a call on a statewide or regional planning listserve. Alternately, ask for the name of the town attorney, in the hopes that the attorney may be willing to send you an electronic copy. If someone tells you that they cannot provide the zoning code in any format, gently remind them that zoning codes are public documents, subject to freedom of information act requests, and that as a member of the public you have a right to inspect theirs. If the missing document is the official zoning map and the only copy is hanging on the wall of the zoning office, try to find a volunteer to drive by the office to take a picture or pictures of the map, which you can then assemble into a single PDF for uploading.

NOTE: A frequent question is whether subdivision or other land use-related regulations not in the official zoning code should be reviewed or appended to the zoning text PDF. They should not. The National Zoning Atlas is focused on the official zoning code only. Similarly, you need not log site-specific approvals that appear outside of the zoning text. For example, a planned residential development (PRD) might be explained briefly in the zoning text, and you may find online a separate approval for a specific PRD housing development.

NOTE: In rare circumstances, a zoning ordinance will explicitly state that regulations rely on a separate document, such as a "master plan" for a particular neighborhood. For example, the zoning code of Henderson, Nevada, stated that the uses allowed downtown were all listed in a separate downtown master plan – which was a stand-alone document, not even an appendix to the zoning code. In this rare circumstance, append the separate document to the zoning ordinance as a single PDF. Please ask the National Zoning Atlas team to confirm this is the right approach.

3. Zoning Map & Geospatial Files

This Subsection provides tips on where to search for a zoning map and where to search for geospatial files. In addition, for novices to GIS, it explains the types of geospatial files that a team member may encounter.

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a. Zoning Map Search Tips

You will almost always be able to find a PDF or an image of the zoning map on the jurisdiction's official website. If you do not, contact the jurisdiction staff for an electronic copy. See the last paragraph in the preceding section if the staff asks for a fee, asks you to come to the office, or refuses to provide the map in any format.

b. Geospatial File Search Tips

You might be able to download the geospatial files (GIS layers) related to the zoning map from one of the following sources:

- Jurisdiction's open data portal
- Jurisdiction's planning/zoning department website
- Jurisdiction's tax assessor's website
- ArcGIS Hub
- qpublic.net

However, you are more likely to come up short with a simple online search. More likely, you will need to contact the jurisdiction staff. Start with the staff member who administers the zoning code. Alternately, contact the Geospatial Information Services or Data Visualization Office of the jurisdiction, if any. As a third option, contact the regional planning agency or county office, which sometimes creates and maintains GIS files for mid-sized and smaller municipalities. If all else fails, contact the office of the tax assessor or property appraiser, who will sometimes have parcel-level GIS data with zoning code information that they can share.

Some jurisdictions will have neither geospatial files nor parcel data. Small and rural jurisdictions, in particular, may not digitize their maps. In these cases, you will have to either assemble a district map using parcel data or manually draw layers using the official zoning map as a georeferenced base image, as explained in Part V.

For archival purposes, upload any geospatial files obtained from the jurisdiction and any manually-created map as described in Part II.D.4.

NOTE: Geospatial files provided by the jurisdiction are rarely the official zoning map. The official zoning map is most often a static document adopted by the zoning authority, showing where each of the districts is located. Refer to a jurisdiction's zoning text to verify what form the official map takes. In limited situations, the geospatial files may be more accurate and updated than the publicly available zoning map; if you suspect this, consult with the jurisdiction's staff.

There are times when sloppy GIS files will cause serious issues. Part V explains how to resolve these issues.

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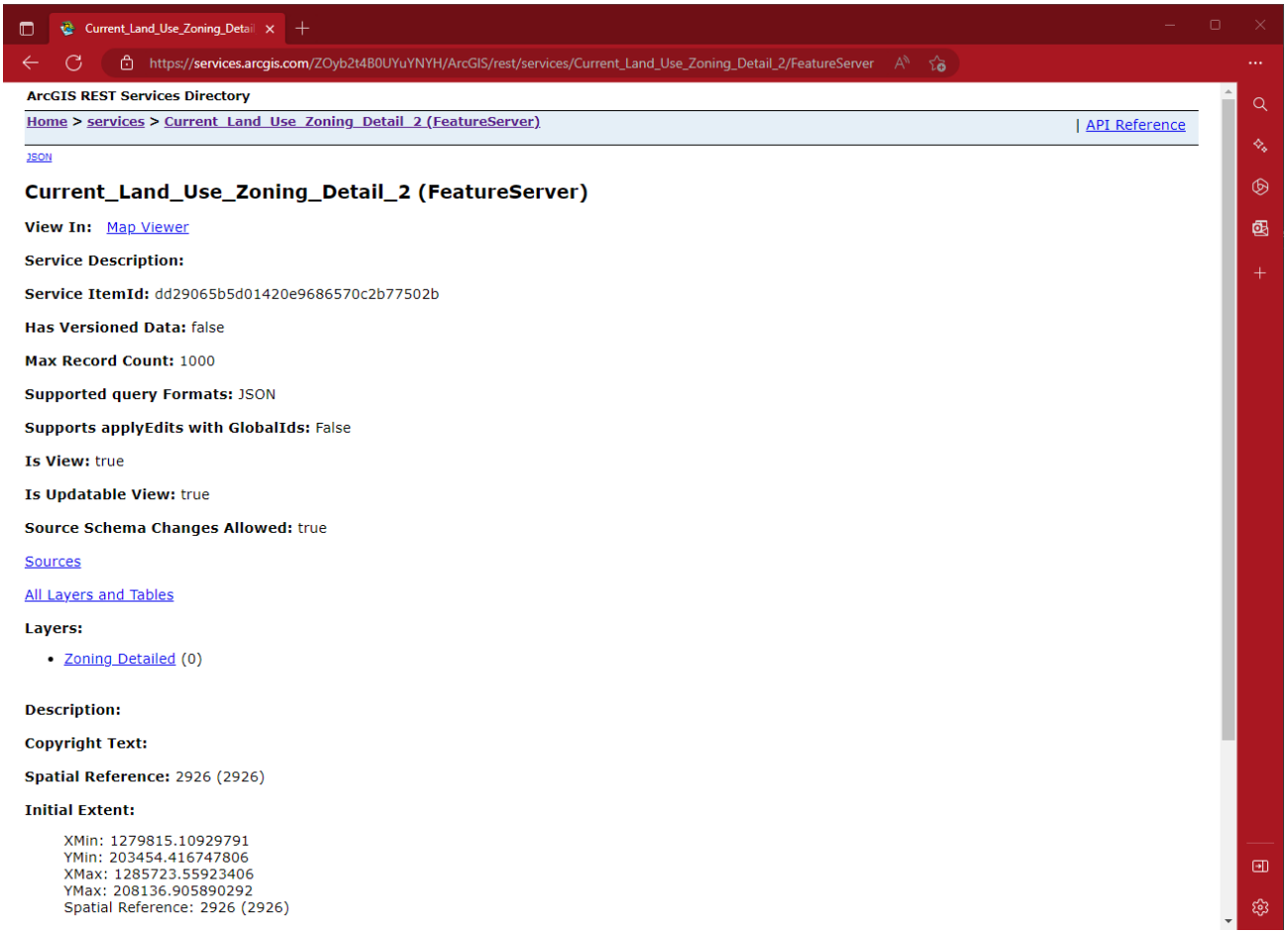
c. Geospatial File Types

For someone new to GIS, we include here a quick primer on the variety of formats in which zoning GIS data may be kept, including: ArcGIS servers, File GeoDatabases, shapefiles, GeoJSONs, GeoPackages, and KML.

This Subsection references two types of GIS software programs, QGIS and ArcGIS Pro. If you are new to GIS, you may prefer to work with QGIS over ArcGIS Pro, since it is free. To help you get started with QGIS, take a look at these tutorials or the QGIS Manual.

i. ArcGIS Servers

ArcGIS servers are a common way to publish data that may not be readily apparent as geospatial data. These servers typically appear in a web browser as a basic web page that follows a common template, such as this ArcGIS FeatureServer page for the City of Seattle:



Crucially, it includes the string "FeatureServer" in the URL, which is the most reliable indication that this is an ArcGIS service. This URL can be copied and pasted into either QGIS or ArcGIS Pro, where it will appear as a data source equivalent to any of the other formats discussed.

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There is a large, updated list of over 3,000 ArcGIS servers from all levels of government in the United States, updated biweekly. Search terms that can help you find an ArcGIS service include:

- ArcGIS REST service
- Map services
- ArcGIS Online

To integrate the URL linking to GIS data (like the URL used in the Seattle example) into your GIS software program, follow these steps in QGIS:

1. Copy the URL.
2. In QGIS, find the **LAYER** menu at the top of the window, then mouse to **ADD LAYER**, then **ADD ARCGIS REST SERVER LAYER…**
3. In the window that appears, click **NEW.**
4. In the Name field, enter a name that is memorable and distinct for your own reference.
5. In the URL field, paste the URL you copied in step 1.
6. Click **OK.**
7. Back at the previous window, check that your new layer is selected in the dropdown at the top, then click **CONNECT.**
8. A list of all available layers will appear in the middle part of the window. Find your zoning layer, click to select it, then click **ADD** at the bottom of the screen.
9. The layer should appear in the main QGIS Layers list.
10. Save the file locally by right-clicking the layer > Export > Save Feature As…

If you are using ArcGIS, follow these steps:

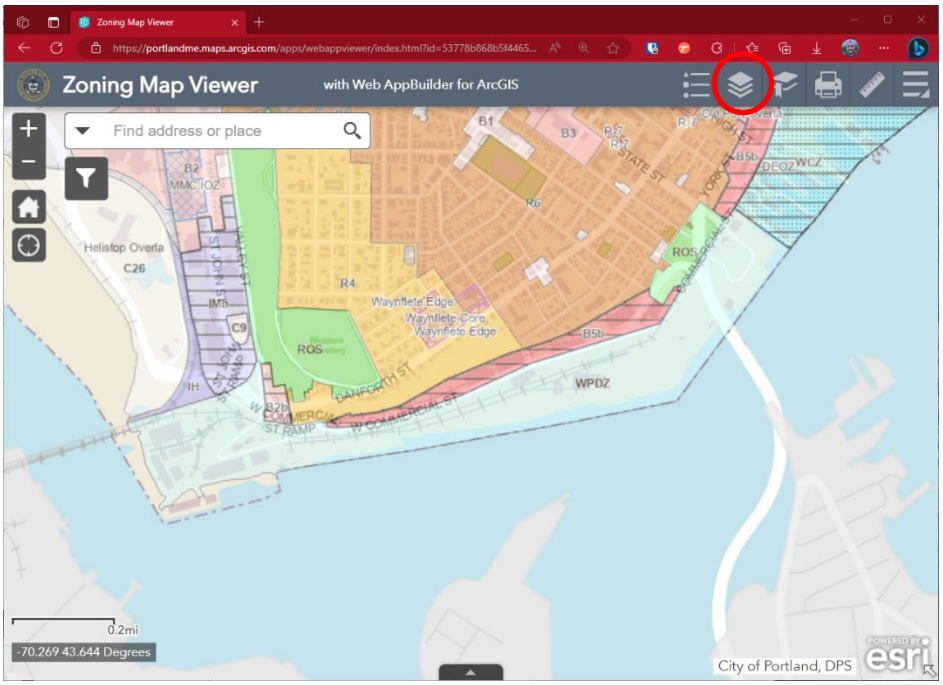
1. Copy the URL.
2. In the **MAP** tab of the ribbon, click the *label* (*not* the icon) for **ADD DATA.**
3. Select **DATA FROM PATH.**
4. Paste the URL in the box that appears and click **ADD.**
5. The layer should appear in the **CONTENTS** list.
6. Use the **EXPORT FEATURES** tool to save the file locally. You will then be able to edit the geometry and attribute table.

You may find an interactive webmap without a URL/link to the source data readily apparent. However, interactive webmaps frequently use the same template from the GIS software company Esri, which houses ArcGIS, meaning that the path to the source data can often be predicted.

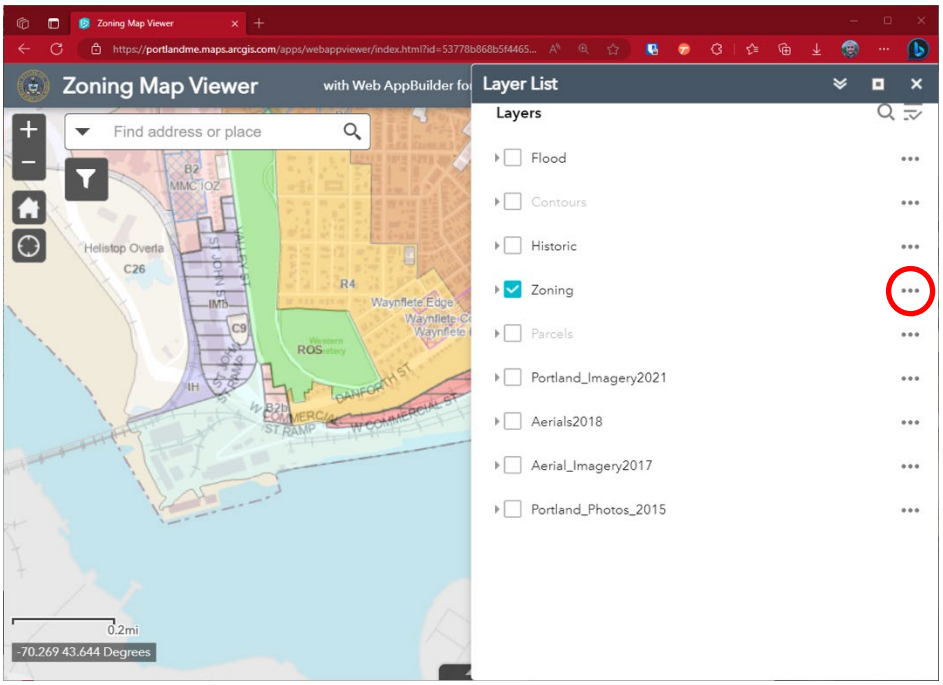
Here's an example from Portland, Maine. This interactive zoning web map was not too hard to find on Portland's web site. However, the source data is not immediately obvious. To find the ArcGIS FeatureServer that has the source data for the web map:

Click on the Layers panel, as shown here:

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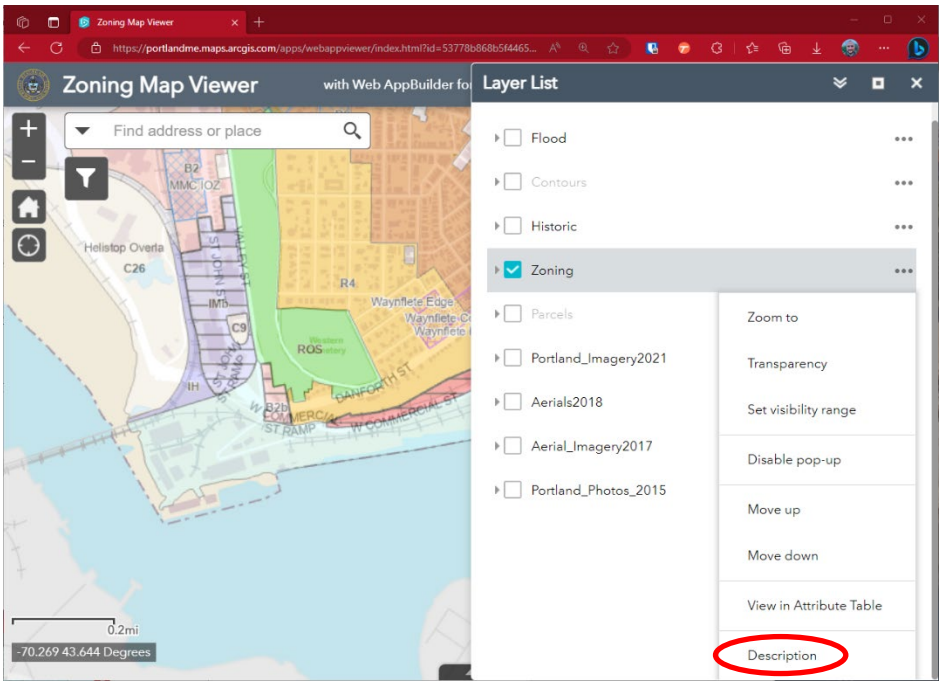


Click on the meatball menu (the icon that looks like an ellipsis or 3 dots), shown here:



Click on the **DESCRIPTION** link, shown here:

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ii. File GeoDatabase

File GeoDatabases are actually folders with a .gdb extension. The contents look like gibberish to your computer's file browser, but specialized GIS software such as QGIS and ArcGIS can browse and open them. You will typically find these as a .zip file on a government's open data portal. This format should be your first choice when there are several options if you are using ArcGIS Pro.

iii. Shapefiles

A single shapefile consists of 3–8 files, sharing a common name but with different extensions. These files must be kept together when they are transferred among computers and folders. They also have a limit of 10 characters for the names of columns in their attribute table. You'll typically find these as a zip file on a government's open data portal. QGIS can open shapefiles without unzipping them first; for ArcGIS Pro, you must unzip the zip file before use.

iv. GeoJSON

GeoJSON is a GIS file format developed for web mapping use. It is the file format in which you'll submit your geospatial data to the Editor, but it's less common on government open data portals. It is a great option for downloading data, when available. Unlike File GeoDatabases and shapefiles, GeoJSON contains its data within a single, text-based file, so do not worry about accidentally separating components of your data. It is just as easy to use as other formats in QGIS but requires some extra steps to use in ArcGIS Pro.

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v. GeoPackage

GeoPackage is a newer, open standard for geospatial data. Like GeoJSON and unlike File GeoDatabases and shapefiles, all the data is stored inside a single file, so do not worry about accidentally separating components of your data. Compared to GeoJSON, it reads and writes faster in GIS software, and it does not require extra steps to be used in ArcGIS Pro. This format should be your first choice when there are several options if you are using QGIS.

vi. KML

KML is a format optimized for display in Google Earth rather than professional GIS software. It may be lacking in geospatial precision and/or important attributes. It should be your last choice for downloading or storing your data, but it is better than nothing.

4. Saving Files

Once you have found the zoning text, map, and geospatial files, you will need to upload them to the Editor. This Subsection covers file formats, the scope of the files to be saved, naming conventions, effective dates, and finally the actual upload process.

a. File Formats

i. Zoning Texts

Zoning texts should be saved and uploaded as PDFs, preferably in 8.5”x11” format.

If the zoning text is a Word document, export or print it to PDF.

If the zoning text is entirely online as text on a website (e.g., in a municipal code of ordinances or in one of the online local law databases), there is usually a button that allows you to download the text into a single PDF, or print to a single PDF. If this option is not available, then cut and paste the text into a word processing program, and save that to PDF. (Include tables of contents and do your best to make the formatting make sense for future readers.)

If your zoning text is only publicly available in separate, individual chapter files, combine them into one PDF.

If your zoning text has separate bulk and use charts, which are officially part of the zoning code but not located in the same public document, be sure to combine them into one PDF.

ii. Zoning Maps

Zoning maps (the “official” maps) should be saved and uploaded as either PDFs or in some image file format (e.g., TIFF, JPG, PNG).

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If the jurisdiction does not have a stand-alone official map and only provides the public with an online interactive GIS map, do your best to capture the zoning map in static format. In some cases, you will be able to print the interactive map to a PDF.

When that is not an option, screenshot the zoning map (if needed, taking multiple screenshots), paste these into a word processing document, and save that document as a PDF. Please do not load individual screenshots to the Editor. Combine them into one document before upload, and follow the naming conventions in the next Subsection.

Finally, note that special zoning districts like overlays are sometimes mapped in a separate document, or even in the zoning code itself. These should also be saved and uploaded to the Editor per Part II.D.4.c.

iii. Geospatial Files

Zoning geospatial files – including files you have downloaded from the jurisdiction directly, files you have gathered from other sources (e.g., a regional or state agency), and files you have drawn by hand – should be converted if necessary, saved, and uploaded as a single file per jurisdiction.

If this collected or created data is already merged into a single file, such as GeoJSON or GeoPackage, upload that file.

If this data is in an online-only format, such as an ArcGIS REST service, save it as a GeoJSON, then upload that file. If this data is in a format that uses multiple files (e.g., .shp, .dbx, .shx) for a jurisdiction, such as Esri Shapefile or File GeoDatabase, zip these files together into a single .zip file, then upload it.

Given that this upload is for archival and reference purposes only, you need not – and, in fact, should not! – edit the geometry or attributes before upload. The files you create and clean in Part V will be uploaded to the **ATLAS MAP** – not the ones you are uploading here.

b. File Scope

It is very important that the full and complete documents for zoning text and maps be uploaded, rather than piecemeal amendments of a text or map or individual chapters of a zoning text. If your zoning text is only publicly available in individual chapter files, combine them into one PDF.

The upload of subsequent updates to the zoning code and maps as partial documents (e.g., covering only an amended section) is acceptable only if the municipality is taking a long time (e.g., longer than three months) to integrate the smaller change into the larger document or maps.

c. File Naming Conventions

When you upload a file to the Editor, you will need to manually type in its name using our standard file naming conventions, to ensure that others may easily identify its type and scope. In the Name of File field, use the following conventions when typing in the file name:

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File Type	Naming Convention	When to Use
Entire text of a zoning code	"Zoning Text"	Do this for both the first zoning text you upload and any later whole-text rewrites of a zoning code.
Zoning code text amendment that only addresses a specific topic(s)	"Zoning Text Amendment [Topic(s)]"	Use this naming convention if a jurisdiction is slow to incorporate amendments into the entire zoning text. The amendment document is the only official source for changes related to that topic in your atlas. We might see many such documents as states increasingly legislate to require local governments to change specific aspects of their codes.
Zoning code text describing a mapped but extinct district	"Zoning Text Extinct District [Name of District]"	Use this naming convention if you are able to locate the zoning text from a previous zoning code that describes the rules related to a mapped but extinct zoning district.
Official zoning map	"Zoning Map"	Do this for the first zoning map you upload and any later whole-map changes to a zoning code.
Official zoning map – Overlay/other district	"Zoning Map – Supplemental Map [Overlay/or other district(s)]"	Use this convention for an overlay or other district(s) mapped separately from the primary zoning map but still part of the official map.
Zoning map amendment that only addresses a specific neighborhood(s) or district(s)	"Zoning Map Amendment [Neighborhood/District(s)]"	Use this naming convention if the jurisdiction is slow to incorporate amendments into the whole-jurisdiction zoning map. The amendment document is the only official source for changes related to that map in your atlas.
GIS file layers for the entire jurisdiction, from the jurisdiction	"GIS Data – From Jurisdiction"	Do this for both the first zoning whole-jurisdiction GIS data you receive from a jurisdiction, and any later whole-jurisdiction GIS updates (which usually come with a comprehensive rezoning) from the jurisdiction.

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GIS file layers for the entire jurisdiction, manually drawn by you	"GIS Data – Manually Created"	Do this for both the first zoning whole-jurisdiction GIS data you draw, and any later whole-jurisdiction GIS updates (which usually come with a comprehensive rezoning) you draw.
GIS file layers that only addresses a specific neighborhood(s) or district(s)	"GIS Data – From Jurisdiction – Supplemental Map [Neighborhood/District(s)]"	Use this naming convention if a jurisdiction has provided neighborhood or district-specific updates to the GIS data.

You should use these naming conventions when you upload into the Editor. (You do not need to rename the file on your desktop before uploading it to the Editor, because you will be manually typing its name in the Name of File field.)

d. Effective Date

As you collect zoning texts and zoning maps, skim the document and find the effective date – in other words, the date on which the text or map was first adopted or, in the likely case that it has been amended, the date on which the text or map was last amended. (You do not need to find an effective date for the GIS files.)

To find this date, search for the following phrases in the zoning text and zoning map:

- Effective date
- Effective as of
- Last amended
- Amended as of
- Last updated
- Updated as of
- Adopted

Usually the effective date of zoning text is posted on either the first page or the table of contents, or somewhere at the end of the zoning chapter in the local ordinances. Do not be discouraged if you cannot find a reference to the effective date on the official zoning map, because effective dates are rarely documented on these maps. If the effective dates do not appear in one or both sources, contact the jurisdiction's staff to confirm the effective date of the zoning text or zoning map.

If you have an effective date that is simply month and year, use a "1" for the day. This number may be imprecise, but it allows you to come close enough for our purposes.

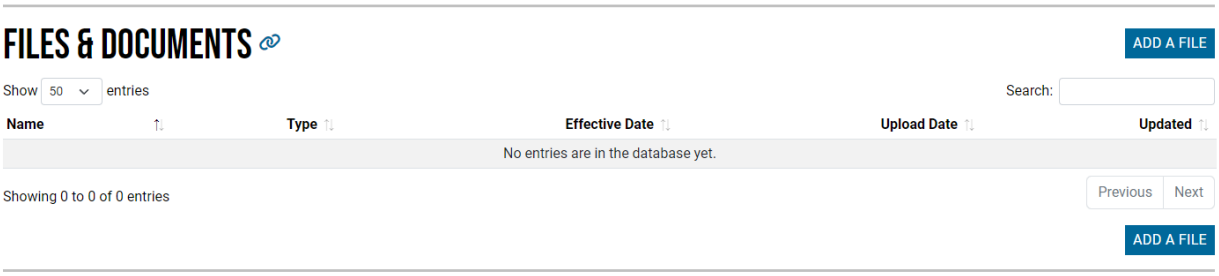
If you cannot find an effective date and do not hear from jurisdiction staff in a timely manner, the Editor will automatically enter the effective date as the date of upload.

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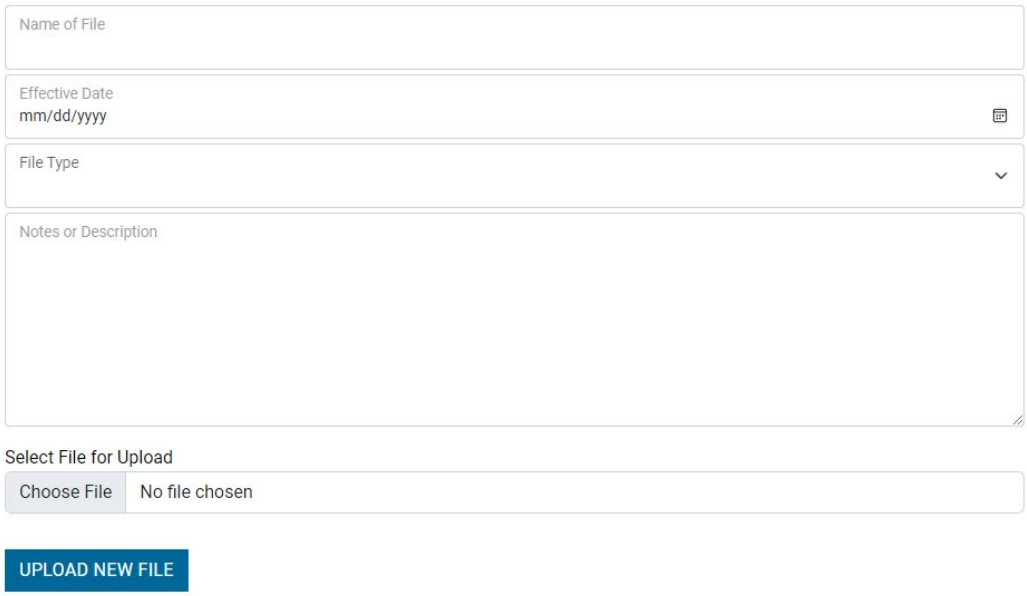
NOTE: If your search yielded several different copies of any of these documents, check their dates to choose the most recent one. If needed, contact the jurisdiction's staff to confirm you have the correct version.

e. Upload Procedures

Once you have the file in the correct format, with the right scope, named correctly, and with the effective date (where available) identified, you are ready to upload the file to the Editor. At the bottom of each jurisdiction page, there is a file upload menu:



Clicking the **ADD A FILE** button brings you to the Upload a File page, where you input the name of the file and effective date per the above instructions. In the File Type field, select "Zoning Text," "Zoning Map," or "GIS Data," as appropriate. Add notes if needed; these might be most useful if you are uploading an amendment. Here is the screen you should see when filling out these items:



f. Deleting Files

We strongly discourage deletion, replacement, or modification of previously uploaded documents, unless the documents contain some error or were uploaded in error.

In the future, fully amended codes or stand-alone amendments will be uploaded to the Editor, so we need the prior files to serve as evidence of the zoning code as it previously stood. Jurisdictions

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have a habit of simply deleting outdated codes to reduce the public's confusion; since the National Zoning Atlas will be used for future research, we need those outdated codes archived to see how the rules change over time.

E. DIVISION OF LABOR

Once all the jurisdictions are filled out, the team leader should assess how to divide labor. To avoid confusion and minimize duplication of efforts, it is best to assign only one zoning code and geospatial analyst for each jurisdiction (save those of large cities over, say, 300,000 people). But how many jurisdictions should each analyst be assigned?

When it comes to zoning code analysis, a key factor in the amount of labor required by a particular jurisdiction is the number of zoning districts. Jurisdictions have wildly different numbers of zoning districts. When the New York Zoning Atlas team reviewed five counties around Ithaca, analysts found that the number of districts ranged from 3 to 53. Roughly assessing the minimum number of districts for each jurisdiction from zoning map legends and/or the list of zoning districts in the zoning texts can help a team leader divide up work more fairly. Longer text and more districts take more time. Note, however, that you will not know the exact number of districts until you undergo the three-step process described in Parts III.A. through III.C.

When it comes to geospatial analysis, a key factor in the amount of labor required by a jurisdiction is the population of the jurisdiction. Localities with larger populations tend to be less complicated for geospatial analysis, because they usually have full-time staff or consultants that have drawn or maintain geospatial files. A team leader assigning jurisdictions might assign larger jurisdictions to less experienced geospatial analysts, and might assign small-population jurisdictions or jurisdictions without downloadable geospatial files to more experienced geospatial analysts.

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III. IDENTIFY, CREATE, & CHANGE ZONING DISTRICTS

Zoning districts are the building blocks of any zoning atlas, and properly identifying them is essential to the success of your project. Because gathering names of zoning districts is foundational to Parts IV and V, we suggest all team members – team leader, zoning code analyst(s), and geospatial analyst(s) – participate in gathering them.

To do so, you must consult all three resources collected in Part II.D.: the zoning text, the zoning map, and the geospatial files. Only after consulting all three resources can you accurately input the names of the districts into the Editor. That is why this Part covers these three searches before encouraging you to upload zoning district information into the Editor. After entering your list of districts, you will enter 3 attributes related to their mapped status.

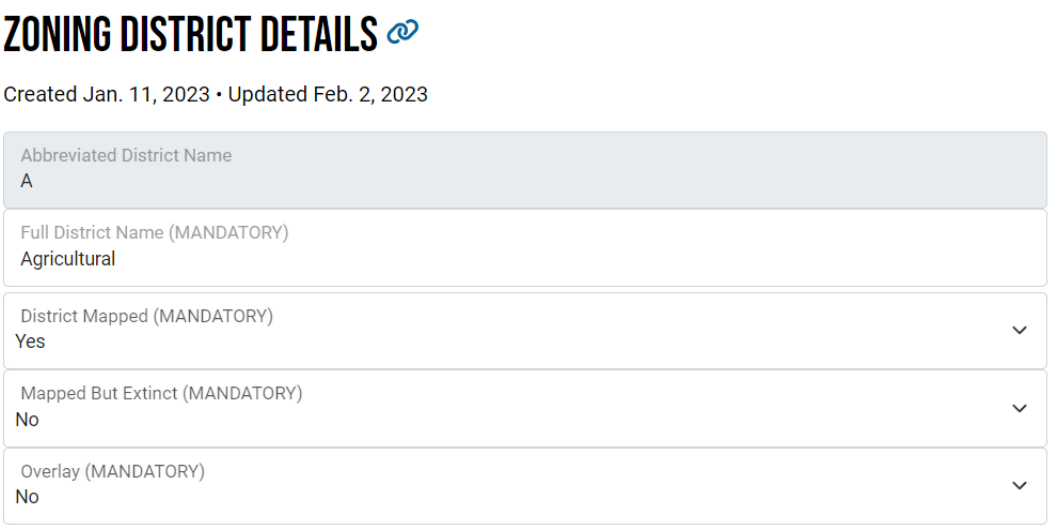
This Part also covers how to track progress of zoning districts and delete zoning districts.

In this Part, you will fill out the following fields for each district:

- **Abbreviated District Name**: The abbreviation used for the district, often two or three letters combined with numbers.
- **Full District Name**: The full name of the district.
- **District Mapped**: A binary Yes/No entry indicating whether the district is on the zoning map.
- **Mapped but Extinct**: A binary Yes/No entry indicating whether the district is on the zoning map but not in the zoning text.
- **Overlay**: A binary Yes/No entry indicating whether the district is an overlay district, meaning that it is, or can be, layered on top of another district(s).

These fields appear at the top of every zoning district page in the Editor, as follows:

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A. SEARCH THE ZONING TEXT, MAP, & GEOSPATIAL FILES

This Section explains where to look within the zoning text, map, and geospatial files for a list of zoning districts. There are several methods you can use to log zoning districts in the Editor. New teams should log the list of full and abbreviated names of zoning districts in a separate spreadsheet (such as an Excel or Google Sheets document) and import it as instructed in Part III.B.2. View a related video tutorial, "Identifying, Naming, & Claiming Jurisdictions in the Editor," on our website.

1. Search the Zoning Text

This Subsection explains how to find a list of districts, and then how to identify full and abbreviated district names. As you search, know that while districts are sometimes called zoning districts, they can also be called districts, zones, or overlays.

a. Find a List of Districts

Start by trying to find a list of districts all in one place using one or more of these steps:

- Scan the table of contents (sometimes called "contents"): Sometimes, but not always, it has a consolidated list of the districts.
- Search for the phrases "divided into," "divides the," "hereby," "established," and/or "following zoning districts." There is often a page somewhere early in the code that says something like "[Jurisdiction Name] is divided into the following districts:"
- Search for the words "zone" and/or "district": If either of these words appears 5 or more times on a single page, scan the page to see if the page contains a list of the districts.
- Search for charts which show different district-specific characteristics, such as minimum lot sizes or lot coverage requirements: The rows or columns of these charts are labeled with different districts.

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Even if you locate a consolidated list of districts using one of the means above, do not be lulled into a false sense of security that your job is done. Here are four reasons why you must continue:

- Consolidated lists may not include districts added to a zoning code after it is first adopted. Many omitted districts are planned residential development districts added after the original zoning code was implemented.
- Consolidated lists may include districts that have never made it to the zoning map, which means that such districts exist only in theory.
- The zoning text may not include districts that remain on the zoning map but have been eliminated from the zoning code.
- You may not have initially noticed sub-districts, smaller districts related to each other in some way, a coding phenomenon explained in Part III.A.1.b.

If the list of districts is difficult to cut and paste (because it is in table or PDF format), you might consider using optical character recognition (OCR). ImageToExcel is one popular tool, though the free version is limited to 5 scans a day. For Microsoft 365 users, the Excel app for iOS and Android also has a picture-to-data conversion tool.

b. Identify Full & Abbreviated District Names

This Subsection explains how to identify full and abbreviated district names. Be sure the abbreviated district names are correct. Once the zoning districts have been created, that field is not editable! The full name can be adjusted later. Please capitalize the full names.

i. Start with the List, If Any

A list of districts somewhere in the zoning text can provide a starting point for the Full District Name and Abbreviated District Name fields. The list might include both full and abbreviated names, or might only include one or the other. If your list is in the latter category, start searching through the zoning text for the names in the list. Often, you will quickly find the abbreviated and full name of the district together in one phrase or sentence in the zoning text. For example, you might see:

- R-40 Residential-40 Zoning District
- ID 2 Industrial District 2
- HOZ Housing Overlay Zone

For these districts, put “R-40,” “ID 2,” and “HOZ” in the Abbreviated District Name field. Before putting the longer district title in the Full District Name field, delete the words “Zone,” “Zoning District,” and “District.” Accordingly, for the examples given, input “Residential-40,” “Industrial 2,” and “Housing Overlay” in the Full District Name field. Try not to get creative; input information exactly as you find it in the zoning text.

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ii. If No Abbreviations in the Code or Map

Sometimes, you will see no abbreviations in either the zoning code or map. In that case, enter the full name of the district in the Abbreviated District Name field and the Full District Name field.

iii. If Abbreviations Only Appear on the Map

Sometimes, you will only see the abbreviation of a district used in the zoning map, while the full name of the district is used in the zoning text. In these cases, use educated guesses and the process of elimination to determine which full name matches which abbreviation. Using an example above, seeing "R-40" on the zoning map would point you to the Residential-40 district.

iv. If There Are Sub-Districts

There is an inconvenient phenomenon among modern zoning codes to delineate so-called "sub-districts," which are geographic subdivisions of what we'll call a parent district. Sub-districts might share the key regulatory characteristics of a parent district, but then differ from other sub-districts within the parent district in other ways.

As an example, a downtown district might be divided into a retail sales sub-district, a restaurant sub-district, and a theater sub-district; maybe the entire downtown district allows for tall buildings, while the sub-districts identify specific types of uses that can only be placed in each sub-district. As another example, a planned development district might identify as sub-districts specific planned residential developments, which may have been created pursuant to project-specific rules.

List sub-districts as individual zoning districts only if they are mapped separately on the zoning map or geographically defined in the text such that a geospatial analyst can map them on the **ATLAS MAP**, and if you can discern meaningful differences between them because the zoning code distinctly regulates each sub-district (as evidenced, for example, by sub-district-specific entries in a use or dimensional table or sub-district-specific written regulations elsewhere in the code). Do not log sub-districts as individual districts in the Editor if you cannot find a map identifying sub-district boundaries, if you cannot determine whether there are differences (due to a lack of information, which may be the case with individually approved planned developments), or if the differences are so minor (such as sub-districts that deviate only with regard to their height maximums or, in the case of the downtown sub-districts above, different types of noncommercial uses) that the effort of creating an entirely new sub-district in the Editor would not be justified.

In the latter case (of minor differences), log only the parent district, but select "Alternatives" entries or provide Visible Atlas Notes that might help end users. For example, for a parent district with sub-districts that deviate only on the basis of height, log only the parent district, then when you get to the Max. Height fields, make an "Alternatives" entry and say "X' if in Tall Sub-district, Y ' if in Short Sub-district." As another example, for the downtown district example above, log only the downtown district, put "Commercial - General/Mixed" as the nonresidential subcategory, and

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write a Visible Atlas Note that says, "Varies per Retail Sales Sub-district, Restaurant Sub-district, and Theater Sub-district."

If sub-districts do not have abbreviated names in the text or map, do your best to create clear abbreviated names. For example, the town of High Point, North Carolina, created a boundary called the "Core City Area" (CCA), but did not make the CCA a zoning district. Some districts spanned CCA and non-CCA areas. A residential district (R-5) allowed 2/3/4-family housing within the CCA, but 1-family housing outside the CCA; an industrial district (LI) allowed 4+-family housing within the CCA but no housing outside the CCA. The CCA is mappable. In total, thus, four districts should be shown on the zoning map: R-5, R-5-CCA, LI, and LI-CCA.

If sub-districts are mentioned in the text but not mapped on the zoning map and not mappable, and if sub-districts have distinct regulations relevant to the information this project tracks, then include sub-districts in the text describing the relevant regulation, after selecting "Alternatives" from the drop-down menu for the regulation.

v. If There Are Highly-Tailored Districts

This Subsection deals with those districts that may have broad rules that can be augmented in ways specific to a single lot or small number of lots, or those districts with highly-tailored rules specific to a single lot or small number of lots. In general, these "highly-tailored" districts are typically created to accommodate a specific development proposed by a developer.

Highly-tailored districts are difficult to analyze primarily because they may be created by an independent city council resolution, independent planning board action, or independent agreement with a developer. Often, the terms of the resolution, meeting minutes of the planning board, or agreement with the developer are not included in easily accessible zoning texts.

In many states, jurisdictions will use the phrase "planned district" to delineate these highly-tailored districts. Some planned districts may include residential uses (and thus fall under our definition of planned residential development), while others may not. In other states, such as North Carolina, jurisdictions will use the phrase "conditional zoning district." Conditional zoning districts are sometimes listed in their own section of the zoning code and distinguished by an affix (e.g. "CD-" or "-CZ"). Highly-tailored districts may be listed by their addresses, such as "120 Maple Street Planned Unit Development," or by their acreage, such as "4.2 Acre Conditional Zoning District."

Highly-tailored districts should be listed as individual zoning districts only if they are mapped individually on the zoning map or geographically defined in the text such that a geospatial analyst can map them on the **ATLAS MAP**, *and* if you can easily obtain information about the rules that govern them. If you find a jurisdiction with several of these districts, and they do not meet the criteria in the preceding sentence, only log a single umbrella district (e.g., "planned district" or "conditional zoning district") and include the broadest allowable use, lot, and structure restrictions. That means you should log the umbrella district when: only an umbrella district

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appears in the zoning map, even if parcel-specific districts appear in the text; or only an umbrella district appears in the zoning text, even if parcel-specific districts appear in the map.

In addition, if there are more than five parcel-specific exercises of high tailoring within a jurisdiction, and you know the regulations for each, you can use your judgment as to whether you should code these as individual districts or as fold them all together into an umbrella district.

NOTE: This Subsection simply provides instruction as to how to identify an accurate list of districts. It does not tell you how to classify the districts. Some sub-districts and conditional zoning districts, for example, may later be classified as overlay districts. Planned residential development districts also have special rules. Keep reading to continue to fill out the rest of the fields.

NOTE: Conditional zoning districts should not be confused with conditional uses (i.e. uses permitted after staff review if they comply with district-specific rules), which are further explained in Part IV.C.1.c.

vi. If There Are Temporary or Tentative Districts

In rare cases, you may come across districts that are temporary or tentative. Such districts might include annexed land yet to receive permanent zoning, experimental land use decisions, moratoria, or emergency disaster relief zones.

These districts usually have a fixed implementation and expiration date. If a temporary district has a defined expiration date, or if it is not clearly marked in the zoning map (and cannot otherwise be mapped), do not list a temporary district in the Editor. Instead, make a Visible Atlas Note for the jurisdiction using the protocols listed in Part II.C.5.i.

If a so-called "temporary" district does not have an expiration date and is clearly marked in the zoning map, list it in the Editor as a district.

vii. If There Are Unzoned Areas Within a Zoned Jurisdiction

A small number jurisdictions that exercise zoning authority decided to only zone some, but not all, of their land. For example, Nye County, Nevada, exercises zoning over a small part of its land, leaving the rest of the county unzoned. What does a zoning code analyst do with the areas that are left unzoned, in an otherwise zoned jurisdiction? Add a new "district" called "Unzoned" as the Full District Name and the Abbreviated District Name fields. Geospatial analysts should follow the instructions for these unzoned areas in Part V.D.3.g.

2. Search the Zoning Map

After completing your scan of the zoning text, turn next to the zoning map. Open the file and locate the legend. You are likely to find district names in the zoning map legend which you did not notice in your scan of the zoning text. Often, but not always, the legend lists both the full district name and the abbreviation for the district. Add what you find to the list and follow the same steps in Part III.A.1. to identify the Full District Name and Abbreviated District Name fields.

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3. Search the Geospatial Files

After completing your scan of the zoning map, you only have one last cross-reference to complete: that of the geospatial files that have been provided by or downloaded from the jurisdiction itself. (If a jurisdiction has not provided such files, then the team can skip this third step and proceed to Part III.B.)

The geospatial analyst(s) may have to lead this task, and they should at least conduct their first review of the geospatial files upon receipt from the jurisdiction. Part V provides more technical details for the geospatial analyst(s) to further clean and name the files, but waiting too long to review them for zoning district names could cause the team to have to duplicate effort later on.

Here are examples of zoning districts that might appear in the geospatial files but nowhere else:

- Layers that may not yet feature in the zoning text or the official zoning map, because they were recently adopted and only the GIS layers were updated so far.
- Overlays that may not be clearly shown in the official zoning map.
- Layers that once existed in the zoning text but were deleted from the text, and not from the map (i.e., Mapped but Extinct layers).

Now you can see why reviewing all three resources – the zoning text, the zoning map, and the geospatial files – is necessary to finalize the list of districts that serves as the building block of your atlas.

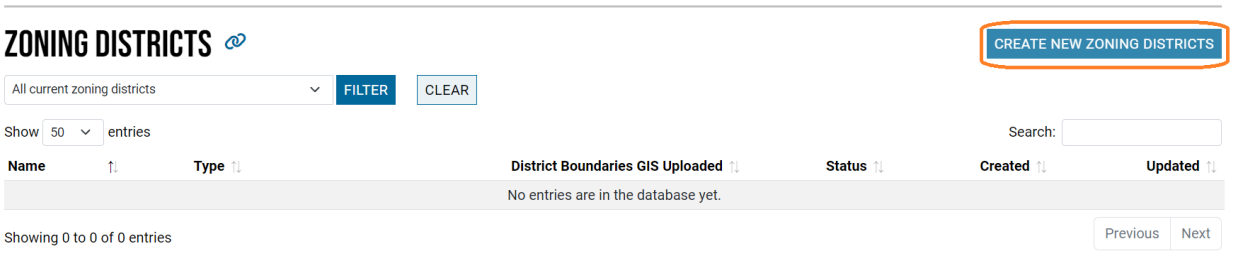
B. ENTER ZONING DISTRICT NAMES

The Editor allows you to manually enter individual zoning districts or to import a list of many zoning districts. If you followed our suggestion to log the list of full and abbreviated names of zoning districts in a separate spreadsheet (such as an Excel or Google Sheets document), skip to Part III.B.2. Otherwise, continue reading to add an individual zoning district to an existing jurisdiction.

1. Method #1: Entry for One Jurisdiction

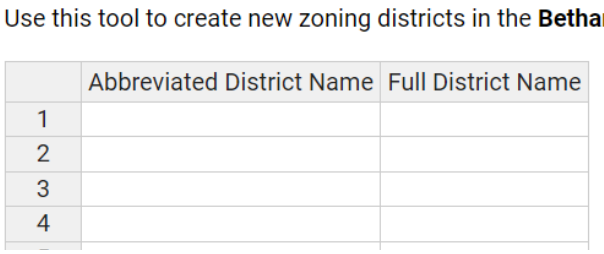
This method is best for teams adding zoning districts to an existing jurisdiction.

From the home page for the jurisdiction, click on **CREATE NEW ZONING DISTRICTS**:



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Now type in or cut and paste from an independent spreadsheet all of the rows (each representing a district) containing the Abbreviated District Name and Full District Name of the district into this table:



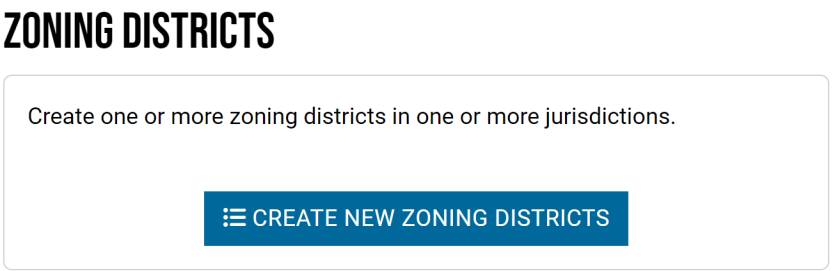
Once the district names have been entered, click the **CREATE NEW ZONING DISTRICTS** button at the bottom of the page:



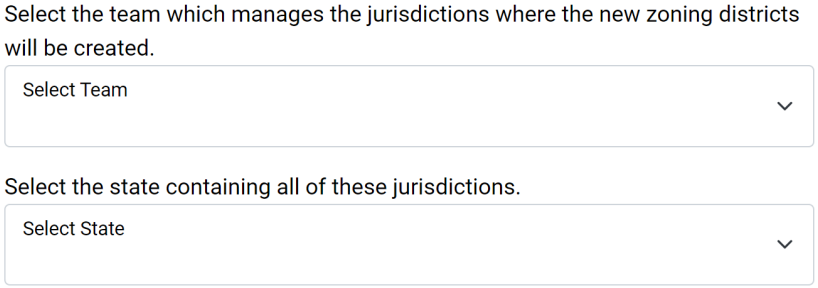
2. Method #2: Import Lists for Two or More Jurisdictions

This method for importing zoning district data is best for teams who have data in a spreadsheet outside the Editor and want to add zoning districts for more than one jurisdiction at one time.

From the **IMPORT** tab, click on **CREATE NEW ZONING DISTRICTS**.



Select your team and state.



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Now cut and paste from your independent spreadsheet all of the rows (each representing a district) containing the County, Jurisdiction, Abbreviated District Name, and Full District Name. The grid can expand to accept 500 districts at a time.

Ctrl+V or ⌘+V can be used to paste data directly into the grid below.

	County	Jurisdiction	Abbreviated District Name	Full District Name
1				
2				
3				
4				

Once the district names have been entered, click the **CREATE NEW ZONING DISTRICTS** button at the bottom of the page:

24				
25				

CREATE NEW ZONING DISTRICTS

C. IDENTIFY MAPPED, EXTINCT, & OVERLAY DISTRICTS

In this Section, you will begin to fill in zoning district data on the individual zoning district pages, links to which should now appear on your Jurisdiction page. The zoning map will help you fill out the following required fields:

- Mapped
- Mapped but Extinct
- Overlay

1. Mapped Districts

The District Mapped field identifies which districts actually appear in the map (i.e., actually apply to plots of land). Use the map legend to cross-check the names of the districts you have already logged, and if they appear in the map, log a "Yes" in the District Mapped field.

If a district is referenced in the zoning text, zoning map, and geospatial file but is not labeled or in the legend, log a "Yes" in the District Mapped field. Assume that there is just a typo in the legend.

If a district is listed in the zoning text but not included in the official map or GIS zoning files, log a "No" in the District Mapped field. If a district is listed in a map legend but is not plotted on any land in the map itself, then log a "No" in the District Mapped field. Continue to collect information about unmapped districts but note they will not appear on the public map interface for the National Zoning Atlas. This is because an unmapped district only exists on paper, not in reality.

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NOTE: Zoning codes may sometimes note the presence of floodplain, wetlands, aquifer districts, tree overlay districts, and the like. These types of districts are often not included on the official zoning map and may even lack fixed boundaries as floodplains and wetlands, for example, change. If they are mentioned in the zoning text as a district, log them as a district, as you would any other district. If they do not appear in the zoning map, log a "No" in the District Mapped field and treat them like other unmapped zoning districts. As you proceed with the analysis in Part IV, note that these districts will most likely be marked as "Nonresidential" in the Type of Zoning District field, and "Prohibited" in the 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, and 4+-Family Treatment fields. Sometimes, though, they will allow housing but require flood-resilient construction.

NOTE: You may find the term "floating" to refer to a zoning district, especially when dealing with planned residential developments. This term is meaningless. It has nothing to do with whether the district is unmapped. (It also has nothing to do with whether there is an overlay.) You have to read the regulations and review the zoning map to understand whether a so-called "floating" district is mapped.

2. Mapped but Extinct Districts

The Mapped but Extinct field identifies which districts have been erased from the zoning text but still appear in the zoning map. Such districts are rare, but they exist! When you find a district that is on the map but not referenced in the text, log a "Yes" in the Mapped but Extinct field.

Of over 2,600 districts logged in the Connecticut Zoning Atlas, 11 were mapped but extinct. For each of these 11 districts, we contacted staff of the jurisdiction or staff of the regional councils of governments or used online research to identify previous versions of zoning codes in which these districts appeared. We logged information about the 11 districts using the most recent zoning text in which they were mentioned. While this method is not perfect, it is the only option.

Do your best to find the old version of the zoning code that articulated the rules for this district. Search the jurisdiction's online records and meeting minutes, and call the city/town clerk or zoning office. If you find such a document, these should also be saved and uploaded to the Editor using the "Zoning Text Extinct District [Name of District]" instructions in Part II.D.4.c.

NOTE: Despite your best efforts, you may not be able to find information about the rules that were used to create an extinct district, because by definition they are not a part of the current zoning code. A jurisdiction without good records may not have the older version of the code used to create the district. In that case, it is impossible to fill out with complete accuracy the mandatory fields in the Editor (such as those in Parts IV.B. and IV.C.). Instead, find a map showing the existing land uses in a jurisdiction (the jurisdiction's planning documents or zoning office may have such a map) or just use Google Maps. Use the existing land uses to guess the Type of Zoning District Field and the other required Treatment fields. Then include a Visible Atlas Note that says, "Information about this extinct district not available; map shows existing land use."

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As noted in Part III.A.1.b.vi., temporary or tentative districts should not be included as districts, and thus there is no need to assess whether they are Mapped but Extinct. Extinct districts that are not mapped (but to which the zoning text may refer) should not be included as districts.

3. Overlay Districts

The Overlay field identifies overlay districts. The National Zoning Atlas defines an overlay as a district that can be or is overlaid atop another district and mandates certain regulations that alter, supplement, or offer additional options for (but do not entirely override) the regulations of the underlying district. An overlay may have the name "overlay" in its title, but it may not be an overlay at all.

NOTE: In some cases, an overlay may be overlaid atop a base district as well as other overlays. Zoning code analysts will receive instructions about how to input information about zoning code treatment of overlay districts in Parts IV.A.3. and IV.C. Geospatial analysts will receive instructions about how to treat overlays in Part V.D.3.a.

a. Distinguish an Overlay from a Base District

Distinguishing between base and overlay districts is important for an accurate atlas, because overlays by definition override some characteristics of underlying districts. As one example, a "historic overlay" might require different standards for historic housing than otherwise required for housing in the underlying residential district. As another example, a "transit-oriented development overlay" might allow for a greater density of housing than otherwise allowed in the underlying mixed-use district.

Whether a district is called an overlay or not has no bearing on whether the district is an overlay. Some so-called "overlays" actually function as base districts that replace underlying zoning altogether. A sub-district or conditional district may function as an overlay or as a base district, depending on the regulations. The only districts which should be logged as overlays are those that satisfy the definition of the overlay above.

Similarly, whether a district is mapped or not has no bearing on whether the district is an overlay. An overlay may be defined in the text but just not mapped yet.

That said, if a district does appear in a map, use a shortcut to determine whether it is an overlay. Graphically, mapped overlays are often depicted with a hatch (i.e., diagonal stripes), cross-hatch, or dots over an existing layer. For districts depicted with these or similar graphic conventions, log a "Yes" in the Overlay field.

b. Determine if a Planned Residential Development District is an Overlay

Some zoning districts are created specifically to allow planned residential developments (PRDs, discussed in Part IV.C.7.). For sake of simplicity, we call these "PRD-only" districts. PRD-only districts present special issues when it comes to overlays.

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In some zoning codes, PRD-only districts allow PRDs through special processes that change some, but not all, of the regulatory characteristics of the underlying zone. These PRD-only districts satisfy the definition of an overlay. Log a "Yes" in the Overlay field.

In other zoning codes, PRD-only districts trigger an override of all of the regulatory characteristics of the underlying zone. These PRDs-only districts are not overlays. Log a "No" in the Overlay field.

NOTE: You may find the term "floating" to refer to a zoning district, especially when dealing with planned residential developments. This term is meaningless. It has nothing to do with whether the district is an overlay. (It also has nothing to do with whether the district is mapped.) You have to read the regulations and review the zoning map to understand whether a so-called "floating" district is an overlay.

c. Revisit the Type of District Field

After you have identified your district as an overlay district, revisit the Type of District field. discussed in Part IV.B.1. In that field, you select Primarily Residential, Mixed with Residential, or Nonresidential. If the overlay district does not change this selection – that is, if it does not affect (reduce, expand, or otherwise change) the general uses allowed in an underlying base district – mark "Overlay Not Affecting Use" in the Type of District field. This will help ensure the **ATLAS MAP** accurately displays the use-related characteristics of the districts.

D. TRACK PROGRESS OF ZONING DISTRICTS

With the list of districts and their basic attributes properly inputted, the Editor keeps track of your progress on each. The home page for each jurisdiction has a list of all of the zoning districts and their status. Here is an example from the city of Palmetto Bay, Florida:

ZONING DISTRICTS

CREATE NEW ZONING DISTRICTS

All current zoning districts | FILTER | CLEAR

Show 50 entries Search:

Name	Type	Overlay	District Boundaries GIS Uploaded	Text Review Status	Created	Updated
AG, Agricultural	Mixed with Residential	No	Yes	Completed	Feb 1, 2024	Apr 5, 2024
B-1, Limited Business	Nonresidential	No	Yes	Completed	Feb 1, 2024	Mar 13, 2024
B-2, Business	Nonresidential	No	Yes	Completed	Feb 1, 2024	Mar 15, 2024
Downtown Palmetto Bay		No	Yes	In Progress	Mar 4, 2024	Mar 4, 2024
E-1, One Acre Estate Single Family	Primarily Residential	No	Yes	Completed	Feb 1, 2024	Feb 29, 2024
E-1C, 2.5 Acres Estate Single Family	Primarily Residential	No	Yes	Completed	Feb 1, 2024	Feb 29, 2024
E-2, Five Acres Estate Single Family	Primarily Residential	No	Yes	Completed	Feb 1, 2024	Feb 29, 2024
E-M, Estate Modified Single Family	Primarily Residential	No	Yes	Completed	Feb 1, 2024	Feb 29, 2024
E-S, Estate Suburban Single Family	Primarily Residential	No	Yes	Completed	Feb 1, 2024	Feb 29, 2024
FT&I, Franjo Triangle and U.S. 1 Island District		No	No	In Progress	Feb 12, 2024	Feb 12, 2024

This page in the Editor details whether the district boundaries for the GIS have been uploaded, the status of review for the districts, the date the district was created, and the date the district was updated. As Part IV.F.1. explains, the review status tells you whether a zoning analyst is working on the textual analysis for the district ("In Progress"), whether the team leader is reviewing it

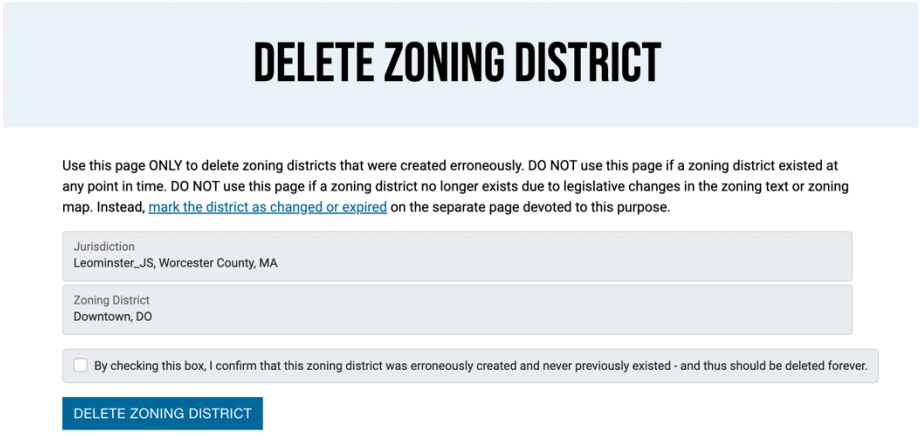
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("Review"), or whether the textual analysis is ready to publish ("Completed"). Check the review status for an entire jurisdiction per Part VI.B.2.

E. DELETE A ZONING DISTRICT

In rare circumstances, you will want to delete a zoning district altogether from the Editor. You should not delete a zoning district if the district's boundaries change (e.g., if the jurisdiction rezones to expand or shrink the district). If there is a zoning district boundary change, simply upload new zoning district boundaries. You should not delete a zoning district if the district's zoning changes. If there is a zoning code or map change affecting the district, simply upload or update new information per Part VI.B.2.a., using the **MARK CHANGED OR EXPIRED** button. We can keep track of such changes longitudinally for research purposes only if we maintain district-specific records.

You should only delete a zoning district if it never existed in the first place or if you have inadvertently added a duplicate jurisdiction. In either of these cases, you can click on the **DELETE** button at the bottom right of the zoning district home page. Pressing that button leads you to a new page:



This page requires you to check a box before the zoning district is deleted. Again, never use this except in extremely limited circumstances. If you have questions about whether the circumstances you face merit a zoning district deletion, please contact National Zoning Atlas staff.

That concludes Part III. The team leader and zoning code analysts should proceed to Part IV. Geospatial analysts may wish to skim Part IV; their substantive work will begin in Part V.

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IV. COLLECT & INPUT TEXTUAL DATA

This Part covers how zoning analysts must complete information for each zoning district home page in the Editor.

This Part begins by outlining the structure of zoning district home pages and explaining how a team leader can add new, custom fields for analysts to complete. It then explains how zoning code analysts must use the zoning text to classify zoning districts and catalog uses, lots, and structures. Finally, it describes the process of reviewing, verifying, and finalizing zoning district data.

A. INTRODUCTORY INSTRUCTIONS

Before you begin filling out the substantive information about the text, read these instructions, which explain the Zoning District page, discuss the "Alternatives," "Contextual," and "N/A" options, list common abbreviations and terms to be used in text-based answers, and note decimal conventions.

1. Get to Know the Zoning District Home Page

At the outset, zoning code analysts should familiarize themselves with the zoning district home page.

a. Overview

The header for each zoning district home page, like this header for the B-1a Business District in Ithaca, New York, contains the Abbreviated District Name and Full District Name:

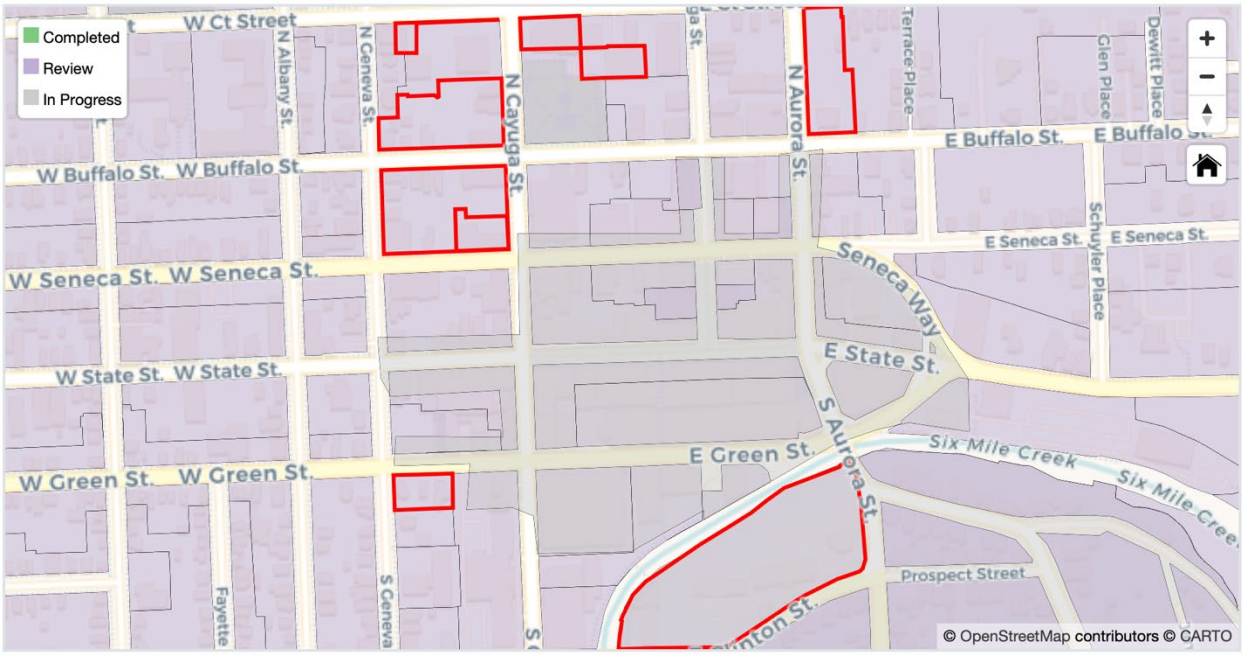


The header contains links allowing easy navigation to the different parts of the page.

The Zoning District Map section of the home page displays a map showing the zoning district boundaries. Geospatial analysts will upload these boundaries per Part V. In addition, the Zoning District Map section displays whether this district has been completed, is in review, or is in progress. The New York Zoning Atlas team uploaded geometry for the B-1a district, which is outlined in red and is not contiguous, as shown in the following map:

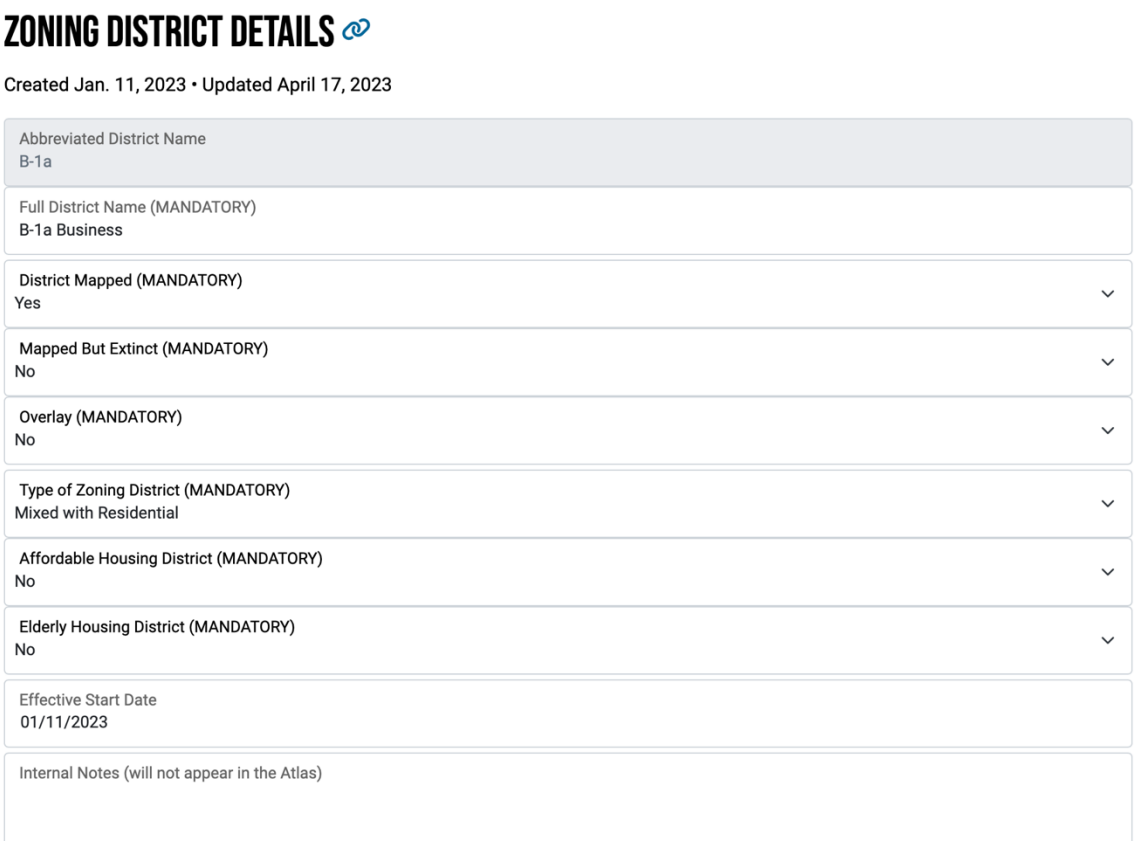
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ZONING DISTRICT MAP



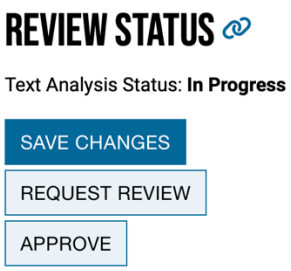
The Zoning District Details section of the home page contains the fields you will fill out using the instructions contained in this Part. The Abbreviated District Name is the only field that is grayed out. As Part III.A.1. explains, this field may not be changed after its initial entry, because it is the glue that connects the textual analysis and the geospatial analysis. Here's a snapshot of some of those fields for Ithaca's B-1a zoning district:

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Below the Zoning District Details section are different sections related to types of housing. Some fields are mandatory. You should fill these out first, as the mandatory fields enable other fields to appear (or not).

The Review Status section is the section which allows a zoning code analyst and a team leader to pass the text analysis back and forth, as described in Part IV.F.1.



The Help section allows you to send us an email, connects to this version of the *How To* guide, and directs you to our National Zoning Atlas Slack page, exclusively for active members of the research collaborative. At the very bottom is the **MARK CHANGED OR EXPIRED** button, discussed in Part VI.B.2.a.

One last thing! Regularly use the **SAVE CHANGES** button that appears in the upper left of the page, or the bottom of the page (in the Review Status section).

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b. Alternatives, Contextual, & N/A Options

In the Zoning Details section of each zoning district home page, there is a Units/Special field to the right of each field seeking your input. These fields provide zoning code analysts with the default unit of measurement for single numerical answers, but also enable analysts to account for complex and special cases that may provide property owners with alternative choices or that may require an understanding of the surrounding neighborhood context.

i. Default & Drop-Down Menu

By default, this field displays a specific unit of measurement, such as acres, feet, or percent.

If you click on the arrow in the Units/Special field, a drop-down menu appears. As an example of the drop-down menu, maximum building height shows the default of "Feet" (a standard measure for building height), followed by "Alternatives," "Contextual," and "N/A":



In most cases, your answer for any given field will be a single numerical answer. That's the case in the above example, which indicates that residential buildings in this particular district must be a maximum of 40 feet. As another example, a zoning code might provide that for every housing unit with 2+ bedrooms, the property owner must provide 2 parking spaces. In that case, an analyst would simply enter "2" in the Min. Parking Spaces per 2+ BR field and move on.

The remainder of this Section deals with situations where there is not a single numerical answer, or where there is no answer.

ii. Alternatives

The "Alternatives" option should be chosen from the Units/Special drop-down menu if the zoning code provides multiple alternatives, rather than a single numerical answer. If this option is chosen, you must explain the alternatives, using up to 75 characters in the blank explanatory field. In general, aim for the fewest number of words to describe the regulation using the abbreviations suggested in Part IV.A.1.c. Do not repeat the units in the text entry; the example above omits the phrase "parking spaces" in the text entry inserted in the Min. Parking Spaces per 2+BR field. If you must convert a number to conform with the default unit of measurement (e.g., converting square feet to acres for a Min. Lot Size field), do so prior to entering the data.

For example, consider a zoning code requiring 1 parking space for 2-3-bedroom units, 2 spaces for 4-5-bedroom units, and 1 additional parking space for each bedroom over 5. After selecting "Alternatives" for Min. Parking Spaces per 2+ BR, enter:

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Min. Parking Spaces per 2+ BR	Units / Special
1/2-3BR; 2/4-5BR; +1/add'l BR	Alternatives

As another example, where a code requires a minimum lot size of 1 acre normally, but 1.2 acres for elderly housing of the same type (1-family, 2-family), input "1; 1.2/elderly" (where the slash indicates "for") in the Min. Lot Size fields, after marking the field as "Alternatives."

As another example, a code might mandate a different setback on one street only. In that case, input (for example) "15; 10 on State Street," after marking the Front Setback field as "Alternatives."

As another example, a code might say affordable housing has a lower height limit (40 feet) than other housing (60 feet). In that case, input "60; 40/affordable."

As another example, a code might say that a front setback is 15 feet in a zoning district, but along certain roads it is 25 feet. Because this presents alternatives, mark it "Alternatives" rather than "Contextual," and input "15; 25 on X Street [& Y Street]."

In the rare instances where the requirements are very extensive and it is not possible to provide all the possible alternatives, provide a reference to the section of the requirement. When the New Hampshire Zoning Atlas team found 5 pages of minimum lot size instructions based on soil types, they selected "Alternatives" and in the Min. Lot Size field stated, "Varies per § X." A reference to the zoning code may also be in order in a form-based code, where a particular field varies by three or more building types.

iii. Contextual

The "Contextual" option should be chosen from the Units/Special drop-down menu if the zoning code regulations vary depending on the context, including the characteristics of the lot, the characteristics of neighboring lots, proximity to transit stations or other infrastructure, or physical features. If this option is chosen, you must communicate the nature of the contextual regulation, using up 75 characters in the blank explanatory field. In general, aim for the fewest number of words to describe the regulation using the abbreviations suggested in Part IV.A.1.c.

As an example, the zoning code might say that the building has to be within 10 feet of the building line of a neighboring building. After selecting "Contextual" for Front Setback, enter:

Front Setback	Units / Special
W/in 10' of building line of neighboring building	Contextual

More examples relevant to setbacks may illustrate this point. The zoning code might say that a front-yard setback must be the same as the average front-yard depth of the existing buildings within 200 feet of the lot. In that case, input "Average front-yard depth of buildings w/in 200.'" The code might say that the setback must be some number of feet for lots of a certain length and another number of feet for lots of a different length. In that case, input "20' if lot <100'; 25' if lot

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100'+." Or the code might give a percentage of the lot length required for the setback. In that case, input "10% of the lot length" in the relevant Setback field, after marking it "Contextual."

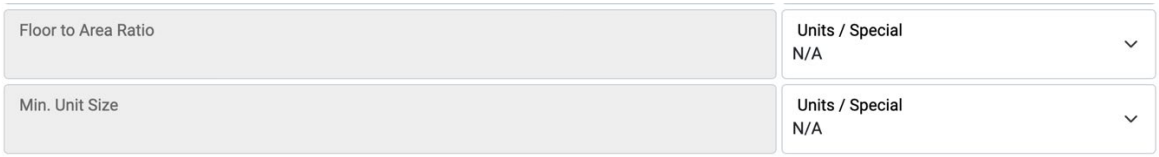
If the district has a specific number *and* an exception that offers context-specific regulations, then select "Contextual" from the Units/Special drop-down menu, and add the number followed by the words "& sometimes contextual." For example, a provision that says, "required front yards are 10' except along Morningside Avenue, where they must align with existing buildings," should be coded in the relevant Front Setback field: "10; or contextual on Morningside Avenue."

As another example, a zoning code might say, "heights are capped at 30' except along Morningside Avenue, where they must be within 5' of the heights of existing buildings on the block," should be coded in the relevant Max. Height field: "30; or contextual on Morningside Avenue."

In the rare instances where the requirements are very extensive and it is not possible to provide all the possibilities for a contextual approach (for example, if there are five streets along which heights or setbacks vary), refer to the section of the zoning code and enter: "Varies per § X."

iv. N/A

And finally, there is the "N/A" category. This is what analysts should enter if the zoning code is silent on a numerical measure. It grays out the field that would otherwise request a numerical value. See the following example for a district that does not have a floor-to-area ratio or a minimum unit size:



During the initial analysis of a zoning district, the N/A field allows an analyst to track what has been reviewed. We strongly suggest actively marking a field N/A after it's been reviewed, so that your colleagues and team leader can be sure you've actually reviewed that particular field and so that you remember where you left off.

NOTE: In case it is not clear from the above, if a zoning code is silent on a particular regulatory matter, do not type a "0" or a "N/A" in the field requesting a numerical value (e.g., the Floor to Area Ratio and Min. Unit Size fields on the left in the above image). This will clutter the backend database and will not be appropriately logged.

c. Common Abbreviations & Terms

To minimize clutter and ensure consistency, use the following abbreviations when inputting a text entry in an "Alternatives" or "Contextual" field:

- / for "per"
    - /BR for "per bedroom"

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    - /unit for “per unit”
- / for “for”
    - Example: “0.5/elderly” in a Min. Parking field to show a half parking space required for each elderly housing unit
- ‘ for “feet” when used with a number
    - Example: 60’ for “sixty feet”
- ° for “degree”
- > for “greater than”; ≥ for “greater than or equal to”
- < for “less than”; ≤ for “less than or equal to”
- & for “and”
- % for “percent”
- + for “plus”
    - Example: “1/2BR + 1/add’l BR” for a rule that owners provide one parking space for 2-bedroom units plus an additional parking space for each additional bedroom over 2-bedrooms
- + for “or more”
    - Example: 3+BR for “three or more bedrooms”
- § for “section” (such as the section of a zoning code)
- add’l for “additional”
- ADU for “accessory dwelling unit”
- BA for “bathroom”
- BR for “bedroom”
    - 0BR for “studio”
    - 1BR for “one bedroom”
    - 2BR for “two bedroom,” and so on
- ft for “foot” or “feet” when used without a number
    - Example: “30’ + 1' add'l ft in height/add'l ft in side yard over 10’” for a rule capping height at 30’ but allowing a one-foot height increase for every additional foot of side setback beyond 10’
- PRD for “planned residential developments” regardless of the text specific name for a PRD
- RV for “recreational vehicle”
- SF for “square feet”

Use the following terms when inputting a text entry in an “Alternatives” or “Contextual” field, regardless of the specific terms used in the jurisdiction’s zoning code text (thus avoiding reference to jurisdiction-specific terms and definitions):

- affordable for income-restricted housing, regardless of specific terms found in the text
- elderly for senior or adult housing, regardless of special terms in the text
- sewer for municipal or public sewer or wastewater systems that are not on site like septic, drainage fields etc.
    - Example: “1 w/sewer; 3 w/out” for a rule requiring a one-acre minimum lot size for housing served by municipal sewer, and three acres for those not so served

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- unit for dwelling units or housing units
- water for municipal or public water or for water sourced from off the property
    - Example: "0.5 w/water; 2 w/out" for a rule requiring a half-acre minimum lot for housing served by municipal water, and two acres for those not so served

Use a semicolon to differentiate between entries, as shown above. As another example, input "1/2BR; 2/3+BR" in the Min. Lot Size field for a rule requiring a 2-bedroom single-family home to have a one-acre minimum lot size, or a two-acre minimum if the home has three or more bedrooms.

d. Decimals

Carry over decimals in the zoning code text exactly as shown. In the rare circumstance where you must calculate decimals, do so to the hundredth place.

e. Capitalization & Punctuation

Normally, fields with open-ended entries which relate to lots and structures (e.g., minimum lot size or maximum height) require a number only. In cases involving Alternatives and Contextual entries, however, you will be inputting non-numerical text. When non-numerical text starts one of your entries, capitalize the first word. For example, capitalize "Varies" when starting a Contextual entry that begins with that word.

Do not use punctuation for standard answers (i.e., entries that are neither Alternatives nor Contextual entries). Use a semicolon(s) to separate alternative options presented in an Alternatives or Contextual entry. Put a period at the end of any Alternatives or Contextual entry, but stick to one sentence.

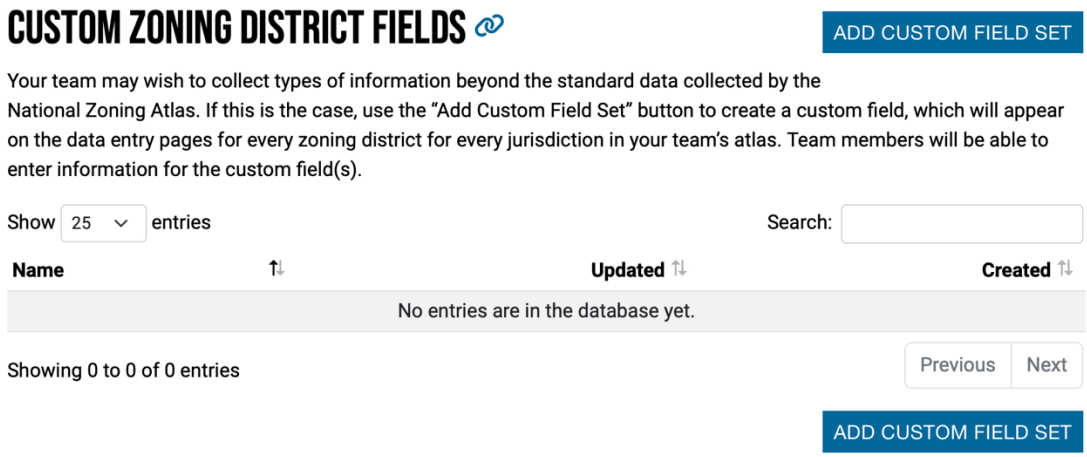
In the Visible Atlas Notes field, use (short) sentences, capitalize the first word of each sentence, and put a period at the end of any such sentence(s).

2. Add a Field Set & Field(s)

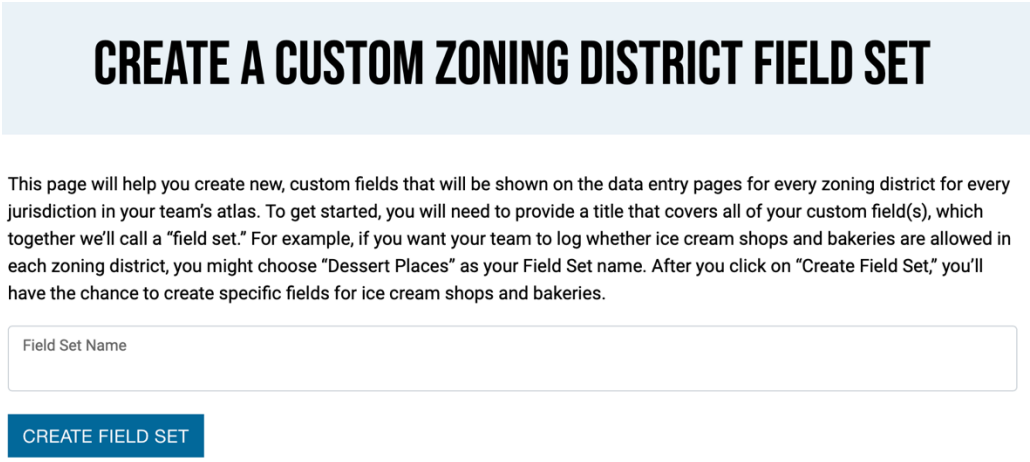
Some teams may wish to collect information not covered by the fields described above. Anyone on the team can create new, custom field(s) to all of the jurisdictions (and all of the zoning districts) covered by the team. The New Hampshire Zoning Atlas team, for example, collected information about 5+ units of housing, given special statutory provisions addressing those types of housing developments.

To add custom fields, a team leader must click on the **TEAMS** menu, then click on the name of the team. At the bottom of the team's page is the **CUSTOM ZONING DISTRICT FIELDS** menu:

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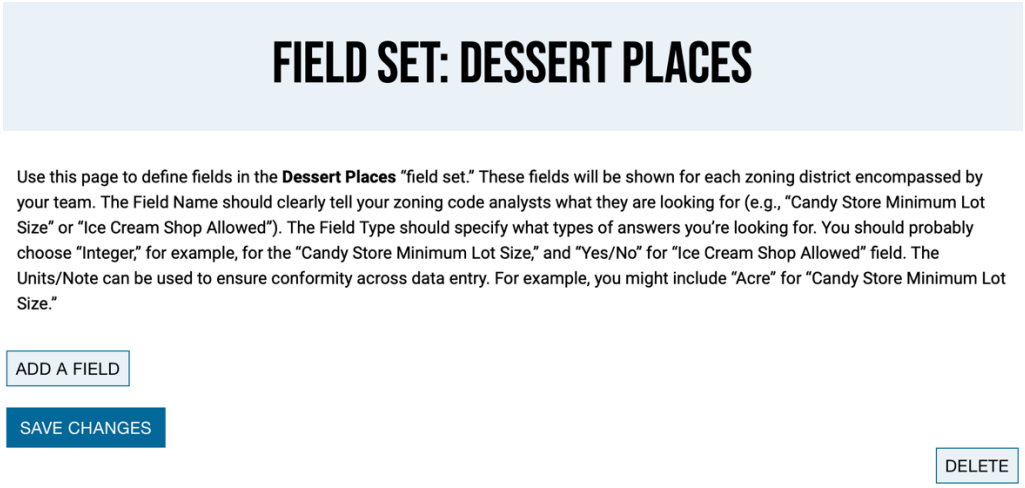


Click the **ADD CUSTOM FIELD SET** button, which takes you to this request for a Field Set Name:



A field set refers to the category for the field(s) for which you would like to collect information. For example, if you want your team to log whether ice cream shops and bakeries are allowed in each zoning district, you might choose "Dessert Places" as your Field Set Name. After you click the **CREATE FIELD SET** button, the next screen provides you with the ability to create specific fields for ice cream shops and bakeries:

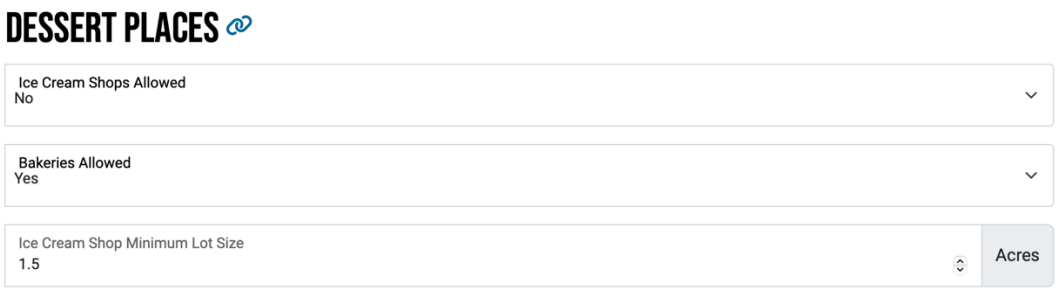
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You may now add individual fields within the field set by clicking the **ADD A FIELD** button for every new field for which you wish to collect information. The Field Type field allows you to select from among 5 types of answers that must be provide: text (an open-ended field), integer (a number without decimal places), decimal, yes/no (a drop-down menu), or date. In addition, you may add a unit of measurement or a note to analysts. Here, is an example showing 3 fields in the Dessert Places field set, two asking whether ice cream shops and bakeries are allowed, and one requiring analysts to input a minimum lot size in acres:



After you press the **SAVE CHANGES** button, these new fields will appear on every zoning district page. Here's what zoning analysts sees for every zoning district for the team that added the Dessert Places field set:



If you do add a custom field set, provide instructions for your zoning code analyst(s) as to how they should code the fields.

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These fields, once created, appear below the Planned Residential Development (PRD) section of each zoning district home page.

3. Special Treatment of Overlays

An overlay district, by definition, sits on top of a base district and overrides certain aspects of the regulations in a base district. Some overlay districts also overlap other overlay districts. If a district does not sit on top of a base district, it is not an overlay. (This is true even if the name of the district includes the word "overlay.") The inverse is true as well: even if the term overlay is not used, it may still be an overlay if it functions as and is mapped as an overlay. Such is the case with the "combining districts" of Austin, Texas, which are not named "overlays" but were classified as overlays by National Zoning Atlas staff.

The general rule for inputting zoning code information about overlays is to only complete fields if the overlay overrides the base district and is different from the base district. If a field is left blank, the base district's characteristics will be shown on the **ATLAS MAP**. If the field differs from the base district's equivalent field, then the overlay district will automatically override the base district on the **ATLAS MAP**.

If the overlay district overrides the base district by eliminating base district regulations in a field, enter a "0" (a zero) in the appropriate field. Please use this technique both for setbacks and other fields for which a zero is permissive, and for heights and other fields for which a zero might seem restrictive (because, for example, a zero entry in a height column might suggest a building cannot be built, even though in this case a zero captures the absence of a base district override). This is the only time we endorse inputting a "0" in any of the fields in the Editor. For example, let's say an overlay expressly eliminates all setback requirements for an underlying district. A "0" entry confirms that the numbers in the base district are overridden.

If the overlay changes the base district depending on which base district it overlays, then select "Alternatives" in the drop-down menu next to the field and input: "Varies per base district per § X."

4. Special Treatment of Planned Residential Developments

A planned residential development (PRD) may be permitted in a particular zoning district pursuant to the zoning code, but you may find very few rules associated with PRD approvals. You may be tempted to scour the Internet to search for information contained in individual master plans, property records, or zoning commission meeting minutes. Enter only information into the Editor that actually appears in the written text (or official map) of the zoning code. Do not include information about the approval of a specific PRD (or subsequent approvals of individual housing units within a PRD) unless that approval has been recorded in the zoning code.

Often, zoning codes treat PRD housing and non-PRD housing differently when it comes to various site development conditions – such as the density of units (for example, numbers of units per structure, or number of structures per lot), lot coverage and open space requirements, setbacks,

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and the provision of infrastructure. In a district permitting PRD and non-PRD housing but requiring different development rules for each, select the "Alternatives" entry, then in the text you enter, include the non-PRD entry, add a semicolon, then include the PRD entry next. For example, for a district that requires a minimum lot size of 1 acre for single-family housing and 10 acres for PRD housing containing single-family dwellings, log in 1-Family Min. Lot Size field "1; 10/PRD."

Part IV.C.7 describes how to deal with PRDs that include mobile and manufactured homes.

B. CLASSIFY ZONING DISTRICTS

As you delve into the text, locate the definitions section of the zoning code so you have it handy.

In this Section, you will fill out the following fields for every district:

- **Type of Zoning District**: One of the following three options, each indicating the general nature of the district: Primarily Residential, Mixed with Residential, or Nonresidential.
- **Most Common Nonresidential Use Permitted**: One of several options, required to be completed in Mixed with Residential and Nonresidential districts, of the most common category of nonresidential uses permitted in the district.
- **Affordable Housing District**: A binary Yes/No entry indicating whether the entire zoning district requires all of its housing to satisfy an affordable housing definition.
- **Elderly Housing District**: A binary Yes/No entry indicating whether the entire zoning district requires all of its housing to be occupied by elderly persons.

1. Type of Zoning District

Each zoning district allows or prohibits different specific uses. Here, we classify the districts based on the general uses they allow.

The Type of Zoning District field shows whether the district generally falls into one of three categories – Primarily Residential, Mixed with Residential, or Nonresidential – or fits into a fourth category, an Overlay Not Affecting Use. Distinguishing districts in this manner allows a more accurate assessment of the amount and nature of land devoted to residential and nonresidential uses.

NOTE: This classification is not clear-cut. It requires some judgment on your part as you weigh whether a particular district falls into these categories.

a. Where to Look

To assess whether residential uses are allowed in a particular district, locate in the zoning text:

- The "use table" (also sometimes called the "table of principal uses" or "table of allowed uses"), which is a chart listing the uses allowed in each district.
- If there is no use table, search for:

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- Chapters or sections of the code devoted to individual districts, which likely list allowed uses
- Descriptions of each district, sometimes found at the beginning of the zoning code, which describe the overall nature of each district in a few sentences

b. Principal & Accessory Housing Uses

To properly classify the districts, you must know that residential uses can be principal uses (i.e., the main use on a single zoning lot) or accessory uses (i.e. subordinate uses to a principal use on the lot). When you are evaluating whether a district is Primarily Residential or Nonresidential, you must only consider principal residential uses.

A jurisdiction permitting a single accessory dwelling unit per lot, and no other housing types, must be classified as Nonresidential. For example, a retail district that only allows a shopkeeper to have a single apartment for the shopkeeper over her store must be classified as Nonresidential; so must a factory that allows for a night watchman's apartment and no other residential uses. Notwithstanding this classification of principal-use housing, log the regulations on that accessory dwelling unit as instructed in Parts IV.C. through IV.E.

On the other hand, a retail district that allows for two apartments on the upper stories of a retail structure should be classified as Mixed with Residential, even if the apartments are limited in size to be smaller than the retail footprint. That is because two apartments are not an accessory use. Thus, where two or more housing units are allowed on the same lot as a non-housing use, such housing should be considered a principal use. In such a district, all categories related to 2-family (and 3-family or 4+-family, as applicable) housing should be filled out.

NOTE: Assisted living facilities, congregate housing, group dwellings, other institutional residential settings, hotels, and motels must not be counted as residential uses in the Zoning Atlas. While many people live in these settings, the settings have different social, economic, and environmental implications than the non-institutional housing that tends to be the subject of inquiries about zoning and its effects. By contrast, elderly housing (where individuals or households occupy units as tenants or owners, without daily institutionalized care) and active adult communities must be counted as residential uses. This point is repeated below.

c. Primarily Residential

A Primarily Residential designation should be given to districts allowing: housing only; or housing and other uses customarily allowed in residential areas, including religious institutions, schools, home offices (or "home-based occupational" uses), and accessory agricultural uses (e.g., home gardens). A district allowing housing with these other uses should still be classified as Primarily Residential.

While you must always verify allowed uses with the zoning text, one of the easiest ways to preliminarily classify a Primarily Residential district is its name:

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- Any district abbreviated R-1, R-2, R-3, R-4, R-5, R-6, R-15, R-20, R-40, or R-80 (where "R" stands for "Residential") is almost certainly a Primarily Residential district.
- Any district full name including the words "residence," "residential," "multifamily," "housing," "apartment," "mobile home," or "manufactured home" is likely, but not always, Primarily Residential. For example, a district called "Multifamily Residence-Retail" will not be Primarily Residential, even though it has the word "Residence" in the title.
- Any district full name including the words "agriculture" or "agricultural" is likely Primarily Residential, and certainly if "residence" or "residential" also appears.
- Any district full name including the words "planned residential," "planned residence," "planned unit development," or "active adult" is almost certainly Primarily Residential.
- Any district full name including the words "elderly" or "elderly housing" may be Primarily Residential if the type of housing permitted allows occupancy by tenants or owners, without nursing or other daily supervision.
- Any overlay district full name including the words "residence," "residential," "multifamily," "housing," "apartment," "active adult," "elderly," or "elderly housing" is almost certainly a Primarily Residential district.

We debated how to treat the vast parts of rural America with zoning allowing both farms and homes (usually one or two per lot). Usually, zoning allows the subdivision of large lots into much smaller residential lots. If there are development pressures in the area, then residential sprawl can take over farmland. With that scenario in mind, we decided to classify agricultural-residential zoning as Primarily Residential, even if the amount of land occupied by housing is not as large as the amount of land occupied by agricultural uses. We felt that given national trends for agricultural lands to be converted to residential land, it would be misleading to classify this type of zoning as zoning where housing is an accessory use. For the most part, these districts' hybrid purpose is obvious from the name of the district. On the other hand, some zoning districts do not allow for residential uses and are clearly for industrial agricultural purposes. These districts should be classified as Nonresidential, and the Most Common Nonresidential Use Permitted field should be marked "Agricultural-Industrial."

d. Mixed with Residential

A Mixed with Residential designation should be given to districts allowing nonresidential uses and housing, whether the housing is stand-alone housing (e.g., apartment buildings) or housing integrated with nonresidential uses (e.g., buildings with retail on the ground floor and residential above). Nonresidential uses likely to be found in districts also allowing residential uses include retail shops, restaurants, office or medical buildings, performance venues, as well as certain light industrial uses (warehouses, small scale manufacturing, breweries, etc.)

In assessing a district, remember to consider only principal uses, not accessory uses. If the district allows home occupations as an accessory use (e.g., where a resident can put an office or small shop on site) but does not allow stand-alone principal nonresidential uses, then that district is Primarily Residential, not Mixed with Residential.

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Again, while you must always verify allowed uses with the zoning text (and particularly the use table), you can get a sense of the likely classification based on the name of the district:

- Any district where the words "mixed use," "mixed-use," "village," "main street," "center," or "central business" appear in the full name is likely Mixed with Residential, but not always.
- Some districts with the words "commercial" or "industrial" in their titles also allow housing as a principal use, so do not dismiss these districts as Nonresidential.

A district allowing university, college, or institutional education uses which also allows dormitories built by the educational institution should not be classified as Mixed with Residential. The reason is that dorms are closed to the public and thus not truly a source of housing. If the same district allows apartments (including student apartments) owned by entities other than educational institutions (such as private developers), then it should be classified as Mixed with Residential.

NOTE: Overlay districts which are not limited as to where they may be located (e.g., not limited to only residential or only commercial uses or districts) should be marked as Mixed with Residential. An example of this is an overlay district called "Historic," which the code says can be overlaid over places with buildings older than a certain number of years or buildings within a designated historic district. Unless the code limits the application of the Historic overlay district to only residential or only nonresidential areas, you must assume that it may be overlain over any district type in the jurisdiction. Thus, you would input "Overlay Not Affecting Use" in the Type of Zoning District field. Part IV.C.1.c. provides instructions on how to treat the types of overlays that do not affect underlying housing characteristics.

e. Nonresidential

A Nonresidential designation should be given to districts: either prohibiting residential uses entirely; or allowing one accessory dwelling on the same lot as a nonresidential use and no other types of residential housing. Common examples of the latter include an apartment for a retailer to live above her shop or a caretaker apartment for a factory. Again, while you must always verify allowed uses with the zoning text (and particularly the use table), you can get a sense of the likely classification based on the name of the district:

- Any district full name including the words "open space," "recreational," or "conservation land" is almost certainly Nonresidential, unless it includes the words "development" or "subdivision," which would likely render it Primarily Residential.
- Any district full name including the words "airport," "office park," "public utility," "public service utility," "mining," or "cemetery" is almost certainly "Nonresidential."

Once you have classified a district as "Nonresidential," skip to Part IV.C.6 and focus only on whether the district allows accessory apartments.

NOTE: You could wait to fill out the Type of Zoning District field until after you have completed the analysis in Part IV.C. Filling out this field first, though, ensures familiarity with the zoning code

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of a particular jurisdiction, and may help you prioritize certain districts in the tasks ahead. If you fill out the Type of Zoning District field before the analysis in Part IV.C., do not be surprised to find a few corrections in the Type of Zoning District field are needed. That is OK!

f. Most Common Nonresidential Use Permitted

The Most Common Nonresidential Use Permitted field is intended to provide a user with the most common nonresidential use or uses allowed in Mixed with Residential and Nonresidential districts. Very often, the name or description of a district will help identify the appropriate category; other times, the "most common" use may be a judgment call. The below explanations of each category of nonresidential uses include illustrative examples. Unless otherwise specified, an illustrative example is sufficient alone, or in combination with other illustrative examples, to trigger a classification of the district at issue. The categories include:

- Agricultural-Industrial: Large-scale, commercial agricultural uses, whether indoors or outdoors, including farms (including marijuana production facilities), feed lots, animal processing, slaughterhouses, and related warehouse/storage; and excluding housing. If housing is permitted, classify the district as Primarily Residential.
- Cultural/Entertainment/Tourist: Uses involving people gathering or recreating, including restaurants, bars, nightclubs, performing arts centers, concert venues, sports stadiums, hotels/motels, commercialized boardwalks, large amusement or water-activity parks, breweries/distilleries/wineries open to the public, and adult uses. Districts with Cultural/Entertainment/Tourist uses and Retail/Service uses (such as shops and salons) should be logged as Mixed – Specified Commercial Uses. Districts primarily providing low-impact recreational opportunities on open space, beaches, or fields should be classified as Open Space/Light Recreation.
- Industrial: Heavy and light industrial uses, including manufacturing, industrial parks, open industrial uses, wholesale/distribution, warehouse/storage, car sales/service, Agricultural-Industrial uses, Mining/Extractive uses, Transportation uses, and Utility uses; excluding districts only allowing (respectively) agricultural-industrial, mining/extractive, transportation, or utility uses, which should be logged in their respective categories. Light industrial uses are defined differently in different jurisdictions, but generally include less-intensive, less-noxious, and smaller-scale manufacturing uses and wholesale/distribution facilities, where the products and activities are intended to serve consumers as opposed to serving other industrial entities.
- Institutional/Government: Uses operated by large institutions, whether public or private, including colleges and universities, government or military facilities, hospitals and other institutions of care, assisted living facilities and other institutional residential settings, correctional facilities, schools, and private clubs not open to the public.
- Mining/Extractive: Heavy industrial uses associated with extractive activities, including mines, quarries, oil fields, related warehouse/storage facilities, and related processing facilities. This category should be chosen if the only industrial uses allowed are mining/extractive uses.

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- Mixed – Any/All Nonresidential: A catch-all category that by definition encompasses all nonresidential uses. This should be rarely chosen, though it is sometimes seen in rural areas with short zoning codes.
- Mixed – Industrial-Commercial Uses: Some combination of Industrial (either heavy industrial alone, or heavy and light industrial) and commercial uses.
- Mixed – Specified Commercial Uses: Some combination of Cultural/Entertainment/ Tourist, light industrial (see definition above), Institutional/Government, Office, and Retail/Service, uses. This category should be used for those districts, including many downtown and mixed-use districts, allowing an array of uses.
- Office: Office and professional uses, including office buildings, office parks with minimal retail and no manufacturing facilities, and small-scale medical offices; excluding hospital office buildings and college/university office buildings, which should be logged as Institutional/Government; and excluding districts only allowing research/tech-related offices, which should be logged as Research/Tech.
- Open Space/Light Recreation: A variety of uses involving no or minimal disturbance to land or providing passive and some low-impact active recreation, including conservation land, floodplains, wetlands, parks, campgrounds, trails, nature centers, sports fields with minimal associated infrastructure, beaches, recreational vehicle (RV) parks not used for full-time residency, community gardens, farmers' markets, and small urban farms; excluding stadiums (or other sports facilities with significant buildings or structures), commercialized boardwalks, and large amusement or water-activity parks, which should be logged as Cultural/Entertainment/Tourist.
- Research/Tech: Uses related to research and technology, associated primarily with private companies and not government or academic institutions, including both laboratories and offices; excluding college/university facilities, which should be logged as Institutional/Government.
- Retail/Service: Uses exclusively serving consumer demand, including shops, salons, banks, tailors, marijuana dispensary/retail; and excluding districts only allowing car sales/service uses, which should be logged as Industrial. Districts with Retail/Service uses and Cultural/Entertainment/Tourist uses (such as restaurants) should be logged as Mixed – Specified Commercial Uses.
- Transportation: Uses (sometimes considered industrial uses) related to all forms of transportation, including airports, marinas, ports, rail yards, transit facilities, and gas stations. This category should be chosen if the only industrial uses allowed are transportation-related uses. Districts allowing both marinas and Retail/Service or restaurant uses should be logged Cultural/Entertainment/Tourist.
- Utilities: Heavy industrial uses associated with utility-company or public-service-company activities, including power plants, incinerators, recycling, sewage treatment, telecommunications, solar, or wind facilities. This category should be chosen if the only industrial uses allowed are utility uses.

The Editor does not allow users to log the most common nonresidential uses for Primarily Residential areas, even though, as noted above, it is possible – given zoning's history – that

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Primarily Residential districts may also allow nonresidential uses, such as religious institutions, home offices, and home gardens.

g. Overlay Not Affecting Use

In some cases, you may have an overlay which does not affect the uses available in a district. A historic district overlay, for example, may impose certain design parameters, such as height caps or setback requirements, but may not change the uses in the base district.

This selection is not for all overlays. Only select "Overlay Not Affecting Use" if the overlay does not affect any uses. If the overlay affects any uses (for example, if it affects only single-family housing), it cannot be marked as an "Overlay Not Affecting Use." Making this selection will help us sort out the way certain overlays display on the **ATLAS MAP**. The easiest way to think about the Type of District field is that it affects how the map appears. If the map should not appear any different with the overlay, use select "Overlay Not Affecting Use." Otherwise mark the Type of District field to show that piece of land should appear on the map.

2. Affordable Housing District

The Affordable Housing District field logs those Primarily Residential or Mixed with Residential districts that allow housing but require that all housing satisfy certain affordability criteria – usually that all or some units be subject to rent caps, deed restrictions, or occupancy limitations. Note that many smaller jurisdictions lack affordable housing provisions, so do not worry if you do not find these provisions in every jurisdiction.

NOTE: Log only affordable housing provisions found in a zoning code. If you come across provisions, such as inclusionary zoning mandates or density bonuses, that are found in other local or state laws, make a jurisdiction Visible Atlas Note per Part II.C.5.i.

a. Where to Look

To start identifying districts that should be logged "Yes" in the Affordable Housing District field, search for these terms in the Full District Name field:

- Affordable
- Opportunity
- Workforce
- Incentive Housing
- Specialty Housing
- Acre: A district created to allow affordable housing on a specific site may include the size of the plot in the title of the district (e.g., the "3.7 Acre Affordable Housing District").

Also search the districts logged in Part IV.B.3 as a "Yes" in the Elderly Housing District field, as elderly-only requirements sometimes also have affordable-only requirements.

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Of course, there are some districts whose name gives no indication as to what type of housing they allow. Carefully review these districts and modify the Affordable Housing District field as needed, in tandem with your efforts in Part IV.C.

For districts you have identified by name or any other means, once again locate the following components of the zoning text, if any, to confirm that affordable units are required:

- The "use table," "table of uses," or "table of allowed uses" (the chart listing of uses allowed in each district), which may have a column for affordable housing specifically
- Chapters or sections of the code devoted to individual districts, which likely lists allowed uses
- Descriptions of each district, sometimes found at the beginning of the zoning code, which describe the overall nature of each district in a few sentences

b. How to Log "Yes" and "No"

It is important to re-emphasize that the Affordable Housing District field signifies whether all housing developments in a particular district *must* meet certain affordability criteria. These criteria can require that a certain percentage of units in a project be affordable (e.g., 10% or 20%) or that all units in a project (100%) must be affordable. Both represent affordable housing districts so long as the affordability requirements apply to all developments in the district. Only such districts should be logged as a "Yes" in the Affordable Housing District field.

Certain districts are unlikely to be affordable-only districts. Likely "No" districts in the Affordable Housing District field are any districts called R-1, R-2, R-3, R-4, R-15, R-20, R-40, or R-80, and the "residential-agricultural" type districts – or really any district that covers a large area.

Some districts require affordability for only some types of housing. For example, some districts freely allow 1-family housing but limit multi-family housing to affordable housing. Such districts should be logged as a "No" in the Affordable Housing District field. In Part IV.C., you will have a chance to log affordable housing requirements for particular types of housing.

NOTE: Although mobile and manufactured homes are less expensive than other kinds of housing, they do not automatically count as affordable housing districts. Only log "Yes" in the Affordable Housing District field if the district has specific affordability criteria.

3. Elderly Housing District

The Elderly Housing District field logs those Primarily Residential or Mixed with Residential districts that allow housing but restrict occupancy of that housing to people over a certain age. Note that many smaller jurisdictions lack elderly housing provisions, so do not worry if you do not find these provisions in every jurisdiction. Whether the restriction starts at age 55, 65, or some other age, all such housing should be logged as "elderly" housing (with apologies to those in that age range who do not consider themselves "elderly"). This field proved important in the Connecticut Zoning Atlas because it illustrated how many communities restrict multi-family housing to elderly

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occupants. While elderly housing requirements benefit income-restricted and impoverished elderly people, they also exclude families with young children and younger adults.

a. Where to Look

To start identifying districts that should be logged "Yes" in the Elderly Housing District field, search for these terms in the Full District Name field:

- Elderly
- Age-Restricted
- Senior
- Active Adult: Note that searching for "adult" will likely lead to adult establishment zones with uses such as cabarets and adult bookstores.
- Older (e.g., "55 and Older District")
- Golf
- Planned: A planned residential/unit development district has maybe a one-in-five chance of being elderly-only.

Also search the districts for which you logged a "Yes" in the Affordable Housing District field, as affordable-only requirements sometimes also have elderly-only requirements. Of course, there are some districts whose name gives no indication as to what type of housing they allow. Pick up these districts and modify the Elderly Housing District field as needed, in tandem with your efforts in Part IV.C.

For districts you have identified by name or any other means, once again locate the following components of the zoning text, if any, to determine if housing is limited to occupancy by older adults:

- The "use table" (the chart listing of uses allowed in each district), which may have a column for elderly housing specifically
- Chapters or sections of the code devoted to individual districts, which likely list allowed uses
- Descriptions of each district, sometimes found at the beginning of the zoning code, which describe the overall nature of each district in 2-4 sentences

b. How to Log "Yes" and "No"

It is important to re-emphasize that the Elderly Housing District field signifies whether all housing developments in a particular district *must* be occupied by older adults. Only such districts should be logged as a "Yes" in the Elderly Housing District field.

Certain districts are unlikely to be elderly-only districts. Likely "No" districts in the Elderly Housing District field are any districts called R-1, R-2, R-3, R-4, R-15, R-20, R-40, or R-80, any "residential-agricultural" type districts, and any district that covers a large area.

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Some districts require elderly occupancy for only some types of housing. For example, some districts freely allow 1-family housing but limit multi-family housing to elderly occupants. Such districts should be logged as a "No" in the Elderly Housing District field. In Part IV.C., you will have a chance to log elderly housing requirements for particular types of housing.

NOTE: As noted above, assisted living facilities, congregate housing, group dwellings, other institutional residential settings, hotels, and motels must not be counted as residential uses in your atlas. Thus, they should not be considered in whether a district requires elderly housing only. Generally, these facilities are multi-unit, multi-occupant institutionalized facilities with nursing or other daily supervision. In some cases, assisted living facilities are defined to also include non-institutionalized living (where individuals or households occupy units as tenants or owners, without daily institutionalized care). If all non-institutionalized housing in assisted living facilities is required to be elderly, then log the district as a "Yes" in the Elderly Housing District field.

NOTE: A small number of jurisdictions may require housing in a district to be *either* affordable *or* elderly housing. Mark a "Yes" in the Affordable Housing District and Elderly Housing District field and add a note, "Housing must be either affordable or elderly."

C. CATALOG REGULATIONS ON USES

By now, you have listed the districts and then classified them. This Section now turns to the way zoning codes treat different housing uses and regulate occupancy of particular types of housing uses. It covers four principal uses as well as affordable housing, accessory dwelling units, and planned residential developments (PRDs).

Four principal uses relate to the number of units permitted on the lot: 1-family, 2-family, 3-family, and 4-or-more-family (written as "4+") housing. Logging the treatment of each of these principal uses separately is important because regulations vary significantly across these categories. For example, the Connecticut Zoning Atlas showed that over a quarter of the land in the state allows 2-family housing as of right (i.e., without a public hearing, and after just a staff administrative review), while only about 2% of land allows 4+-family housing as of right. There were similarly dramatic differences between the regulation of 2-family and 3-family housing. Including 2-family, 3-family, and 4+-family housing in a general multi-family housing category would blur these distinctions and make further analysis less meaningful. For these reasons, try to avoid, where possible, the term "multifamily" or "multi-family," such as in the Visible Atlas Notes field, as this term blurs housing categories in a problematic way.

The fifth principal use is affordable housing, irrespective of the number of units permitted per lot. In other words, the affordable housing category is intended to encompass all 1-family, 2-family, 3-family, and 4+-family housing that happens to be designated affordable. It is intended to capture situations where affordable housing is regulated differently from housing that is not designated affordable. This can be revealing. For example, the Connecticut Zoning Atlas revealed that sometimes affordable housing requirements are more restrictive than requirements for housing that is not designated affordable.

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This Section also covers housing as an accessory use, in the form of accessory dwelling units (or ADUs). An ADU is a housing unit located on the same lot as a principal use and required to be smaller than the principal use. Most often, the principal use is 1-family housing. But, as noted below, some jurisdictions permit housing as an accessory to industrial, commercial, or retail uses.

Finally, this Section covers planned residential developments, which allow for many residential units, often in different buildings, to be built on a single large lot.

Your entries for the 1-Family, 2-Family, 3-Family, 4+-Family, Accessory Dwelling Unit (ADU), and Planned Residential Development (PRD) Treatment fields use conditional logic to turn "on" and "off" other fields. For example, if you mark 2-Family Treatment as "Prohibited," the Editor will hide from view all of the other related fields (such as setback, height, and parking requirement fields) for 2-Family housing.

NOTE: You may initially mark a Treatment field as "Allowed/Conditional" or "Public Hearing," and fill out related fields (such as setback, height, and parking requirement fields), but then later realize that the Treatment field should have been marked "Prohibited" because the type of housing was not actually allowed. If you mark a field as "Prohibited," you will get a pop-up before the Editor will erase your data.

In this Section, you will fill out the following fields:

- **1-Family Treatment**: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.
- **2-Family Treatment**:
  - 2-Family Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.
  - Affordable Housing Only: A binary Yes/No entry indicating whether all 2-family housing must be designated affordable.
  - Elderly Housing Only: A binary Yes/No entry indicating whether all 2-family housing must be occupied by elderly persons.
- **3-Family Treatment**:
  - 3-Family Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.
  - Affordable Housing Only: A binary Yes/No entry indicating whether all 3-family housing must be designated affordable.
  - Elderly Housing Only: A binary Yes/No entry indicating whether all 3-family housing must be occupied by elderly persons.
- **4+-Family Treatment**:
  - 4+-Family Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.
  - Affordable Housing Only: A binary Yes/No entry indicating whether all 4+-family housing must be designated affordable.
  - Elderly Housing Only: A binary Yes/No entry indicating whether all 4+-family housing must be occupied by elderly persons.

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- **Affordable Housing (AH)**:
  - Affordable Housing (AH) Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Not Mentioned.
  - Definition: A quote containing the jurisdiction's definition of affordable housing.
  - Elderly Housing Only: A binary Yes/No entry indicating whether affordable housing must be occupied by elderly persons.
- **Accessory Dwelling Unit (ADU) Treatment**:
  - Accessory Dwelling Unit (ADU) Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.
  - Employee or Family Occupancy Required: A binary Yes/No entry indicating whether an ADU must be occupied by an employee or family member of the occupant of the principal unit.
  - Renter Occupancy Prohibited: A binary Yes/No entry indicating whether an ADU may be occupied by a homerenter.
  - Owner Occupancy Required: A binary Yes/No entry indicating whether the principal unit or the ADU must be occupied by the owner of the lot.
  - Elderly Housing Only: A binary Yes/No entry indicating whether ADUs must be occupied by elderly persons.
- **Planned Residential Development (PRD) Treatment**:
  - Planned Residential Development (PRD) Treatment: One of the following four options, each indicating the nature of the permission: Allowed/Conditional, Special Permit, Prohibited, or Not Mentioned.
  - Mobile or Manufactured Home Park: A binary Yes/No entry indicating whether mobile or manufactured homes are an allowed housing type within any PRD allowed in this district.

NOTE: "Family" means unit of housing. It may be worth noting when the word "family" is defined in zoning. Many zoning codes have unreasonably strict definitions of what constitutes a family. For more information on this and why it is problematic, see this "Zoning for Families" article.

Of these 20 fields, there are 7 that you must fill out *for every district*: 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, 4+-Family Treatment, Affordable Housing (AH), Accessory Dwelling Unit (ADU) Treatment, and Planned Residential (PRD) Treatment. These 7 bring the total mandatory fields for every district to 16. They are marked "(MANDATORY)." Fields that are *not* marked "(MANDATORY)" should only be filled in if there is a value to include. Otherwise, leave them blank and select "N/A" from the Unit/Special field to track that the field was reviewed.

You will also learn about these two fields, similar to the two fields used for jurisdictions:

- **Internal Notes**: A text field for analysts and team leaders only, intended to facilitate discussion and log decisions about interpretation made as the district is created and reviewed.

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- **Visible Atlas Notes**: A text field which explains or qualifies an entry in another field, using the fewest words possible to communicate the point, and which will be displayed on the **ATLAS MAP** when a public user hovers over the district.

1. Principal Use: 1-Family

By far the most common type of residential housing is 1-family housing. Is there any jurisdiction in the country that declines to allow 1-family housing somewhere? Even in places that have "eliminated 1-family zoning" (e.g., Portland and Minneapolis), 1-family housing remains an allowed use.

This Subsection focuses on the 1-Family Treatment field, but the explanations given in this Subsection can be referenced when filling out the other fields with the word "Treatment" in their titles.

a. Defining 1-Family Housing

1-family housing means a building, including a mobile home or a manufactured home, with only one dwelling unit. 1-family zoning permits one such building on each lot.

The following phrases typically denote 1-family housing (with or without hyphens):

- Single-family
- One- or 1-family
- Mobile
- Manufactured

A 1-family unit need not be fully detached (i.e., freestanding and not attached to another unit) to count as 1-family housing for purposes of the atlas. The key criteria for logging 1-family housing is whether a single unit of housing is permitted on an individual lot in that district.

A townhouse or rowhouse type of building may be counted as 1-family housing where each townhouse or rowhouse is one unit each and the lot lines are the same as the "party wall" between townhouses and rowhouses. Be careful about defined terms: In denser urban areas, "townhouses" may only be a description of a building form and may optionally permit multi-family occupancy, while in lower density areas they may mean both a specific building form and single family attached homes. The definitions section may help understand how many units can be allowed in townhouse or rowhouse buildings. When it is unclear if a 1-unit townhouse or 1-unit rowhouse can be constructed on an individual lot, versus more units per lot, be sure to fill out 2-Family, 3-Family, and 4-Family Treatment fields with townhouses in mind.

A mobile or manufactured home is usually permitted as part of a larger park with a single owner, a circumstance covered in Planned Residential Development (PRD) Treatment. However, mobile and manufactured homes should be included as 1-family housing when they are allowed on individual lots.

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A single unit of housing located on an upper story only generally does not count as 1-family housing as a principal use, but rather accessory housing discussed in Part IV.C.6.

NOTE: What about houseboats? So we don't distort calculations related to the amount of "land" allowing single-family housing, we exclude waterways allowing houseboats from zoned land, and we do not count houseboats as 1-family housing. However, houseboats should be logged as follows. If houseboats are allowed in only one district in the jurisdiction, input this Visible Atlas Note for the relevant district: "Houseboats are allowed, but water but will not appear as zoned land or figure in the online atlas layers/filters." If houseboats are allowed in multiple districts, input this Visible Atlas Note for the relevant jurisdiction: "Houseboats are allowed in districts X/Y/Z, but water but will not appear as zoned land or figure in the online atlas layers/filters."

Now that you know how we define 1-family housing, you can start to log its treatment.

b. Where to Look

To fill out the 1-Family Treatment field, you must locate one or more of the following parts of the zoning code:

- The "use table," "table of uses," or "table of allowed uses" (the chart listing uses allowed in each district)
- A chapter or section of the code containing in its title the words: "Uses permitted," "Permitted uses," "Use regulations," "Residential use," "Residence zones," "Residential zones," or "Residential districts"
- The chapter or section of the code devoted to the district, which likely lists allowed uses

One of these parts has the information necessary to complete the 1-Family Treatment field. Search them using the phrases suggested in the preceding Subsection.

c. How to Log the Four Treatment Options

In the 1-Family Treatment field (and every field with the word "Treatment" in its title), you will input one of four options indicating the nature of the permission for such uses: Allowed/Conditional, Public Hearing, Prohibited, or Overlay. Hybrid cases are discussed below and covered in the Notes fields.

An "Allowed/Conditional" entry means that 1-family housing is allowed without a public hearing. In other words, permission to build this type of housing is only subject to review by town planning staff. During this review, staff may or may not be required to apply explicit criteria laid out in the zoning code. These reviews are sometimes called "as of right" or "by right" processes, although neither of those phrases is typically used in a zoning code. Rather, the most common terms used in a zoning code to designate Allowed/Conditional housing is simply "permitted" or "allowed."

A "Public Hearing" entry means that 1-family housing use is allowed, subject to a public hearing. Specifically, these hearings are meetings held in public, where other members of the public may

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provide comments, and where there is some discretion in decision-making. The public hearing might be held by a city council, a planning commission, a zoning commission, or any other public body. Public hearings for the purpose of the Atlas are not non-discretionary review procedures, such as site plan reviews, which often legally require approval after a review, by staff or a commission, yielding a conclusion that site plan provisions of the zoning code are satisfied without a public hearing.

Logging public hearing requirements is important because when housing is subject to public hearings, the results tend to be different, and usually more contentious, than when housing undergoes simple "Allowed/Conditional" processes. Unfortunately, use tables and zoning code text rarely indicate clearly whether a public hearing is required. Instead, codes employ terms like "conditional use," "special exception," or "special permit." To understand whether these require a hearing, you must find a definitional or administrative chapter or section of the zoning code. This section states the process required for each of these approvals. To find it, search for the name of the permit type (e.g., "conditional use"), or search for the terms "public hearing" or "hearing." Make a note about what the permit type means in each jurisdiction for use in the other fields with the word "Treatment" in their titles.

NOTE: Knowing your state's zoning rules might help you fill out this field more quickly. Some states may mandate public hearings for certain permit types; such is the case in Connecticut, which mandates public hearings for special permits, but which allows individual jurisdictions to determine whether conditional uses and special exceptions require a public hearing. As another example, New York's state enabling act allows, but does not require, local governments to hold public hearings on site plan reviews.

NOTE: If 1-family housing is only allowed under certain conditions that may be rare, then you will have to use Visible Atlas Notes. For example, if housing is allowed only if residents are elderly, then mark 1-family housing as "Allowed/Conditional" or "Public Hearing," as applicable. In the Visible Atlas Notes field, input this note (denoting the housing treatment by including the number-of-family type): "1-Family housing allowed only if elderly." If other, non-elderly housing is allowed in the district, mark "No" in the Elderly Housing District field, because that field should only be marked "Yes" if all housing in the district is elderly-only. As a second example, if housing is allowed only if the building was built before a certain year, then mark 1-family housing as "Allowed/Conditional" or "Public Hearing," as applicable. In the Visible Atlas Notes field, input this note: "1-Family housing allowed only if building constructed before 1953." As a third example, the Seattle zoning code allows residential uses as primary uses in the industrial districts only if they are in landmarked buildings or buildings within a landmark district. In the Visible Atlas Notes field for the industrial district, we input: "1+-family allowed only w/in a landmark structure or landmark district."

NOTE: In some jurisdictions, public hearings may be "optional." Mark these as "Allowed/Conditional," but add the following note in the district's Visible Atlas Notes field: "Public hearings may be held at the discretion of the decision-making body."

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NOTE: Planned residential developments (PRDs) have special rules, as explained further in Part IV.C.7. Consider PRDs that include mobile and manufactured housing, which are detached dwellings for individual families that should be considered 1-family homes. When a district allows mobile or manufactured home parks but not conventional housing, then your entry for 1-family homes should be identical to your entry for Planned Residential Development (PRD) Treatment (which, as noted below, covers mobile and manufactured home parks). In other words, when the only 1-family homes that are allowed in the district must be a part of a mobile or manufactured home park with multiple homes on a single parcel, put "Allowed/Conditional" if a park is permitted as of right, and "Public Hearing" if a park is permitted pursuant to a public hearing. When a district allows both conventional 1-family housing and mobile or manufactured homes, then input into the 1-Family Treatment field the way that the conventional 1-family housing is treated, and make a note in the Visible Atlas Notes field that says, "[Mobile/Manufactured] housing also permitted as of right/after a public hearing]."

A "Prohibited" entry means that 1-family housing is prohibited. In codes with a use table, figuring out which districts prohibit 1-family housing is relatively easy: the field shows an "X" or is left blank in that location. In codes without a use table, manually search for the chapter or section of the code relevant to residential uses or the specific district, using the phrases identified above (or more simply "dwelling" or "housing"). It is hard to search for absence. The general rule of thumb of zoning interpretation is that if a use is not expressly mentioned, it is not allowed. Instead, you will look for the omission of 1-family housing from a list of allowed uses.

NOTE: The treatment of housing on an upper story (above a nonresidential area) deserves special mention here:

- If stand-alone 1-family housing is not allowed in the district, then the 1-Family Treatment field should say "Prohibited."
- If one unit of housing is only allowed over shops or some other nonresidential use, then the 1-Family Treatment field should say "Prohibited" and the Accessory Dwelling Unit (ADU) Treatment field should say "Allowed/Conditional" or "Public Hearing," whichever is applicable.
- If more than one unit of housing (i.e., 2 or more units) is allowed, but is only allowed on the upper story over shops or some other nonresidential use, then mark "Prohibited" in the 1-Family Treatment field; and "Allowed/Conditional" or "Public Hearing," whichever is applicable, in the 2-Family, 3-Family, and 4+ Family Treatment fields.
- If an ambiguous amount of housing (that is, if the code simply allows "housing" on upper stories) is allowed, but is only allowed on the upper story over shops or some other nonresidential use, then mark "Prohibited" in the 1-Family Treatment field; "Allowed/Conditional" or "Public Hearing," whichever is applicable, in the 2-Family, 3-Family, and 4+-Family Treatment fields; and "Allowed/Conditional" or "Public Hearing," whichever is applicable, in the Accessory Dwelling Unit (ADU) Treatment field.

NOTE: It is very possible that you will find regulations in a zoning district for a treatment you thought was prohibited or not mentioned. It is worth carefully reviewing the regulations and

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consulting with your team leader about how to interpret this discrepancy. Zoning codes are created by humans, who do make mistakes occasionally.

An Overlay" entry means that 1-family housing is treated the same way in the base district and the overlay district. This entry in the 1-Family Treatment field is only available for those districts marked as a "Yes" in the Zoning District's Overlay field. Take these steps to determine if an "Overlay" entry is appropriate for the 1-Family Treatment field:

1. Confirm the Overlay field is marked "Yes."
2. Identify the base district(s) upon which the overlay district can be placed.
3. Find the use table or the chapter or section of the code devoted to the overlay district to determine allowed uses.
4. Determine whether there is a difference between permissions for 1-family housing in the overlay district and any base district(s) upon which it can be laid.

Your determination in the fourth step will tell you how to mark the district. If there is no difference in the way 1-family housing is treated in the base and overlay districts, or if the overlay is silent on uses, then mark the field "Overlay." This is common for flood zones, design districts, or historic districts that affect construction standards or design but not the underlying uses, or airport zones that impose only height or noise attenuation regulations. If the allowance for 1-family housing for the overlay district is always different from the allowance of housing under any base district, then do not mark "Overlay" in the 1-Family Treatment field. Instead, mark "Allowed/Conditional," "Public Hearing," or "Prohibited" as appropriate given the overlay district's requirements. This is common in mixed use, downtown, transit-oriented, or PRD overlay districts that may allow (sometimes via public hearing) denser housing (e.g. 4+-family) than the base district would otherwise allow, or in environmentally sensitive area overlays that may prohibit housing. Only fill out the subsequent fields on uses, lots, and structures where the overlay overrides the base district. If the field is left blank, the base district's characteristics will prevail on the **ATLAS MAP**.

If an overlay district can be laid atop both residential and nonresidential base districts and only changes the permissions from Allowed/Conditional to Public Hearing (or vice versa), then it should be marked as an "Overlay" in all Treatment fields with a Visible Atlas Note for the district stating, "This district changes base district permissions to [public hearing or staff review, as applicable]."

If an overlay does not affect underlying uses, then select "Overlay Not Affecting Use" in the Type of Zoning District field.

NOTE: What do you do if some 1-family housing is allowed by right, but other 1-family housing requires a public hearing? You should log just one entry signifying what you think is the most common permit type in the 1-Family Treatment field but make a one-sentence note in the Visible Atlas Notes field about the alternate permit type. For example, let's say you find a district that requires public hearings for 1-family homes if they are located in wetland areas. In that case, log "Allowed/Conditional" in the 1-Family Treatment field and in the Visible Atlas Notes field, put: "Public hearing required for 1-family housing in wetlands." Here's an alternate scenario: The zoning code says that the zoning commission may, at its discretion, hold a public hearing for a

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certain kind of housing. In that case, log "Allowed/Conditional" but make a one-sentence note in the Visible Atlas Notes field: "Public hearing may be required for X-family housing." Because the Visible Atlas Notes field may include notes about several different fields, be clear about the applicability of your one-sentence note. Do not include the term "multifamily" or "multi-family" in the Visible Atlas Notes field, as this term blurs housing categories in a problematic way. Instead use "1-family," "2-family," "3-family," "4+-family," or "X+-family."

2. Principal Use: 2-Family

In this Subsection, you will complete 3 fields related to 2-family housing: 2-Family Treatment, Affordable Housing Only, and Elderly Housing Only.

a. Defining 2-Family Housing

2-family housing means two dwelling units, whether in one building or two separate buildings. True 2-family zoning allows for two dwellings of equal size (or is simply silent as to size). Zoning that allows for 1-family housing with a smaller unit should be treated as 1-family zoning with an accessory dwelling, which is considered in Part IV.C.6.

The following phrases typically denote 2-family housing (with or without hyphens):

- Two-family dwelling
- Two-family housing
- Two-family home
- Duplex
- No more than two units

If you do not see any of the above terms, search for the terms "multi-family," "multi family," "multifamily," or "apartment." To understand what those terms mean, go to the definition section of the zoning code, or find some other location where the term is defined. In the absence of a definition identifying the minimum number of units included in such terms, assume it encompasses 2-family housing. Where a zoning code permits 1-family housing (or any other use or type of building) to be converted to 2-family housing, treat 2-family housing as permitted (and log it as Allowed/Conditional, Public Hearing, or Overlay, as appropriate).

You should now be able to identify the term(s) used by the zoning text to mean 2-family housing.

b. Where to Look

One of the parts of the zoning text identified in Part IV.C.1.b. has the information necessary to complete the 2-Family Treatment field. Search the part(s) using the term(s) you know to connote 2-family housing.

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c. How to Log the Four Treatment Options

Proceed with the analysis in Part IV.C.1.c and input one of four options indicating the nature of the permission for such uses: Allowed/Conditional, Public Hearing, Prohibited, or Overlay.

NOTE: Some commercial districts may require a retail shop or other commercial use in the building, while also allowing residential uses within the same development. In those cases, 1-family housing is not allowed as a stand-alone use, so it should be marked Prohibited. However, 2-or-more-family housing may be allowed and should be given the appropriate designation in the Treatment field (Allowed/Conditional or Public Hearing). Unless the language states otherwise, ADUs should be considered permitted, and the ADU Treatment field should also be given the appropriate designation. Add a Visible Atlas Note for the district stating that "Residential uses are allowed only in conjunction with a commercial use."

NOTE: A district that includes only single-family housing may allow for the creation of a planned residential development (PRD) with 2-, 3-, and/or 4+-family housing through a PRD-specific approval process. If 2-, 3-, and/or 4-family housing is only allowed through a PRD, mark the applicable 2-, 3-, and/or 4+-Family Treatment fields as "Prohibited." There are two primary reasons for this suggestion: first, PRDs tend to be rare, so logging 2/3/4-family housing as permitted across the entire district would be misleading; second, PRDs tend to be open-ended in terms of area and dimensional regulation, so subsequent 2-, 3-, and/or 4+-Family Treatment fields on area and dimension may be devoid of information. That said, if an individual PRD has actually been created, and if you have a copy of the regulations governing development in that PRD, and if it overrides all of the regulations in the underlying district, you should create a new zoning district for a PRD district, marking the specific type of housing permitted in the PRD via the 1-, 2-, 3-, and/or 4-Family Treatment fields, filling in any dimensional fields, marking a "No" in the Overlay field, and choosing the applicable permission (Allowed/Conditional or Public Hearing) in the Planned Residential Development (PRD) Treatment field. Review carefully the notes in Part III.B regarding overlay districts and Part IV.C.7. regarding PRDs.

d. How to Log Affordable & Elderly Treatment

The Affordable Housing Only and Elderly Housing Only fields should be marked either "Yes" or "No" if the 2-Family Treatment is Allowed/Conditional or Public Hearing. If 2-Family Treatment is Prohibited or Overlay, or if the Type of Zoning District field is marked "Nonresidential," these fields are hidden and left blank.

The Affordable Housing Only field identifies (with a "Yes" entry) districts that require that all 2-family housing satisfy certain affordability criteria. Mark "Yes" even if only one of the two duplex units must meet those affordability criteria, as may be the case with so-called inclusionary zoning mandates that require a certain percentage of units to be affordable to, or occupied by, households below a certain income, allowing the other units to remain market-rate. If the Affordable Housing Only field for the Zoning District is marked "Yes," then the 2-Family Affordable Housing Only field should be marked "Yes" too. If the Zoning District Affordable Housing Only field is marked "No," then assess whether the district requires 2-family housing to satisfy affordability

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criteria, using techniques similar to those outlined in Part IV.B.2. The Connecticut Zoning Atlas found at least 10 districts that only allowed 2-family housing if it were owned or operated by the town or a nonprofit developer.

The Elderly Housing Only field identifies (with a "Yes" entry) districts that require that all 2-family housing be occupied by people over a certain age. If the Zoning District's Elderly Housing Only field is marked "Yes," then the 2-Family Elderly Housing Only field should be marked "Yes" too. If the Zoning District's Elderly Housing Only field is marked "No," then assess whether the district restricts 2-family housing to elderly occupancy, using techniques similar to those outlined in Part IV.B.3.

3. Principal Use: 3-Family

In this Subsection, you will complete 3 fields related to 3-family housing: 3-Family Treatment, Affordable Housing Only, and Elderly Housing Only.

a. Defining 3-Family Housing

3-family housing means 3 dwelling units, whether in one building or separate buildings. 3-family zoning permits 3 dwelling units on a lot.

The following phrases typically denote 3-family housing (with or without hyphens):

- Three-family dwelling
- Three-family housing
- Three -family home
- Triplex
- No more than three units

If you do not see any of the above terms, search for the terms "multi-family," "multi family," "multifamily," or "apartment." To understand what those terms mean, go to the definition section of the zoning code, or find some other location where the term is defined. In the absence of a definition identifying the minimum number of units included in such terms, assume it encompasses 3-family housing. Where a zoning code permits 1-family housing (or any other use or type of building) to be converted to 3-family housing, treat 3-family housing as permitted (and log it as "Allowed/Conditional," "Public Hearing," or "Overlay," as appropriate).

You should now be able to identify the term(s) used by the zoning text to mean 3-family housing.

b. Where to Look

One of the parts of the zoning text identified in Part IV.C.1.b has the information necessary to complete the 3-Family Treatment field. Search the part(s) using the term(s) you know to connote 3-family housing.

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c. How to Log the Four Treatment Options

Proceed with the analysis in Part IV.C.1.c and input one of four options indicating the nature of the permission for such uses: "Allowed/Conditional," "Public Hearing," "Prohibited," or "Overlay." If you have questions about planned residential developments, also review the Note on planned residential developments in Part IV.C.2.c.

d. How to Log Affordable & Elderly Treatment

The Affordable Housing Only and Elderly Housing Only fields should be marked either "Yes" or "No" if the 3-Family Treatment is Allowed/Conditional or Public Hearing. If 3-Family Treatment is "Prohibited" or "Overlay," or if the Type of Zoning District field is marked "Nonresidential," these fields are hidden and left blank.

The 3-Family Affordable Housing Only field identifies (with a "Yes" entry) districts that require that all 3-family housing developments satisfy certain affordability criteria. Mark "Yes" even if only a percentage of units within a development must meet those affordability criteria, as may be the case with so-called inclusionary zoning mandates that require a certain percentage of units to be affordable to, or occupied by, households below a certain income, allowing the other units to remain market-rate. If the Zoning District Affordable Housing Only field is marked "Yes," then the 3-Family Affordable Housing Only field should be marked "Yes" too. If the Zoning District Affordable Housing Only field is marked "No," then assess whether the district requires 3-family housing to satisfy affordability criteria, using techniques similar to those outlined in Part IV.B.2.

The 3-Family Elderly Housing Only field identifies (with a "Yes" entry) districts that require that all 3-family housing be occupied by people over a certain age. If the Zoning District's Elderly Housing Only field is marked "Yes," then the 3-Family Elderly Housing Only field should be marked "Yes" too. If the Zoning District's Elderly Housing Only field is marked "No," then assess whether the district restricts 3-family housing to elderly occupancy, using techniques similar to those outlined in Part IV.B.3.

4. Principal Use: 4+-Family

In this Subsection, you will complete 3 fields related to 4+-family housing: 4+-Family Treatment, Affordable Housing Only, and Elderly Housing Only.

a. Defining 4+-Family Housing

Four-or-more-family housing means 4 or more dwelling units, whether in one building or separate buildings. 4+-family zoning permits 4 or more dwelling units on a lot.

The following phrases typically denote 4+-family housing:

- Multi-family/multi family/multifamily
- Apartment
- Quadplex

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If you have not previously referenced the definition section of the zoning code, search "multi-family," "multi family," "multifamily," or "apartment," to confirm these terms allow 4+-family housing. Where a zoning code permits 1-family housing (or any other use or type of building) to be converted to 4+-family housing, treat 4+-family housing as permitted (and log it as Allowed/Conditional, Public Hearing, or Overlay, as appropriate).

4+family housing can include mobile and manufactured homes, where multiple are permitted on one lot. Be sure to mark Planned Residential Development Treatment and Mobile or Manufactured Home Park field as "yes" where multiple mobile and manufactured homes are permitted on one lot.

In general, exclude from this category uses that: are incidental to employment or student tenure; are not typically leased or sold to the general public; are associated with the status of being unhoused; or lack a kitchen and bathroom in dwelling unit. Thus, exclude from principal use consideration: seasonal farmworker or farm labor housing, dormitories and student housing, shelters for people who are unhoused, boardinghouses, and roominghouses. Also exclude guest houses or guest units intended to house guests of occupants of the principal dwelling on a temporary basis. If you wish, include in the Visible Atlas Notes field: "Also allows [type of use from list above] [per § X]."

You should now be able to identify the term(s) used by the zoning text to mean 4+-family housing.

b. Where to Look

One of the parts of the zoning text identified in Part IV.C.1.b has the information necessary to complete the 4+-Family Treatment field. Search the part(s) using the term(s) you know connote 4+-family housing.

c. How to Log the Four Treatment Options

Proceed with the analysis in Part IV.C.1.c and input one of four options indicating the nature of the permission for such uses: "Allowed/Conditional," "Public Hearing," "Prohibited," or "Overlay." If you have questions about planned residential developments, also review the Note on planned residential developments in Part IV.C.2.c.

NOTE: Some jurisdictions allow for multi-family housing conversions to occur only from specific uses, such as office uses. If this is the case, include in the Visible Atlas Notes field: "X-family [& Y-family] housing allowed only for conversions from [use, e.g., office use]."

d. How to Log Affordable & Elderly Treatment

The Affordable Housing Only and Elderly Housing Only fields should be marked either "Yes" or "No" if the 4+-Family Treatment is "Allowed/Conditional" or "Public Hearing." If 4+-Family Treatment is "Prohibited" or "Overlay," or if the Type of Zoning District field is marked "Nonresidential," these fields are hidden and left blank.

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The Affordable Housing Only field identifies (with a "Yes" entry) districts that require that all 4+-family housing developments satisfy certain affordability criteria. Mark "Yes" even if only a percentage of units within a development must meet those affordability criteria, as may be the case with so-called inclusionary zoning mandates that require a certain percentage of units to be affordable to, or occupied by, households below a certain income, allowing the other units to remain market-rate. If the Zoning District's Affordable Housing Only field is marked "Yes," then the 4+-Family Affordable Housing Only field should be marked "Yes" too. If the Zoning District's Affordable Housing Only field is marked "No," then assess whether the district requires 4+-housing to satisfy affordability criteria, using techniques similar to those outlined in Part IV.B.2.

NOTE: Some jurisdictions require developments with 5 or more units to satisfy inclusionary housing mandates. Take a zoning district requiring 10% affordable units in 6+-family developments. For these, mark "No" in the 4+-Family Affordable Housing Only field. Then fill out the Affordable Housing Treatment columns, per Part , to communicate how the regulations apply differently to affordable housing. And finally, use a district-specific Visible Atlas Note to say: "6+-family housing subject to affordable housing mandates (i.e., inclusionary zoning) per § __."

The Elderly Housing Only field identifies (with a "Yes" entry) districts that require that all 4+-family housing be occupied by people over a certain age. If the Zoning District's Elderly Housing Only field is marked "Yes," then the 4+-Family Elderly Housing Only field should be marked "Yes" too. If the Zoning District's Elderly Housing Only field is marked "No," then assess whether the district restricts 4+-family housing to elderly occupancy, using techniques similar to those outlined in Part IV.B.3.

5. Principal Use: Affordable Housing

The fifth principal use category is affordable housing. It encompasses 1-family, 2-family, 3-family, and 4+-family housing.

Affordable housing can only be indicated as permitted if the 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, or 4+-Family Treatment fields indicate Allowed/Conditional or Public Hearing. The fields dealing with affordable housing are intended to identify zoning districts where affordable housing is treated differently than housing not designated affordable, or, in districts where only affordable housing is allowed, to articulate definitions and requirements for such housing. The Affordable Housing (AH) Treatment field covers affordable housing that may be created by mandate, at the property owner's option, and/or in accordance with incentives provided via the zoning code.

NOTE: The Affordable Housing (AH) Treatment field differs from the Affordable Housing Only field. The Affordable Housing Only field, described in Part IV.B.2., identifies those districts which only allow affordable housing, and no other kind of housing. That field is meant to capture individual zoning districts designed specifically to promote affordable housing. By contrast, the Affordable Housing (AH) Treatment field (and the related fields) should be used to log the allowance or prohibition of affordable housing whether the district *requires* all housing to be affordable or not.

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NOTE: Log only affordable housing provisions found in a zoning code. If you come across provisions, such as inclusionary zoning mandates or density bonuses, that are found in other local or state laws, make a jurisdiction Visible Atlas Note per Part II.C.5.i.

In this Subsection, you will complete 3 fields related to affordable housing: Affordable Housing (AH) Treatment, Definition, and Elderly Housing Only.

a. Starting Point: Look at Other Fields

Start by filling out the Affordable Housing (AH) Treatment field using the logic in this Subsection, all of which depends on the way you have previously filled out certain other fields.

If a district prohibits 1-family, 2-family, 3-family, and 4+-family housing, then mark the Affordable Housing (AH) Treatment field "Prohibited." All Nonresidential districts and some Overlay districts should be marked "Prohibited."

If a district has been marked "Yes" in the Affordable Housing District, 2-Family Affordable Housing Only, 3-Family Affordable Housing Only, or 4+-Family Affordable Housing only fields, then simply repeat the entry logged for 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, or 4+-Family Treatment, as applicable, in the Affordable Housing (AH) Treatment field and AH Elderly Housing Only fields. Then fill out the Definition field (explained in Part IV.C.5.b.).

For all remaining districts marked as Primarily Residential, Mixed with Residential, or Overlay (allowing housing) in the Type of Zoning District field, but which have not been identified as affordable per the preceding paragraph, continue to the next Subsection, where you will be given instructions on how to fill out the Definition field. You will wait to fill out the Affordable Housing (AH) Treatment field for these districts until after you find (or do not find) a definition of affordability that has regulatory consequences.

b. Defining Affordable Housing

Now onto how the zoning code defines affordable housing. This definition is important because it shows what the jurisdiction means by "affordable" housing and often contains substantive limitations on its nature and occupancy. You should copy the full, word-for-word definition of affordable housing, usually 10-30 words long, and paste it into the Affordable Housing (AH) Definition field.

Some components of this definition may include:

- A required percentage of area median income or average household income for residents, or a cap on the amount residents may pay for such housing
- Requirements as to the recordation of a covenant or deed that would render such housing affordable for an established period of time or in perpetuity
- Restrictions as to what types of entities can own or develop the units, most often limited to housing authorities, nonprofits, or the jurisdictional government itself

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- Identification of specific federal or state agencies that must subsidize, finance, or sponsor the units
- Reference to a state affordable housing statute
- A percentage of housing units that must be set aside to satisfy affordability requirements
- Restrictions as to who may occupy affordable housing units, including some that limit such housing to employees of the jurisdiction or its school system, people who work in the jurisdiction, existing residents or relatives thereof, or specific types of workers (e.g., firefighters or ambulance personnel, as is the case in several Connecticut towns)

To find such definitions, search for the following terms:

- Affordable housing
- Affordability
- Income-restricted
- Assisted housing
- Set-aside development
- Workforce
- Average income, annual income, median income, household income
- Pay: Captures definitions where residents' payments are capped at a percentage of income
- Convey, record, covenant deed-restrict, deed restrict: Capture definitions where affordability is tied to a covenant placed on the property; capture both "restricted" and "restrictions"
- Subsidized, financed, sponsored
- HUD, Housing and Urban Development
- Housing authority: Captures definitions limiting qualifying owners/developers to housing authorities
- Inclusionary housing
- Non-profit, nonprofit: May produce false positives in that nonprofit organizations may be mentioned in the use table or in other parts of the zoning code, but could capture definitions limiting qualifying owners/developers to nonprofits
- Statutes
- Specific numerical statutory reference to housing law dealing with affordable housing: e.g., in Connecticut, searching for "8-30g," the section number for the affordable housing provisions in state law, would locate definitions tied to those provisions

If none of these words or phrases appear in the zoning code, mark "Not Mentioned" in the Affordable Housing (AH) Treatment field. The "Not Mentioned" entry is meant to indicate a neutral stance on affordable housing – neither prohibiting the use, as would be the case in a Nonresidential district, nor expressly treating affordable housing differently than other types of housing. Notice that the "Not Mentioned" option replaces the "Overlay" option of the other principal use housing Treatment fields, because you only fill out the Affordable Housing (AH) Treatment field if it is treated differently than other types of housing within the same district.

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NOTE: Some jurisdictions allow for fee waivers for affordable housing projects. In such cases, include a jurisdiction-wide Visible Atlas Note (if there are many districts to which such a provision applies) or a district-specific Visible Atlas Note (if there are just a few districts to which this applies) as follows: "Fees may be waived for affordable housing developments per § X."

NOTE: As a reminder, complete the Affordable Housing (AH) Definition field in addition to the mandatory Treatment fields for 1-, 2-, 3-, and 4+-family housing. In addition, if all 2-, 3-, and/or 4+-family housing is required in a particular zoning district, be sure to mark the 2-Family Affordable Housing Only, 3-Family Affordable Housing Only, and 4+-Family Affordable Housing Only as a "Yes," as applicable.

c. How to Log the Remaining Two Treatment Options

If the above words or phrases appear in the zoning code, proceed with the analysis in Part IV.C.1 and input one of two options indicating the nature of the permission for such uses: "Allowed/Conditional" or "Public Hearing."

If either of these two options is marked, then at least one of the following four fields must also be marked as allowing housing: 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, and 4+-Family Treatment. Thus, a positive entry in the Affordable Housing (AH) Treatment field always duplicates another housing entry.

NOTE: Some jurisdictions allow for affordable housing conversions to occur only from specific uses, such as office uses. If this is the case, include in the Visible Atlas Notes field: "X-family [& Y-family] affordable housing allowed only for conversions from [use, e.g., office use]."

d. How to Log Elderly Housing

The Elderly Housing Only field identifies (with a "Yes" entry) districts that require that all affordable housing be occupied by people over a certain age.

If the Zoning District's Elderly Housing Only field is marked "Yes" and the Affordable Housing (AH) Treatment field is marked "Allowed/Conditional" or "Public Hearing," then the AH Elderly Housing Only field should be marked "Yes" too.

If the Zoning District's Elderly Housing Only field is marked "No," then assess whether the district restricts affordable housing to elderly occupancy, using techniques similar to those outlined in Part IV.B.3.

6. Accessory Dwelling Units

In this Subsection, you will complete 5 fields related to ADUs and their occupancy: Accessory Dwelling Unit (ADU) Treatment, Employee or Family Occupancy Required, Renter Occupancy Prohibited, Owner Occupancy Required, and Elderly Housing Only.

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a. Defining ADUs

An accessory dwelling unit (ADU) is a single unit of housing located on the same lot as a principal use, usually a 1-family home, and typically smaller than or in some other way subordinate to that principal use. To be logged as an ADU in the Editor, the housing unit must be a stand-alone, independent dwelling unit, which means it must have a kitchen and bathroom. Do not log as an ADU a housing unit for which a kitchen is prohibited – even if the zoning code calls that housing unit an ADU. Similarly, rooms made available in boardinghouses or roominghouses are not ADUs.

The following phrases typically denote ADUs:

- Accessory dwelling/unit/apartment
- In-law dwelling/unit/apartment
- Caretaker(s) dwelling/unit/apartment
- Garage apartment
- Carriage house
- Granny flat
- Servant quarters, servant's quarters, servants' quarters [unfortunately, still used]
- Subsidiary dwelling/unit/apartment
- Business apartment
- Facility manager dwelling/unit/apartment

Search the zoning text for these phrases to identify the term(s) used by the zoning text to mean an ADU.

b. Where to Look

To find out how ADUs are treated, first search for term(s) you found above in the table of contents. Start with the table of contents because there is often a single section in a zoning code that deals with ADUs.

If the term(s) does not appear in the table of contents, search the use table for that term(s). If you find it in the use table, you can easily complete the Accessory Dwelling Unit (ADU) Treatment field for all districts in the jurisdiction.

If there is no use table, search for the term(s) throughout the zoning code.

NOTE: Recall that ADU treatment is independent of your entry in the Type of Zoning District field. While a Nonresidential district prohibits principal-use housing, it may nonetheless allow an ADU to coexist with a commercial or industrial use. Thus, you should search for accessory housing across all zoning districts, and not limit your search to Primarily Residential or Mixed with Residential Districts.

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c. How to Log the Four Treatment Options

Proceed with the analysis in Part IV.C.1.c and input one of four options indicating the nature of the permission for such uses: "Allowed/Conditional," "Public Hearing," "Prohibited," or "Not Mentioned." If a jurisdiction neither expressly allows nor expressly prohibits an ADU in any district, mark the Accessory Dwelling Unit (ADU) Treatment field as "Not Mentioned." If a jurisdiction expressly allows ADUs in some zoning districts but does not mention whether ADUs are allowed in other districts where 1-family housing is allowed, mark the Accessory Dwelling Unit (ADU) Treatment field as "Prohibited" in those zoning districts allowing 1-family housing but not mentioning ADUs.

NOTE: Many jurisdictions expressly enable ADUs in some form. Jurisdictions that do not expressly enable ADUs may allow them as a traditional and customary use pursuant to staff review. Accordingly, the number of districts that you log in your atlas may be an undercount of the districts where ADUs might be allowed.

What do you do if some ADUs are allowed by right, but other ADUs require a public hearing? You should log just one entry signifying what you think is the most common permit type in the Accessory Dwelling Unit (ADU) Treatment field but make a one-sentence note in the Visible Atlas Notes field about the alternate permit type. For example, let us say you find a district that requires public hearings for ADUs only if they are over 1,000 square feet. In that case, log "Allowed/Conditional" in the 1-Family Treatment field and in the Visible Atlas Notes field, put: "Public hearing required for ADUs over 1,000 SF." Because the Visible Atlas Notes field may include notes about several different fields, be clear about the applicability of your one-sentence note.

The ADU category is intended to cover situations where one ADU is permitted per lot. Occasionally, a zoning code will allow more than one ADU on a lot where a commercial business operates, by allowing a caretaker, employee, or owner-occupied accessory dwelling unit for each business establishment on the lot. In these cases, mark principal-use housing as prohibited. Mark ADU housing as "Allowed/Conditional" or "Public Hearing," as applicable, and in the Visible Atlas Notes field indicate: "One ADU [that must be occupied by caretaker/employee/owner] allowed per each business establishment on a lot." Mark Yes in the Employee or Family Occupancy Required field or the Owner Occupancy Required, as applicable.

d. How to Log ADU Occupancy Rules

Once you have completed the Accessory Dwelling Unit (ADU) Treatment field, turn to the four fields regarding occupancy of ADUs. It is important to note these occupancy restrictions because onerous occupancy restrictions can limit the incentive to build ADUs, as well as their feasibility and endurance. These occupancy requirements are not typically found in a use table or other chart, but rather a section of the zoning text dealing with ADUs generally. To fill out the relevant fields, simply do some common-sense reading of the definitions and general requirements applicable to ADUs.

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The Employee or Family Occupancy Required field tracks whether the jurisdiction requires an employment or familial relationship between the occupant of the ADU and the occupant of a principal dwelling. Search for phrases like "must be an employee" or "must be a relative." If the jurisdiction only requires one relationship but not both, still mark the field with a "Yes." If you feel the need to be more precise, feel free to add a note to the Visible Atlas Notes field.

NOTE: Some zoning codes (such as those in Laramie, Wyoming) only allow single units if they are "live/work dwellings." When codes describe an attached dwelling unit that requires a commercial component, this type of housing should be catalogued as an ADU. The Employee or Family Occupancy field should be marked "Yes."

NOTE: Some jurisdictions may require a commercial ADU to be occupied by either an employee or the owner of the business. In these cases, mark the Employee Occupancy Required field as "Yes," as either the employee or owner (an employee of the business) may be the occupant. Then mark "Owner Occupancy Required" as no. Then include the following text in the Visible Atlas Notes field: "Commercial ADU requires occupancy by either business owner or employee."

The Renter Occupancy Prohibited field tracks whether the jurisdiction expressly prohibits renters from occupying ADUs. The Owner Occupancy Required field confirms whether the jurisdiction allows renters to occupy both units, or whether one unit (either the accessory or principal unit) must be owner-occupied. While these two fields have similar effects, they are not the same. If a district allows ADU renter occupancy (that is, has a "No" in the Renter Occupancy Prohibited field) but also requires owner occupancy (that is, has a "Yes" in the Owner Occupancy Required field), then the ADU may be occupied by a renter but only if the principal home is occupied by the lot's owner. If a district prohibits renter occupancy but requires owner occupancy, then the owner may let any person occupy the ADU as long as they do not pay rent. In practice, this means that a family member or employee is most likely to occupy the ADU. That said, do not mark "Yes" in the Renter Occupancy Prohibited field every time the Employee or Family Occupancy Required is a "Yes." Again, while these two fields have similar effects, they are not the same. Unless the zoning code expressly prohibits renters or rental arrangements, mark the Renter Occupancy Prohibited field as a "No."

The Elderly Housing Only field records whether the jurisdiction requires that the ADU be occupied by people over a certain age. You should search for keywords and use techniques similar to those used in Part IV.B.3 to complete the Elderly Housing Only field.

NOTE: The four ADU occupancy fields may seem puzzling in their framing. One field calls for you to log a prohibition on occupancy by renters, while the other three fields call for you to log affirmative occupancy requirements (owner, employee/family, and elderly). Even though they are phrased in what seem like opposite ways, a "Yes" answer to all of these fields indicates greater restrictiveness. This framing enables consistency in any public interface.

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e. Other Notes

While perusing the portions of the zoning code dealing with ADUs, you might find that the jurisdiction requires permits to be renewed on an annual or periodic basis. If this information is of interest to you, note the following in the Visible Atlas Notes field: "ADU permit requires renewal every X years."

One final tip: Often, all ADU-related provisions are located in the same section of the zoning code. Accordingly, you may wish to skip ahead to browse and complete the ADU-specific fields regarding regulations on lots and structures described in Parts IV.D. and IV.E.

7. Planned Residential Development

In this Subsection, you will complete the Planned Residential Development (PRD) Treatment and Mobile or Manufactured Home Park field.

a. Defining PRDs

A planned residential development (PRD) allows for a large number of housing units to be developed in accordance with a coordinated master plan, and offers flexibility with respect to grouping, placement, size, and use of structures. They may be permitted in multiple buildings, may be built on a single large lot or on many smaller lots (e.g., a subdivision on a large tract of land, though note that not all subdivisions are PRDs). They may include cluster developments that are planned to be denser than the zoning district otherwise allows.

The aim of the Planned Residential Development (PRD) Treatment field is to capture situations where many units are permitted, or anticipated to be permitted, at one time. PRDs also include mobile and manufactured home parks, which are owned by a single owner and contain many such homes on a single lot; as well as mobile and manufactured home parks which were perhaps developed at once, but eventually come to have multiple owners, each owning a single home on an individual, subdivided lot. (We would expect the former to have a multi-family treatment logged, and the latter to have a 1-family treatment.) Express allowance of such parks in the zoning code should be logged in the Mobile or Manufactured Home Park field per Part IV.C.7.d.

The following phrases typically or often denote PRDs:

- Alternative housing (another term for mobile or manufactured homes)
- Planned residential
- Planned unit
- Planned development
- PUD
- PDD
- Active adult
- Planned community
- Master planned

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- Cluster
- Large-scale residential development
- Subdivision
- Manufactured
- Mobile
- Man camp

Search the zoning text for these phrases to identify the term(s) used by the zoning text to mean a PRD. However, not all uses of such terms will necessarily mean a PRD. Refer to the definition at the top of this Subsection to assess whether the term denotes a PRD.

NOTE: Some zoning codes may not differentiate between a planned residential development or other types of planned developments. Sometimes there will be general planned development regulations that can encompass a host of uses, such as recreation, community facility, industrial, commercial, residential, mobile home, and mixed use. In this case a note in the Visible Atlas Notes field may be appropriate e.g., "PRD regulations lack housing-specific criteria but may be used for residential, mixed-use, commercial, or industrial purposes." And where applicable, the Planned Residential Development (PRD) Treatment field should be logged "Public Hearing" or "Allowed/Conditional." In such instances where you also have mapped planned developments and cannot discern if they were utilized for residential or other uses, they should be identified as "Mixed with Residential" in the Type of Zoning District field.

b. Where to Look

To find out how PRDs are treated, first search for term(s) you found above in the table of contents. Start with the table of contents because very often, a single section in a zoning code deals with PRDs. In other words, language regarding PRDs may not appear in the section in the zoning code devoted to a specific district. If that is the case, be sure to enter PRD-related information for each district where PRDs are allowed.

If the term(s) does not appear in the table of contents, search the use table for that term(s). If you find it in the use table, you can easily complete the Planned Residential Development (PRD) Treatment field for all districts in the jurisdiction.

If there is no use table, search for the term(s) throughout the zoning code.

c. How to Log the Four Treatment Options

For PRDs, follow a similar logic to the logic in logging the treatment of affordable housing. PRDs can be confusing because PRDs can be permitted within a given district that allows both PRD and non-PRD housing, can be districts in and of themselves (i.e., where a district represents a single PRD), can include nonresidential and residential uses, and/or can be permitted in a variety of forms pursuant to general rules which give little guidance about the parameters for development. Remember that the Planned Residential Development (PRD) Treatment field is intended to log the way housing in PRDs is treated; the emphasis in PRD is the "R" for "Residential." The field is

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intended to reflect the process for approval of a PRD (as a whole), not the process to approve individual housing units within the PRD.

Like other zoning districts, districts that allow PRDs can be overlay or base districts. Its Overlay field status has no bearing on how the Planned Residential Development (PRD) Treatment field must be filled out. This field does not offer an "Overlay" option.

If the code expressly prohibits PRD housing from being built in the zoning district, mark "Prohibited" in the Planned Residential Development (PRD) Treatment field. If a non-PRD-only district is marked as Nonresidential or as an Overlay in the Type of Zoning District field, and if all entries for 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, and 4+-Family Treatment are marked "Prohibited," then the Planned Residential Development (PRD) Treatment field must also be marked "Prohibited."

If none of these words or phrases appear in the zoning code, mark "Not Mentioned" in the Planned Residential Development (PRD) Treatment field. The "Not Mentioned" entry is meant to indicate a neutral stance on PRDs – neither prohibiting the use, as would be the case in a Nonresidential district, nor expressly treating it differently than other types of housing. Notice that the "Not Mentioned" option replaces the "Overlay" option of the other principal use housing Treatment fields, because you only fill out the Planned Residential Development (PRD) Treatment fields if it is treated differently than other types of housing within the same district.

In the vast majority of districts, the zoning code is silent on PRDs, so do not be surprised if this field is most often indicated as "Not Mentioned."

If, however, a section deals with permission for these uses, proceed with the analysis in Part IV.C.1.c and input one of two options indicating the nature of the permission for such uses: Allowed/Conditional or Public Hearing. Where PRDs are permitted, they are most often permitted pursuant to a public hearing, even if 1-family housing (individually developed and permitted) is permitted as of right. If the overall PRD requires a public hearing but after the PRD or PRD plan is approved individual housing is allowed as of right (subject to staff review only and not to a public hearing), mark the Planned Residential Development (PRD) Treatment field as "Public Hearing."

As is the case with affordable housing, the PRD encompasses 1-family, 2-family, 3-family, and 4+-family housing. Thus, in districts where PRDs are allowed, at least one of the four Treatment fields – 1-Family Treatment, 2-Family Treatment, 3-Family Treatment, and 4+-Family Treatment – must indicate "Allowed/Conditional" or "Public Hearing." If the zoning code treats PRD housing and non-PRD housing differently, mark the way non-PRD housing is treated in the 1-Family, 2-Family, 3-Family, and 4+Family Treatment fields (as applicable) and the way PRD housing is treated in the Planned Residential Development (PRD) Treatment field. Then add a Visible Atlas Note indicating that "X-family [& Y-family] housing in PRD [permitted/permitted pursuant to a public hearing]." If the zoning code treats PRD housing and non-PRD housing the same way, then the applicable 1-Family, 2-Family, 3-Family, and 4+-Family Treatment fields should match the Planned Residential Development (PRD) Treatment field.

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NOTE: When multiple types of PRDs are permitted in a district, you should expect to use "Alternatives" entries a lot. Sometimes PRD regulations may allow, for instance, one type of PRD for residential, one for mixed-use, and one for elderly housing. If all three are allowed in any zoning district, but their treatment differs, enter the treatment in the PRD Treatment field with the treatment for the residential-only PRD, or the treatment for the most common type of PRD likely to be built in the district. Then log a note in the Visible Atlas Notes field indicating that there are other types of treatments. For example, you might say "Residential-only PRDs are allowed/conditional; residential-commercial PRDs are subject to a public hearing."

One final tip: Often, all PRD-related provisions are located in the same section of the zoning code. Accordingly, you may wish to skip ahead to browse and complete the PRD-specific fields on lots and structures described in Parts IV.D. and IV.E.

d. Mobile or Manufactured Home Park

The Mobile or Manufactured Home Park field captures whether the district expressly allows multiple mobile or manufactured homes to be developed at once, whether owned by a single owner on a single, large lot, or owned by multiple owners on many individual, subdivided lots. The field captures not only those districts that primarily allow mobile or manufactured housing (such as mobile home park districts), but also those districts that allow mobile or manufactured home parks and other types of housing (such as open-ended planned unit development districts).

Zoning codes in areas with resource extraction activities (such as mining or hydrofracking) sometimes define and specifically allow "man camps." These camps are intended to provide housing for workers for a finite period of time, namely, until the resource extraction ends. Unlike farmworker housing, man camps are not seasonal. Also unlike farmworker housing, which tends to be provided to migrants associated with a particular farm site, man camps tend to be occupied by people paying by the night, week, or month for lodging. When man camps must be constructed pursuant to a site plan or master plan review, mark the Planned Residential Development (PRD) Treatment field as allowing PRDs or, if applicable, allowing PRDs subject to a public hearing. When man camps may include mobile homes, travel trailers, tent trailers, or a mix of these (thus triggering the same types of infrastructure as a mobile home park in general), mark "Yes" in the Mobile or Manufactured Home Park field.

D. CATALOG REGULATIONS ON LOTS

This Section now turns to how zoning codes treat the way lots are developed. It logs the development of lots in all 7 of the housing types discussed in Part IV.C.

NOTE: Many of the answers in this Section are single numerical answers. However, before you proceed, carefully read Part IV.A.1.b., which describes the Units/Special field and the meaning of "Alternatives," "Contextual," and "N/A." In addition, carefully read Part IV.A.1.c., which lays out common abbreviations and terms useful in this Section.

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Specifically, this Section covers minimum lot size requirements, maximum density, minimum parking requirements, lot coverage, and requirements that housing be connected to particular infrastructure or structures.

In this Section, you will fill out the following fields (the fields appear for each housing treatment section as noted below):

- **Min. Lot Size & Min. Development Size** fields: The minimum acres of land required for residential development, or in the case of PRDs, overall development site. Located in these sections:
  - 1-Family Treatment
  - 2-Family Treatment
  - 3-Family Treatment
  - 4+-Family Treatment
  - Affordable Housing (AH)
  - Accessory Dwelling Unit (ADU)
  - Planned Residential Development (PRD)
- **Max. Density** fields: The maximum number of units allowed per acre. Located in these sections:
  - 2-Family Treatment
  - 3-Family Treatment
  - 4+-Family Treatment
  - Affordable Housing (AH)
  - Planned Residential Development (PRD)
- **Front Setback**, **Side Setback**, **Rear Setback** fields: The minimum number of feet away from the front, side, and rear property lines in which construction may not occur. Sometimes they are called "required yards" in zoning texts. Located in these sections:
  - 1-Family Treatment
  - 2-Family Treatment
  - 3-Family Treatment
  - 4+-Family Treatment
- **Max. Lot Coverage – Buildings** and **Max. Lot Coverage – Buildings and Impervious Surface**: The percentage of land allowed to be covered by particular materials (buildings or buildings and impervious surface). Located in these sections:
  - 1-Family Treatment
  - 2-Family Treatment
  - 3-Family Treatment
  - 4+-Family Treatment
- **Min. Parking Spaces** or **Min. Parking Spaces per Studio or 1BR** and **Min. Parking Spaces per 2+ BR** fields: The minimum number of parking spaces required per specific type of unit. Located in these sections:
  - 1-Family Treatment
  - 2-Family Treatment
  - 3-Family Treatment

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    - 4+-Family Treatment
    - Affordable Housing (AH)
    - Accessory Dwelling Unit (ADU)
- **Connection to Sewer and/or Water Required**, and **Connection or Proximity to Public Transit Required** fields: A binary Yes/No entry indicating whether housing is required to be connected to infrastructure. Located in these sections:
    - 3-Family Treatment
    - 4+-Family Treatment
    - Affordable Housing (AH)
- **Restricted to Only Primary Structure** field: A binary Yes/No entry indicating whether the ADU is required to be connected to the main structure. Located in the Accessory Dwelling Unit section.

Overlay districts require special instruction. If any district has a "Yes" in the Overlay field, then only complete subsequent fields for the district if the overlay overrides the base district and is different than the base district. If the field is left blank, the base district's characteristics prevail. If the field differs from the base district's equivalent field, then the overlay district will automatically override the base district. As discussed in Part IV.A.3., in this one situation only, where the overlay overrides the base district by eliminating base districts regulations in a particular field, enter a "0" in the field.

1. Minimum Lot Size & Minimum Development Size

Local jurisdictions can require that a certain parcel of land be of a minimum size before being developed.

In this Subsection, you will complete up to 7 fields. Six relate to minimum lot size for all principal and accessory uses discussed in Part IV.C.; the seventh relates to PRD developments and refers to the overall development site required of PRD developers.

Most often, minimum lot size requirements are located in a chart that details certain district characteristics, sometimes contained in an appendix to the zoning code. These charts might be called:

- Lot Requirements
- Lot and Building Requirements
- Area Requirements
- Area and Bulk Requirements
- Dimensional Requirements
- Minimum Area
- Minimum Lot

If you find such a chart, keep it handy for the next Section, too.

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In the alternative, minimum lot size (and minimum development size) requirements may appear in district-specific sections of the zoning code. When it comes to ADUs and PRDs, you are more likely to find minimum lot size and minimum development size requirements, respectively, in the sections of the zoning code dealing with them specifically – hence the notes in Parts IV.C.6 and IV.C.7 suggesting that you fill out ADU- and PRD-specific fields once you find the appropriate section of the zoning code.

Where zoning codes require a minimum lot or development size, they indicate the requirement as a number in square feet or in acres. The Editor requires the entries to be in acres, because people often think of residential lots in acres. Thus convert square footage figures to acres, and extend the number to the hundredth place. Here's why: Many zoning codes using square feet use round numbers, like 40,000 square feet, instead of the 43,560 square feet contained in an acre. For this reason, after you convert, you will often see 1.84 acres instead of 2 acres, 0.92 acres instead of 1 acre, 0.46 acres instead of half an acre, or 0.23 acres instead of a quarter acre. Extending to the hundredth place can ensure you track these differences.

When you have your acreage number, input it into the field as a number only, without units (e.g., if the zoning district requires a 1-acre minimum lot size, insert "1" instead of "1 acre"). The higher the number, the more restrictive the lot size requirement.

When logging the Min. Lot Size or Min. Development Size field for 4+-Family, Affordable Housing, or PRD sections, you may find that there is a base minimum lot size for a certain number of units, and an additional minimum lot size required for every additional unit. For example, if the zoning code says, "a half-acre minimum for 6 units, and an additional 1,000 SF lot for each unit over 6," log it as: "0.5/6 units + 0.02/add'l unit." The 0.02 was obtained by converting 1,000 SF to acres, using the ratio 43,560 SF/acre, and calculating to the hundredth place, per Part IV.A.1.d.

Not every district allowing housing requires a minimum lot size. That said, 1-family housing almost always has a minimum lot size: In Connecticut, over 98% of 1-family land in Primarily Residential districts is subject to a minimum lot size. Four-or-more-family housing, by contrast, only had minimum lot sizes about half the time.

What do you do if a district requires one minimum lot size for apartment buildings generally, and a smaller lot size for, for example, elderly housing? You should select "Alternatives" from the Unit/Special field and enter a note about the alternate lot sizes. For example, let's say you find a district that requires a 4-acre minimum for large apartment buildings, but a 1-acre minimum for elderly housing. In that case, log "4; 1/elderly."

Similarly, some zoning codes will provide different minimum lot sizes depending on building type or number of units. Consider this provision. "Each single-family dwelling shall be located on a lot with a minimum land area of 5,000 square feet. In the case of a two-family dwelling, the lot shall contain 2,500 square feet of land area for each dwelling unit. For each multifamily dwelling unit 1,600 square feet of land area shall be provided and for each townhouse dwelling unit 1,980 square feet." To fill in Minimum Lot Size fields, you need one key piece of information, which is whether a "townhouse" can be used on any type of lot, or whether it may only sit on independent

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(single-family) lots (which is often the case, for example, in Virginia). You'll have to search for this information in other parts of the zoning code, but once you find it, you can determine which of the following is appropriate. If "townhouse" refers to a building type that can be used on any type of lot, then all Minimum Lot Size fields should be marked as "Alternatives," and 1-Family should read "5,000; 1,980 if townhouse"; 2-Family "5,000; 3,960 if townhouses"; 3-Family "4,800; 5,940 if townhouses"; and 4+-Family "1,600/unit; 1,980/unit if townhouses." If only one "townhouse" is permitted per lot in the jurisdiction, then the 1-Family Minimum Lot Size field should be marked as "Alternatives," and read "5,000; 1,980 if townhouse"; 2-Family "5,000"; and 3-Family and 4+-Family should be marked as "Alternatives" and read "1,600/unit."

NOTE: If a district requires one minimum lot size for apartment buildings generally, and a different (usually larger) lot size for affordable housing, you need not use "Alternatives," because you have the Affordable Housing Min. Lot Size field to indicate the different treatment. The same is true for planned residential developments, for which you have the PRD Min. Development Size field to indicate different treatment.

NOTE: Districts that allow townhomes or attached homes to be developed on a large lot, and provide a development lot size, should be reviewed as a PRD, and Min. Development Size should be logged. If there is also a minimum lot size for individual dwelling units, log that in the appropriate Min. Lot Size field. You may add a Visible Atlas Note identifying special provisions.

2. Maximum Density

Minimum lot size is not the only way to regulate density. Alternatively, or sometimes simultaneously, zoning codes can also cap the number of units per acre.

In this Subsection, you will complete up to 5 fields capping density on principal-use housing developments with two units or more.

You might locate maximum density requirements in the chart you found in Part IV.D.1., if any. If you are not so lucky, search the zoning text for the following phrases:

- Units Per Acre or Units/Acre
- Dwellings Per Acre or Dwellings/Acre
- Density Per Acre or Density/Acre

When you find the ratio, enter it as a number only, without units (e.g., if the zoning district caps 4+-family housing at 6 units per acre, enter "6" instead of "6 units/acre"). The lower the number, the more restrictive the density requirement. Do not attempt to calculate maximum density using any other measures (such as units allowed on each lot and minimum lot size) than units per acre.

NOTE: A small number of jurisdictions provide a *minimum* density requirement. In such a case, make a note in the Visible Atlas Notes field that says, "Minimum density of X [units/dwellings]/acre."

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NOTE: Separate from maximum density requirements, some jurisdictions cap housing at bedrooms per acre, which usually has the effect of increasing the number of studio and one-bedroom units created. Log bedroom-per-acre caps in the Visible Atlas Notes field. For example, you might say: "Maximum density for [Treatment type] capped at [X] bedrooms/acre." Maximum bedroom requirements are discussed in Part IV.E.4. As noted above, do not include the term "multifamily" or "multi-family" in the Visible Atlas Notes field, as this term blurs housing categories in a problematic way. Instead use "1-family," "2-family," "3-family," "4+-family," or "[#]+-family."

3. Minimum Setbacks

Zoning codes determine how much of a lot can be built upon by identifying areas along one or more property lines within which no building or structure may be built. For simplicity's sake, we refer to each of these non-buildable areas as "setbacks," and we measure them by number of feet from the property line. What we're calling a "setback" actually comes in several different forms and terms, including:

- Setback
- Required yard
- Building line
- Minimum distance

The first term, "setback," is most common and is synonymous with the second term, "required yard." Typically, a zoning code provides different setbacks establishing the number of feet a building must be from the front lot line (i.e., the street side of the lot), the side lot line, and the rear lot line (i.e., the back of the lot). The higher the setbacks, the smaller the amount of land that can be built upon. The absence of setback regulations means the district is permissive.

If the zoning code gives a number for feet "from a public right of way," insert that number in the Front Setback field, then input "0; X if adjacent to public right of way" in the Side Setback and Rear Setback fields. If the zoning code provides the number of feet from a project boundary or utility line, do not log these in the Editor.

NOTE: A jurisdiction may require a higher minimum number of square feet for both side yard setbacks than the sum of the individual side yard setbacks. For example, the code might require a minimum of 10-foot setbacks for each side yard but require a total of 25 feet of side setback (i.e., the sum of both actual setbacks). In such cases, insert into the Side Setback field: "10/one, 25/both." If the code requires a total of side setbacks without a minimum for each, divide them by 2. For 25 feet total side setbacks, enter that as "12.5" feet in the Side Setback field.

The third term, "building line," also defines a setback by establishing a "building line" a certain number of feet away from the public street or public right of way. As long as the building line represents the minimum distance (number of feet) between the building and the public road/public right of way, input that number of feet in the Setback fields.

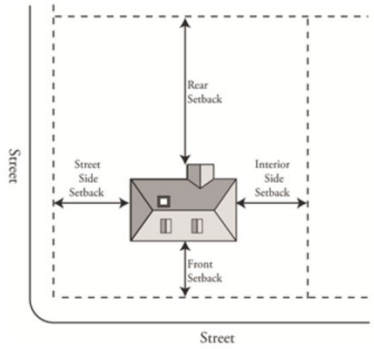
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The fourth term, "minimum distance," is a helpful search term if the other terms have failed to yield a setback definition.

NOTE: If both attached (townhouses, patio homes, etc.) and detached (single-family) homes are permitted (as occurs for 1-family housing sometimes) and there is a minimum side setback required for the detached homes, that can be logged as "X/detached." Similarly, if attached housing has different front or rear setbacks from attached homes, those can be tracked as "X/detached; Y/attached."

NOTE: Some jurisdictions do not define a setback but require housing to be a certain distance apart from another building. For example, a jurisdiction might say, "Homes must maintain a minimum distance of 10 feet between them." In this case, choose "Contextual" from the drop-down menu and add this text: "10' away from any neighboring building."

NOTE: Corner lots deserve special consideration. If a zoning code establishes corner lot side setbacks that differ from non-corner lot setbacks, log this as an "Alternative" treatment in the Side Setback field, then indicate: "X; Y/corner lot." If a zoning code establishes corner lot front setbacks that differ from non-corner lot setbacks, log this as an "Alternative" treatment in the Front Setback field, then indicate: "X; Y/corner lot." Finally, if a zoning code establishes street-side side setbacks that differ from interior-side side setbacks of a corner lot, log this as an "Alternative" treatment in the Side Setback field, then indicate: "X; Y/street-side setback of corner lot; Z/interior-side setback of a corner lot." In that case, X is the interior setback dimension and Y is the street-side dimension. Below is a graphic from the Upland, California, zoning code depicting a corner lot with four different setbacks, and showing a "street side setback":



Beyond corner lot specifications, some jurisdictions go wild with setback types. They might have formulas for setbacks for curvilinear lots, triangular lots, or multiple rear lots; or they may discuss "contextual setbacks" or "building spacing setbacks" which depend on neighboring buildings. Feel free to make an "Alternatives" entry, to the effect of "Varies per § X."

A very small number of jurisdictions tie setbacks to lot depth or surrounding buildings instead of providing numbers or percentages. For example, a zoning code might say that a house has to be set back from the front lot line at least 10% of lot depth and from the back lot line at least 20% of lot depth. Log these setbacks as "X% lot depth," and mark it as "Contextual" in the Units/Special field. For more on this, see Part IV.A.1.b.

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NOTE: Maximum setbacks are sometimes used in jurisdictions with form-based codes. They are not tracked in the Setback fields but can be added as a Visible Atlas Note for the district. For example, where a district limits the setback to a maximum of 20 feet, input the following Visible Atlas Note: "Maximum setback of 20'."

NOTE: In addition, be aware of the term, the "build-to" line, often used by jurisdictions that have adopted form-based codes to represent the distance from the front lot line or the city-designated "building line" to which a building must be built. For example, a jurisdiction might say, "Buildings must be built to within 5 and 10 feet of the front lot line." Build-to requirements should not be logged in the setbacks field. Can you see why these are different than front setbacks? Build-to lines are concerned with the experience of the street as a whole, and they require buildings to be developed within a kind of aesthetic rhythm. Setbacks simply provide outer boundaries for building, and a building may be placed at any random location on the lot (other than within the setbacks). If the jurisdiction has build-to lines of a certain number of feet and not front setbacks, indicate in the Visible Atlas Notes field, "In lieu of a front setback, building within X[; or X to Y] feet of the build-to line is required."

NOTE: A setback is not a step-back (or stepback), namely, a requirement that a building façade be stepped back from the façade of the lower stories, so as to create light and air. These appear in some standard zoning codes and also in form-based codes. Because they only govern upper stories, step-backs are essentially "setbacks in the air," mandating a wedding-cake-shaped building. However, they should not be logged in the Setback fields. If you would like to log a step-back, please include a note in the Visible Atlas Notes field with a reference to the section of the zoning code laying out step-backs, as follows: "Step-backs required above [X story/Y'/certain upper stories], per § Z."

4. Maximum Lot Coverage

Lot coverage requirements cap the amount of land upon which buildings, or buildings and other impervious surfaces, can be constructed.

Lot coverage requirements are always expressed as a percentage of the lot as a whole. These requirements are common: In Connecticut, between two-thirds and three-quarters of districts had some kind of lot coverage requirements.

In this Subsection, you will complete up to 8 fields related to lot coverage, two for each of the four principal housing types.

The Max. Lot Coverage – Buildings fields record the amount of land that may be covered by buildings, and the Max. Lot Coverage – Buildings & Impervious Surface fields record the amount of land that may be covered by buildings and other impervious surfaces, such as asphalt (e.g., driveways). While most jurisdictions have figures for both fields, some have one or the other, and some have none. If the jurisdiction fails to mention lot coverage requirements, leave the relevant fields blank.

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We only log lot coverages for the four principal housing types because we found in Connecticut that codes did not distinguish affordable housing, and we only saw a handful of additional lot-coverage requirements for ADUs. If you run across lot coverage requirements for ADUs, feel free to log in the Visible Atlas Notes field as, "ADU maximum lot coverage X%."

You might locate lot coverage requirements in the chart you found in Part IV.D.1, if any. If you are not so lucky, search the zoning text for district-specific provisions or search for the following phrases:

- Lot Coverage
- Building Coverage
- Impervious Surface
- Pervious Surface
- Coverage (if all else fails)

When you find the percentage of allowable lot coverage, input the whole number associated with the percentage into the field as a number only, without the percentage sign. The lower the number, the more restrictive the lot coverage requirement.

If you just see "lot coverage" or "impervious surface coverage" without reference to buildings, include the percentage in the Max. Lot Coverage – Buildings and Impervious Surface field; in other words, assume this figure encompasses both buildings and other impervious surfaces.

NOTE: Some codes may be silent on the maximum lot coverage and instead require a minimum percentage of the lot to be devoted to "green space." If no other provisions specifically relate to lot coverage, subtract the percentage from 100% and include the resulting percentage in the appropriate Max. Lot Coverage – Buildings and Impervious Surface field. Do not rely on the term "open space" to find lot coverage figures, because open space often allows paved pathways, playgrounds, and other impervious surfaces.

5. Parking Requirements

Zoning codes often mandate that each housing unit has a certain number of parking spaces. Parking requirements impact housing production because the more parking spots required, the fewer housing units can be built on any given lot – and the more expensive it is to build that housing. Minimum parking requirements also impact cities because people are more likely to choose to drive when more parking is provided. Parking requirements are unfortunately common: 87% of the land allowing housing in Connecticut requires parking.

In this Subsection, you will fill out up to 11 different fields related to parking requirements. Be sure to create entries for both the Min. Parking Spaces per Studio or 1BR field and the Min. Parking Spaces per 2+ BR field.

Minimum parking requirements are often located in a chart or table specifically relating to parking. Even where there is a chart or table specific to parking, search for the term "parking" and manually

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review the term each time it appears in the zoning code to be sure you have logged everything correctly.

Zoning codes often differentiate between required parking for 1-family housing and required parking for duplexes, triplexes, or apartments.

There is only one field devoted to 1-family housing, because codes generally do not differentiate parking requirements based on the number of bedrooms in 1-family housing. However, minimum parking requirements do sometimes vary depending on the number of bedrooms for 1-family housing. For example, say that the code requires 1 parking space for studio and 1-bedroom single-family homes, 2 for 2-bedroom or 3-bedroom homes, or 3 for 4-or-more-bedroom homes. For this example, you could input the following in the 1-Family Min. Parking Spaces field: "1/0BR or 1BR; 2/2BR or 3BR; 3/4+BR" and log it as "Alternatives" in the related Unit/Special field. If the code requires one parking space per bedroom, input "1/BR." If the code requires one parking space per occupant, input "1/occupant."

There are two fields each devoted to 2-Family, 3-Family, 4+-Family, and AH housing, because zoning codes often differentiate parking requirements based on the number of bedrooms in such housing. Similarly, minimum parking requirements sometimes differ for 2-bedroom multi-family housing versus 3-bedroom or 4-bedroom multi-family housing. For example, say that the code requires 2 parking spaces for 2-bedroom triplexes, and 3 parking spaces for 3-or-more-bedroom triplexes. For this example, you could input the following in the 3-Family Min. Parking Spaces per 2+ BR field: "2/2BR; 3/3+BR."

There is also a field for parking requirements for ADUs, which logs the number of parking spaces *additional* to the number of parking spaces required of the main unit.

When you find the number of parking spaces required for the housing type, bedroom type, and district, input it into the field as a number only, without units. Take the number to the hundredth place, because you will see some zoning requirements with ".25" or ".75" parking spaces per unit. The higher the number, the more restrictive the parking requirement.

Some communities may require, in addition to parking spaces for the number of units, guest parking or service parking for a specific number of units. For example, if a jurisdiction requires 1 parking space per unit and a guest parking space for every four units, input "1 + 1/4 units." Do not, in this example, simply input 1.25 parking spaces per unit; doing so would lead someone to believe that a building with three units requires four parking spaces (because 3.75 rounds up to 4), when the text only triggers a fourth space if there is actually a fourth unit.

NOTE: Do not be surprised if you find instances where elderly housing has a different parking requirement than non-elderly housing. In such cases, follow the convention you have already heard several times, which is to log it as alternatives: For example, let's say you find a district that requires two parking spaces for 1-family housing, but only one parking space for 1-family housing designated for the elderly. In that case, log "2; 1 parking space/elderly."

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NOTE: Some jurisdictions require that that housing have a garage, in addition to parking spaces. For example, Golden Beach, Florida, requires each lot to have either a one- or two-car garage (depending on the lot frontage) and 2 parking spaces. In such cases, add the number of spaces required in the garage to the additional, non-garage parking spaces. For Golden Beach, the entry was: "3 if <100' frontage; 4 if ≥100' frontage."

NOTE: If minimum parking requirements are tied to floor area of housing units, then include a notation in the relevant parking field to the effect of, "X per Y SF," where X represents the number of parking spaces and Y represents the number of square feet required and log it as "Alternatives" in the related Unit/Special field.

NOTE: Some jurisdictions require multi-family housing developers to provide regular parking and guest parking spaces on a per-unit basis. For example, a code might require 2 parking spaces for every unit plus one parking space for every 3 units. Add the required guest parking space(s) to the regularly required parking space(s). In the example, input 2.33 for the applicable 4+-family parking fields.

6. Connectivity Requirements

In this Subsection, you will complete the following fields requiring housing to be connected to other infrastructure or structures: the Connection to Sewer and/or Water Required field, which records whether the housing must connect to existing sewer and/or water systems, and the Connection or Proximity to Public Transit Required field, which records whether the housing must be located near public transportation. Log these restrictions for 3-family, 4+-family, and affordable housing.

In addition, in zoning districts that allow accessory dwelling units (ADUs), you will complete the Restricted to Only Primary Structure field, which reveals whether ADUs must be physically attached to or connected to the principal dwelling unit. Such a requirement was found in about half of the districts allowing ADUs in Connecticut.

To complete these fields, search for the following phrases:

- Connected to
- Sewer
- Water
- Public service
- Public utility or utilities
- Public transportation
- Public transit
- Attached to

These requirements are often found within the description of an individual district or the ADU housing type description, and not in a chart. You only log a "Yes" in these fields if the connectivity (to sewer/water, transportation, or the principal dwelling unit, as appliable) is mandatory. A

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zoning code that says that housing "should have" or "may have" such a connection, or that such a connection be "adequate" is not mandatory.

When it comes to sewer/water, be mindful that we are trying to capture requirements that housing connect to public water/sewer (not wells, cisterns, septic tanks, leach ponds, etc.). Some zoning codes use the phrases "public service[s]" or "public utility" and then define those terms to include sewer and/or water infrastructure. Where the code requires a connection to "public services" or "public utilities" (defined to include sewer and/or water infrastructure), then log a "Yes" in the Connection to Sewer and/or Water Required field.

To minimize clutter when there are different regulations depending on if there are sewer and/or water connections, input regulations like so: "X w/water/sewer; Y w/o." A real example: "5.8 w/water/sewer; 2.9 w/water; 2.18 w/o."

Sometimes there are additional specifications. Here is an entry where the minimum lot size varied based on both water & sewer connections and if there is a connection, whether the building is attached to another: "0.34 w/water/sewer (detached); 0.09 w/water/sewer (attached); 0.92 w/o."

NOTE: Even if the zoning code does not require connection to sewer/water or transit, the code may still make special provisions for housing near such areas. Where, for example, a district requires a different lot size or building height for lots near a train station, log as "Contextual" in the applicable Minimum Lot Size or Building Height fields (e.g., "X; Y if w/in 500 ft of train station"). For more on this, see Part IV.A.1.b.

E. CATALOG REGULATIONS ON STRUCTURES

You are in the home stretch! This Section concludes with the final fields, all dealing with the way zoning codes treat the development of structures used for housing. It logs this treatment across all 7 of the housing types discussed in Part IV.C.

This Section covers the maximum height of residential structures, floor to area ratios, unit size requirements, maximum bedroom requirements, and maximum units per development.

In this Section, you will mostly be logging numerical answers. Some of the numerical answers differ depending on the number of bedrooms. Log these differences uniformly by using the abbreviations in Part IV.A.1.c.

NOTE: Again, these structure-related requirements do not always exist. Where the zoning code is silent, leave the entry blank.

In this Section, you will fill out the following fields:

- **Max. Stories** and **Max. Height**: The maximum height of residential construction. Fields are in the following sections:
  - 1-Family Treatment

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    - 2-Family Treatment
    - 3-Family Treatment
    - 4+-Family Treatment
- **Floor to Area Ratio**: A single number which constrains building square footage relative to lot area by capping building square footage as a multiple of the lot area. Fields are in the following sections:
    - 1-Family Treatment
    - 2-Family Treatment
    - 3-Family Treatment
    - 4+-Family Treatment
- **Min. Unit Size**: The minimum square footage for a single dwelling unit. Fields are in the following sections:
    - 1-Family Treatment
    - 2-Family Treatment
    - 3-Family Treatment
    - 4+-Family Treatment
    - Affordable Housing (AH)
- **Max. ADU Size (%)** & **Max. ADU Size (sq ft)**: The maximum square footage for an ADU. Located in the Accessory Dwelling Unit (ADU) section.
- **Max. Bedrooms**: The maximum number of bedrooms within a single dwelling unit. Fields are in the following sections:
    - 3-Family Treatment
    - 4+-Family Treatment
    - Affordable Housing (AH)
    - Accessory Dwelling Unit (ADU)
- **Max. Units per Building** & **Max. Units**: The maximum number of units per building or per development, as applicable. Fields are in the following sections:
    - 4+-Family Treatment
    - Affordable Housing (AH)
    - Planned Residential Development (PRD)

Again, overlay districts require special instruction. For any district that has a "Yes" in the Overlay field, then only complete subsequent fields for the district if the overlay overrides the base district and is different than the base district. If the field is left blank, the base district's characteristics prevail. As discussed in Part IV.A.3., in this one situation only, where the overlay overrides the base district by eliminating base districts regulations in a particular field, enter a "0" in the field.

1. Maximum Height

Zoning codes can restrict the height of buildings. Such a restriction can dampen housing supply by constraining the size of buildings that can be devoted to housing. In Connecticut, on average over 90% of districts permitting housing have height restrictions. Four-or-more-family housing is capped at around 4 stories, which means that even where apartment buildings are allowed, they are extremely limited.

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In this Subsection, you will fill out up to 8 fields dealing with the maximum height of housing for the four principal housing types.

Some jurisdictions cap height in terms of number of stories, while others use linear feet; some use both stories and feet and say that whichever is shorter/smaller prevails. There is one field for stories and one for feet, for each of the four principal housing types. Fill out what you find and leave the rest blank.

Maximum height requirements often appear in a chart detailing certain district characteristics, sometimes contained in an appendix to the zoning code. These charts might be called:

- Area and Bulk Requirements
- Dimensional Requirements
- Lot and Building Requirements
- Area Requirements

If you do not find any such charts, search for height restrictions manually using the following phrases:

- Maximum height
- Height
- Stories
- Story

Searching for the term "feet" will yield a large number of erroneous results, from the height of trees to the length of signs. See what you find with the above terms before resorting to "feet."

When you find the number of stories or feet, input it as a number only, without units. Input your number to the tenth decimal place (or the hundredth place as needed), because often height restrictions based on the number of stories include half stories (0.5). The lower the number, the more restrictive the height requirement.

If there is a minimum height requirement, then include in the Visible Atlas Notes field: "Minimum height of [X feet/Y stories] also required." A minimum height might also vary based on elevation. If so, include, as an example: "Minimum height 15' above average elevation, measured at the building line."

A very small number of jurisdictions have context-specific regulations instead of providing a specific number for heights. For instructions on this, see Part IV.A.1.b.

NOTE: You may find zoning codes, especially form-based codes, that establish several different height maximums depending on the type of building. Identify the building types that allow residential uses, then identify the various maximum heights established. In the relevant Max. Height field's Units/Special field, select "Alternatives" and log in one of the following ways, as appropriate:

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- "X; Y for [other buildings/building types]." or
- "X; Y for [other buildings/building types]; Z for [other buildings/building types]."; and so on.

Similarly, zoning codes (often form-based codes) may vary height regulations based on roof type. In the relevant Max Height field's Units/Special field, select "Alternatives" and log the roof types. If two or three roof types, simply say these types; for example "30/pitched; 35/flat." If there are too many types to fit, then say "Varies by roof type per § X."

NOTE: When a height regulation states the maximum height is contingent on a particular aspect of the site or structure (e.g., "Maximum height is 35 feet; but when there is a 30 foot side yard or larger add one 1 foot to the max height for each additional foot of side yard over 30 feet in width up to a maximum height of 45 feet."), log it in the Editor as "Alternatives" and in the Max. Height field enter something like this: "35; 36-45, w/30' side yard + 1' add'l side yard/add'l ft in height over 35'."

NOTE: You may find zoning districts that allow affordable or elderly housing to have different heights than non-elderly, non-affordable types of housing. If so, include the more common number (i.e., for non-elderly/non-affordable housing) in the applicable Max. Height field similar to above: "X; Y for [elderly/affordable] housing."

2. Floor-to-Area Ratio

Zoning codes, especially older codes, often offer what is called a "floor to area ratio," which constrains building square footage relative to lot area by capping building square footage as a multiple of the lot area. In Connecticut, these ratios appear in about a quarter of districts allowing 4+-family housing, but only in about 15% of 1-family districts.

In this Subsection, you will fill out up to four fields, each dealing with the floor to area ratio for the four principal housing types.

You might locate floor-to-area requirements in the chart you found in Part IV.D.1., if any. If you are not so lucky, search the zoning text for these phrases:

- FAR
- F.A.R.
- Floor to area
- Floor-to-area
- Floor area ratio
- Floor-area ratio

On the last two search terms, be sure to include the word "ratio," as the term "floor area" alone will yield you false positives, capturing everything from minimum unit size (the subject of Part IV.E.3.) to cellar size. When you find a floor-to-area ratio, input it as a number (using decimals if needed) only, and take it to the hundredth place. Do not input the number as a percentage;

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convert percentages to numbers (again, using decimals if needed), so forty percent or 40% should be inputted as 0.4. The lower the number, the more restrictive the floor-to-area requirement.

A very small number of jurisdictions have context-specific regulations instead of providing a specific number for floor-to-area ratio. For instructions on this, see Part IV.A.1.b.

NOTE: This methodology does not distinguish between gross and net floor area. Gross area includes all area within the outer exterior surfaces of a building, while net area (sometimes called zoning floor area) often excludes unusable, mechanical and/or below grade spaces (e.g., cellars, stairwells, boiler rooms, wall thickness, etc.). There is no clever way to convert between gross and net floor area, and usually the distinction only makes a negligible difference to the actual amount of housing. If this matters to you, feel free to make a note in the Visible Atlas Notes field.

NOTE: If floor-to-area ratio depends on lot size, include in the relevant Floor to Area Ratio field: "X if lot < Y acres; Y if lot between Z & Q acres." Log as "Contextual" in the relevant Units/Special field. For more on this, see Part IV.A.1.b.

NOTE: If floor-to-area ratio has many options that would be too complicated to list in the 75 characters available in the field (such as when the FAR varies depending on amount of open space provided or by a sky exposure plane), select "Alternatives" in the relevant Units/Special field. Then include the range of the maximum floor area ratio (if possible) and reference the location in the zoning code: "X-Y depending on open space provided, per § Z." For more on this, see Part IV.A.1.b.

3. Unit Size

Zoning codes may also constrain the size of housing units. For principal-use housing, codes sometimes impose minimum unit sizes, which eliminate smaller (and more affordable) housing types. In Connecticut, 40% of districts with a minimum unit size for 1-family housing required a size of 1,000 square feet or more. For accessory dwelling units, codes very often impose maximum unit sizes; in Connecticut, about three-quarters of districts do. Maximum sizes can hinder the effectiveness of ADUs, rendering them too small to meet housing needs.

In this Subsection, you will fill out up to 7 fields dealing with unit size.

The first 5 Min. Unit Size fields deal with the 4 principal housing types and affordable housing, and require you to collect information in terms of square feet. For these fields, you collect the minimum unit size, meaning the smallest number of square feet a housing unit is allowed to be. The last two fields deal with ADUs, for which you are collecting the maximum unit size, which specifies the largest number of square feet an ADU may be. The Max. ADU Size (%) field logs maximum ADU size as a percentage of the principal dwelling, while the Max. ADU Size (sq ft) field logs maximum ADU size in square feet. Some jurisdictions use a percentage, while others use square feet; some use both percentage and square feet and intend that whichever is smaller prevails.

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You might locate minimum unit size requirements in the chart you found in Part IV.D.1, if any. But more likely they are located in district-specific sections of the zoning code. Search for these phrases:

- Unit size
- Minimum size
- Floor area

If a minimum unit size is expressed in square feet, input it as a whole number. If a maximum ADU size is expressed as a percentage, input in the Max. ADU Size (%) field the whole number associated with the percentage as a number only, without the percentage sign. For example, for 16 percent, insert only the number "16." The higher the minimum unit size for principal-use housing, and the lower the maximum unit size for ADUs, the more restrictive the requirement.

Some codes will not have a maximum size for an ADU. In that case, leave the Max. ADU Size fields blank.

NOTE: You may come across language indicating that an ADU can be the same size as the principal dwelling. If the jurisdiction allows an ADU to be the same size as a principal 1-family home on the lot, this is not an ADU at all. It is more accurately coded as 2-family housing. Return to Parts IV.C.2 and IV.C.6. and make changes accordingly.

4. Maximum Bedrooms

Some zoning codes cap the number of bedrooms for three-or-more-family housing and for ADUs. The rationale for these caps appears to be to limit the number of schoolchildren who impose themselves on public school systems. There are essentially no maximum-bedrooms caps on 1-family housing, calling into question why children living in multi-family housing or ADUs must be zoned out. In any event, these caps are more common than one would hope, and thus worth logging.

In this Subsection, you will complete up to four Max. Bedrooms fields, relating to 3-family housing, 4+-family housing, affordable housing, and accessory dwelling units.

This requirement may be tricky to find, but you could start by searching the phrases:

- Maximum bedroom
- Max. bedroom
- Maximum number of bedrooms

In addition, search the ADU-related section of the zoning code for the term "bedroom" to fill out the ADU Max. Bedrooms field. The lower the number, the more restrictive the bedroom requirement.

When you find a maximum number of bedrooms, input it as a whole number, without units. If needed, take the number to the tenth decimal place (or the hundredth place as needed).

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NOTE: You may find descriptions regarding a cap on the total number of rooms permitted in a housing unit, without reference to a particular number of bedrooms. Usually, this total number of rooms excludes bathrooms and utility spaces. If given this number, you could take the total number of rooms and subtract 2 (for a kitchen and living room) to estimate the number of bedrooms that might be allowed. If you do this, include in the Visible Atlas Notes field: "Maximum bedrooms estimated per cap of X total number of rooms."

5. Maximum Units

Finally, some zoning codes cap the number of housing units that can be developed in 4+-family housing, affordable housing, or planned residential developments. The rationale for this type of restriction may be purely exclusionary, or it may be genuinely related to some infrastructure concern. Collect the information regardless!

In this Subsection, you will complete up to two fields: Max. Units per Building and Max. Units. To complete them, search for any of the following phrases in the zoning text:

- Maximum units
- Max. units
- Maximum number of units

You could also search the word "maximum" in the section of the zoning code dealing with affordable housing and the section of the zoning code dealing with PRDs. While the term may give you false positives, it will be a manageable number if you limit the search to just those specific sections.

When you find a maximum number of units, input it as a whole number, without units. The lower the number, the more restrictive the unit requirement.

F. FINALIZE ZONING CODE DATA

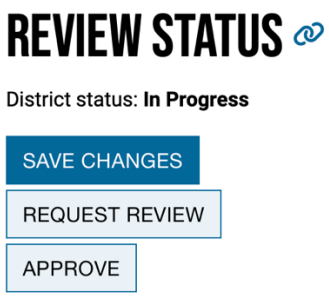
This Section describes how to finalize zoning code data to prepare it for publication to the Atlas. Key to finalizing the data is reviewing and approving the data entered for each individual zoning district. This Section first covers how analysts can initiate the review process for each district for a team leader's approval. Then it offers guidance for a team leader reviewing and approving districts, explaining how to identify and fix common errors and describing the process for making bulk corrections. Finally, it explains an optional process for seeking external verification of data covering an entire jurisdiction.

1. Initiating the Review Process for Individual Zoning Districts

Before a jurisdiction can be published, each of its individual zoning districts must be reviewed and approved.

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When a zoning code analyst finishes inputting zoning code data for a specific zoning district, they should initiate the review process. The **REQUEST REVIEW** button at the bottom of the zoning district page, pictured here, initiates the process:



This request changes the status of the district from "In Progress" to "Review." It also alerts a team leader, who receives an alert on their primary home page, that this zoning district requires their attention.

2. Reviewing & Approving Individual Zoning Districts

The review and approval process then goes into the hands of the team leaders. This Subsection covers how team leaders can identify common errors made during data entry, review and approve districts, and make bulk corrections across several districts or even several jurisdictions.

a. Identifying Common Errors

When reviewing the data, team leaders might keep an eye out for a few common errors.

The first common error is districts that allow agricultural and residential use being classified as "Mixed with Residential" or "Nonresidential" in the Type of Zoning District field. Note our explanation in Part IV.B.1 as to why these are normally "Primarily Residential."

The second common error is a number that makes no sense, because it is too small or too large to be appropriate to the unit of measurement, e.g.:

- A Min. Parking entry showing "4" or more. Sometimes, a zoning code analyst will include a "4" for 2-family housing, where the code says, "Duplexes require 4 units of parking." Because the measurement in the Min. Parking field must be inputted on a per-unit basis, the number that should be included in that field should be 2 in such circumstances.
- A Max. Lot Coverage - Buildings or Max. Lot Coverage - Buildings & Impervious Surface entry where the numbers are expressed in decimals or percentages, rather than simply two-digit integers between, usually, 10 and 100. If a number lower than 10 or higher than 100 is identified, review the zoning code again.
- Max. Stories and Max. Height fields being swapped. It is easy here to slip up and, for example, input a "3" in the Max Height field, when the "3" is intended to be included in the Max. Stories field. Reconcile any clear outliers by reviewing the zoning code.

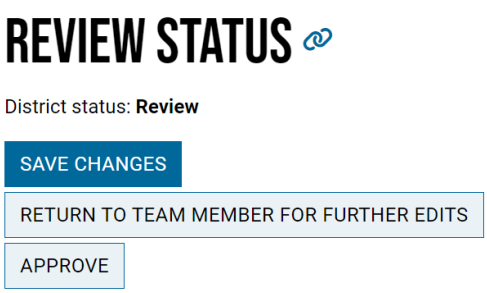
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While we're on the topic of numbers, note a third common error: errant zeroes or "None" text entries. At this stage, delete all zeroes and "None"s your team may have inputted in base (non-overlay) districts. If the zoning code is silent on a numerical measure, then leave the cell blank and change the Units/Special field to "N/A" using the dropdown arrow. The only exception is overlays. As a reminder: If the overlay district overrides the base district by eliminating base district regulations in a field, enter a "0" in the appropriate field. This is the only time we endorse inputting a "0" in any of the fields in the Editor. For example, let's say an overlay expressly eliminates all setback requirements for an underlying district. A "0" entry confirms that the numbers in the base district are overridden.

The fourth common error is failure to use abbreviations in the Visible Atlas Notes or in fields marked Alternatives or Contextual. Please refer to Part IV.A.1.c. to ensure conformity with those abbreviations.

b. Processing Reviews & Approvals

After reviewing the zoning district, the team leader can then **RETURN TO TEAM MEMBER FOR FURTHER EDITS** or **APPROVE**:



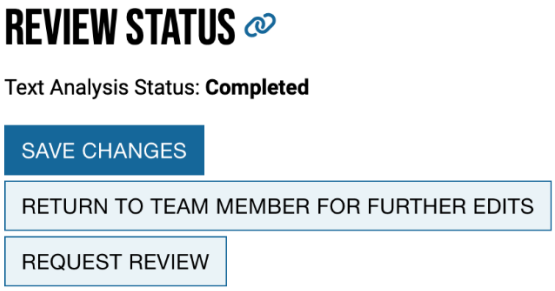
Returning it to the team member will require the team member to review the content of the zoning district and resubmit. In the jurisdiction home page, the zoning district will be marked as "In Progress." It may be helpful to add a note to the Internal Notes field to identify what should be checked/edited (include a date, so team members know what is current). This note can then be removed when approved.

Approving individual zoning districts on their individual pages is an important step because it runs automated data quality checks. Any errors flagged will appear at the top of the zoning district page. Follow the next steps to return the district to the team member for further edits, or to approve it.

Approving the district will prepare it for publication to the **ATLAS MAP** once its geometry is properly uploaded. In the jurisdiction home page, the zoning district data will be marked as "Completed."

A zoning district can always be returned to a zoning code analyst, even after it has been approved (or "Completed"). Here's what the Review Status menu at the bottom of a zoning district page looks like after a district has been approved by a team leader:

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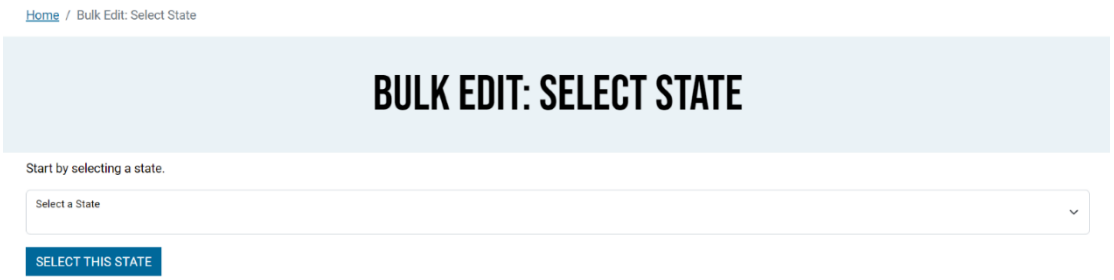
These instructions pertain to review of individual zoning districts. For instructions on how to make corrections across multiple zoning districts, or even across multiple jurisdictions, proceed to the next Subsection. For instructions on how to check the review status for an entire jurisdiction, visit Part VI.B.2.

c. Making Bulk Corrections Using the Bulk Edit Function

A team leader may find that a zoning code analyst has made the same error across multiple zoning districts or even across multiple jurisdictions. The error could relate to erroneous data entry, could result from an analyst entering "None" or extra zeroes in many fields, or could result from some interpretive issue. A team leader has the ability to correct these errors in bulk through the Editor. The Bulk Edit function can also be used for other purposes, including, for example, to copy information related to the subcounty jurisdictions that follow a county zoning code, as noted in Part II.C.5.b.

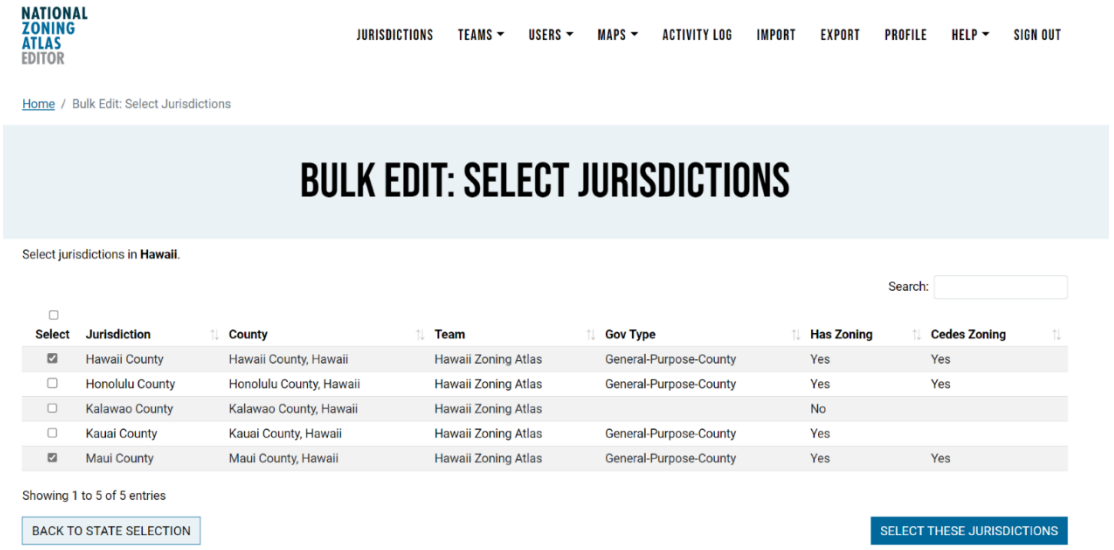
To make bulk edits, navigate to the **BULK FUNCTIONS** tab, which brings you to the two different Editor functions that allow experienced users to edit multiple zoning districts at once. The "Bulk Edit" tool allows users to correct data that was incorrectly inputted or check or update data at scale. The "Bulk Expire" tool allows users to log the date upon which multiple zoning districts' rules changed, or the date upon which multiple zoning districts expired (i.e., ceased to exist), due to a legislative change (such as a statewide zoning override or a local rezoning). To get to the Bulk Edit tool, select "I am CORRECTING DATA that was incorrectly inputted or checking and updating data at scale." That will take you to the Bulk Edit menu.

Select the state you would like to edit from the drop-down menu:

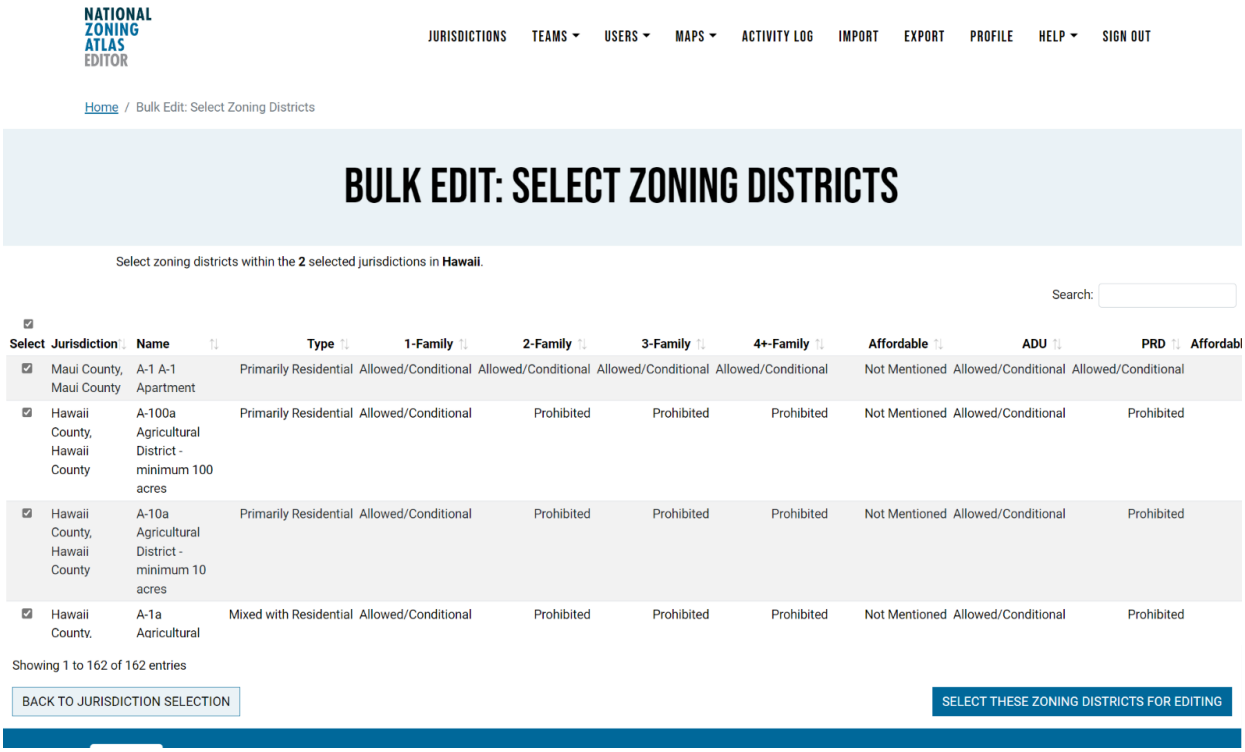


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After clicking on the **SELECT THIS STATE** button, you will get a list of jurisdictions. Check boxes for up to 5 jurisdiction(s) to edit by clicking on the **SELECT THESE JURISDICTIONS** button. In the example, we have selected Hawaii and chosen two of the five jurisdictions:



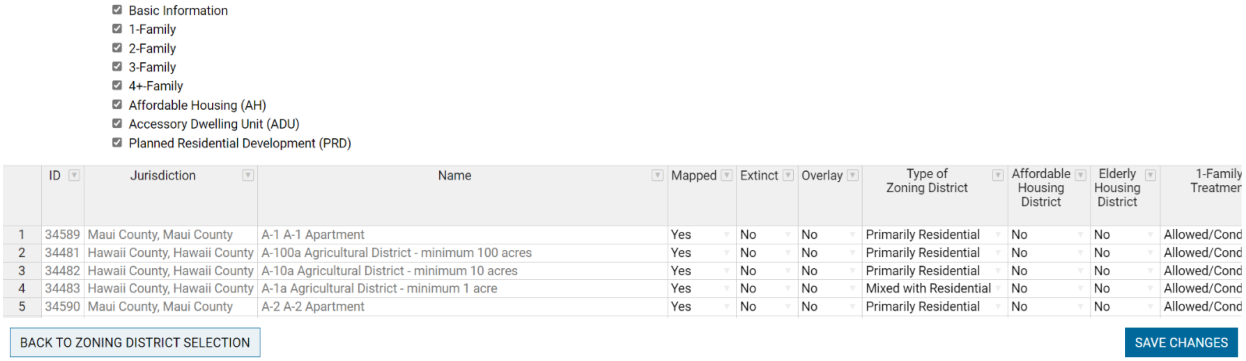
Next select up to 150 zoning districts to edit by clicking on the **SELECT THESE ZONING DISTRICTS FOR EDITING** button. In the Hawaii example, 162 zoning districts (listed under "Name") appeared across the two jurisdictions chosen:



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Now, you will see a spreadsheet view containing all of the entered information for the selected zoning districts. Before you begin to make changes, please read these editing tips:

- You can always go back to the previous selection if needed.
- If you have trouble finding what you are looking for, there is a search option.
- You can filter rows by a column's value. Click the arrow in the header to see more.
- You can right-click columns, even several at a time, to hide them. Hiding columns can make it easier to focus on the columns you're interested in, especially if they are not next to each other.
- Hidden columns will be indicated with red arrows in the header. To show hidden columns, highlight the columns adjacent to the red arrows, then right-click.
- You can use the checkboxes below to show and hide whole sets of columns at a time. *You may need to scroll sideways to see columns that are still visible.*
- You can freeze a column, which will push it to the left and fix its position on the left-hand side. This can be useful for fields you want to have visible at all times.



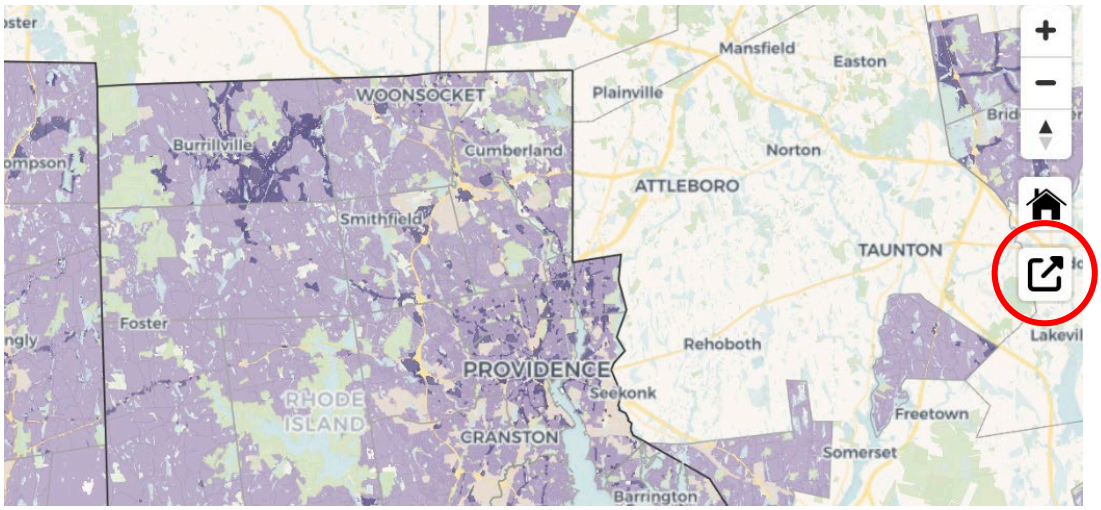
When you are done making changes, click on the **SAVE CHANGES** button at the bottom right corner. Saving changes on this page will not change the status of the edited zoning districts. To change the status of the zoning districts (particularly for those not yet marked "Complete"), return to the instructions in the previous Subsection.

NOTE: You may wish to use the Bulk Edit tool to log specific changes to the rules of multiple districts due to a legislative change (such as a statewide zoning override or a local rezoning) – but *do not use the Bulk Edit tool until you have first documented the date of the legislative change in the Bulk Expire tool*. The Bulk Expire tool saves a copy of the pre-change zoning district, and establishes a new record as of the date of the legislative change. To get to the Bulk Expire tool, go back to the **BULK FUNCTION** menu tab and follow the instructions in Part VI.B.2.c.

3. Submitting an Entire Jurisdiction for External Review (Optional)

Once the zoning code analyst finishes an entire jurisdiction and publishes it to the **ATLAS MAP**, the team might consider sending the jurisdiction to the jurisdiction's staff planner for an external review using the "Share" feature:

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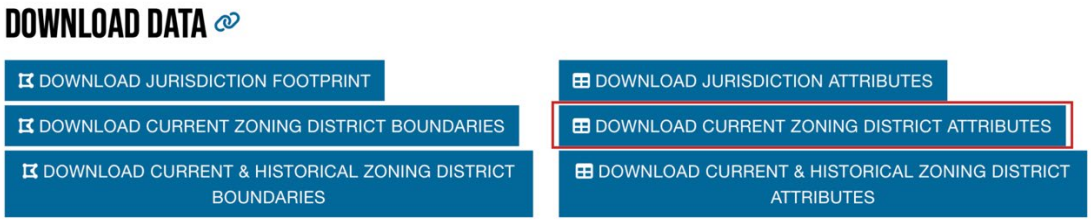
Planners are more likely to become engaged when they are able to see the data in its digital, interactive format. A planner should be asked to peruse data collected *for their town only*. (This is where the information you collect for jurisdiction officials in Part II comes in handy!)

If you need a sample email template for this, feel free to follow something like the below:

> Dear [planner name]:
>
> I'm writing on behalf of the National Zoning Atlas, a research project aiming to help the public understand zoning. As part of this project, we have reviewed the zoning information in your town. Here is a link to its zoning data as represented in our online, national map: [include hyperlink from Atlas "share" button].
>
> Please feel free to get back to us with any corrections or updates. Note that we have followed the methodology and definitions of How to Make a Zoning Atlas 2.0, which can be downloaded for free from our website. If it seems fine or if you don't have time to review, that's OK, too!
>
> We encourage you to use the Atlas, share it among your networks, and let us know if you find it helpful. Please follow the atlas through social media (@zoningatlas) to keep updated as additional jurisdictions' zoning are added to the Atlas!
>
> Sincerely,
>
> [Name]

If the planner does request to view a spreadsheet version of their jurisdiction's information, click the **DOWNLOAD CURRENT ZONING DISTRICT ATTRIBUTES** button to get a spreadsheet of information – which you should convert to PDF before sending to the planner:

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We strongly encourage conversion of the downloaded spreadsheet into PDF format, so that the planner will list specific changes, and may offer explanations related to them. Sending a spreadsheet will invite the planner to make changes in the spreadsheet, which may be difficult to log and evaluate for accuracy.

NOTE: Part VI.B.2.b. discusses how to flag a jurisdiction for review when a zoning code changes and updates are required.

With the zoning code analysis completed, zoning code analysts may wish to skim Part V to understand what their geospatial analyst peers have been doing. Everyone's work concludes in Part VI.

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V. PREPARE & UPLOAD GEOSPATIAL DATA

This Part covers how to prepare and upload the geospatial data for the **ATLAS MAP** displaying the regulatory information collected in Part IV. As a reminder, the National Zoning Atlas requires two nested geometries: jurisdictions and zoning districts. As noted in Part II.C., the team must log all jurisdictions (e.g., cities, towns, villages, or submunicipal authorities) within the team's area (e.g., county, region, or state), whether the jurisdiction has zoning or not. National Zoning Atlas staff will prepare jurisdiction boundaries for all known jurisdictions for your use. To create an accurate map, the geospatial analysts must log the boundaries of the zoning districts, in all of the jurisdictions that actually have zoning. Zoning manifests (in mapped form) through zoning districts, which are the areas within jurisdictions that distinctively regulate allowed uses, structures, and lots (e.g., R-1, R-2, C-1, etc.).

Accordingly, this Part provides step-by-step details of how to create, conform, clean, and upload a GeoJSON with zoning district boundaries. Most of this Part pertains to base zoning districts, which require no special treatment. Part V.D.3. covers districts and developments requiring special treatment, including: overlay districts, planned residential developments, highly-tailored districts, unmapped districts, and external districts (beyond the boundaries of the jurisdiction).

To complete the steps outlined in this Part, you should be familiar with basic GIS analysis using QGIS or ArcGIS Pro. If you are new to GIS, you may prefer to work with QGIS over ArcGIS Pro, since it is free. To help you get started with QGIS, take a look at these tutorials or the QGIS Manual. If you need a primer on GIS file types, refer to Part II.D.3.c.

A. REVIEW GEOSPATIAL DATA FOR JURISDICTIONS

National Zoning Atlas staff will create and upload the jurisdiction boundaries in your state or region to the Editor. This Section covers how we do that. We define the physical boundaries or jurisdictions by importing a GeoJSON file containing their footprints. Geospatial analysts add information about zoning districts, the upload of which is described in Parts V.B. through Part V.D.). View a related video tutorial, "Creating & Uploading Geospatial Data for Jurisdictions in the Editor," on our website.

The National Zoning Atlas team will upload a set of pre-cleaned jurisdiction boundaries from the Census Bureau's TIGER/Line database. These files include state, county or county equivalent, and jurisdiction boundaries clipped to shorelines. These polygons may not include all jurisdictions with zoning power in your state. However, they include many jurisdictions in widely recognized and accepted geometries that are already cleaned and integrated.

You may find that some jurisdictions are missing from the TIGER files we provide or that some boundaries have changed. Common types of missing jurisdictions include submunicipal jurisdictions and private associations, which you may discover as you assemble your list of jurisdictions and your maps. When identified, please contact National Zoning Atlas staff for

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assistance. We can locate the best-available source for the needed boundaries and ensure they are consistent with other jurisdiction boundaries in the project.

B. PREPARING EXISTING GEOSPATIAL DATA FOR ZONING DISTRICTS

This Section describes how to prepare existing geospatial data for zoning districts – namely, zoning district boundaries you may have received from the jurisdiction or other source. The following Section, Part V.C., describes how to create geospatial data for zoning districts from scratch.

This Section explains the typical tasks required when handling existing data, including setting the coordinate system, adding a base map, inspecting and correcting the attribute table, breaking MultiPolygons into single polygons, adding labels and color, and verifying the geospatial data against the official zoning map. After completing these steps, skip to Part V.D.

Before beginning the work described in this Section, save the original copy of the geospatial file obtained from the jurisdiction to the Editor per Part II.D.4. This file will be stored for archival and reference purposes; it is not used for the **ATLAS MAP**. View a related video tutorial, "Preparing Existing Geospatial Data for Zoning Districts," on our website.

1. Set Coordinate System

The first step is to establish a common working map projection. Though the Editor only accepts GIS data in WGS 84 projection, working in a projected coordinate system such as State Plane makes it easier to do operations such as buffering and snapping. If working on an entire state, identify the westernmost or southernmost State Plane zone of your state, then use the NAD83 variant for all your files. (For Florida, use UTM Zone 16 instead of State Plane.) If you are working on just a portion of your state (e.g., a single metropolitan area), you may use a different State Plane system, if preferred. Before uploading your files, we'll remind you to reproject to WGS84 as the very last step.

a. In QGIS

1. Create a new project (**PROJECT** > **NEW**).
2. Drag and drop the zoning district file, TIGER file, and any jurisdiction boundary files (if different from the TIGER layer) into QGIS to import.
3. To set your coordinate system, click on **PROJECT** at the top.
4. Select **PROPERTIES**, then **CRS**.
5. Type the name of your coordinate system in the search bar. For example, **ILLINOIS WEST** for the Illinois Team.
6. Select the result corresponding to NAD83 and ftUS. Continuing with the example of Illinois West, you would select **NAD83 / ILLINOIS WEST (FTUS)**, which is EPSG:3436. When confronted with multiple seemingly identical options, choose the lowest EPSG code.
7. Click **OK**.

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b. In ArcGIS Pro

1. Create a new Map project.
2. From the **ADD FILE** icon on the ribbon, navigate to your GIS file folder in the file explorer, control-click on your zoning district file, TIGER file, and any jurisdiction boundary files (if different from the TIGER layer) to select them all, and then click **OK**.
3. To set the coordinate system, right-click **MAP** in the Contents pane.
4. Select **PROPERTIES**, then **COORDINATE SYSTEMS**.
5. Type the name of your coordinate system in the search bar. For example, **ILLINOIS WEST** for the Illinois Team.
6. In the panel, open **PROJECTED COORDINATE SYSTEMS > STATE PLANE > NAD 1983 (US FEET)** and select the first result.
7. Click **OK**.

2. Add Basemap and Set Layer Transparency

A basemap can provide important context for preparing the GIS layers. This Subsection describes how to add the OpenStreetMap basemap. You may choose a different one if you prefer. However, we strongly recommend using one that depicts streets, because it will help you align your layers.

Once the basemap is added, set your zoning district layer's transparency to 50%. This allows you to align your layers with the basemap.

a. In QGIS

1. To add a basemap in QGIS, navigate to **PLUGINS**.
2. Select **MANAGE AND INSTALL PLUGINS**.
3. Then, search for "QuickMapServices" and click **INSTALL PLUGIN**.
4. Once installation is complete, three buttons, including the one called **QUICKMAPSERVICES**, will be added to the Toolbar.
5. Click **QUICKMAPSERVICES.**
6. Select **OSM**, then **OSM STANDARD** to add the OpenStreetMap raster layer.
7. To change your zoning district layer's transparency, right-click on the layer in the Layers pane.
8. Select **PROPERTIES**, then **SYMBOLOGY**, then **LAYER RENDERING.**
9. Adjust **OPACITY** to 50%.

b. In ArcGIS Pro

1. To add a basemap in ArcGIS Pro, find the **BASEMAP** button on the **MAP** tab of the ribbon. Click that and then choose the OpenStreetMap basemap.
2. To change your zoning district layer's transparency, click on your feature layer in the **CONTENTS** pane to highlight it.
3. Go to the **FEATURE LAYER** tab in the ribbon and type in the Transparency percentage.

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3. Inspect & Correct the Attribute Table

This Subsection aims to ensure that your GeoJSON file has these three mandatory fields (otherwise known as columns) when importing it into the Editor are:

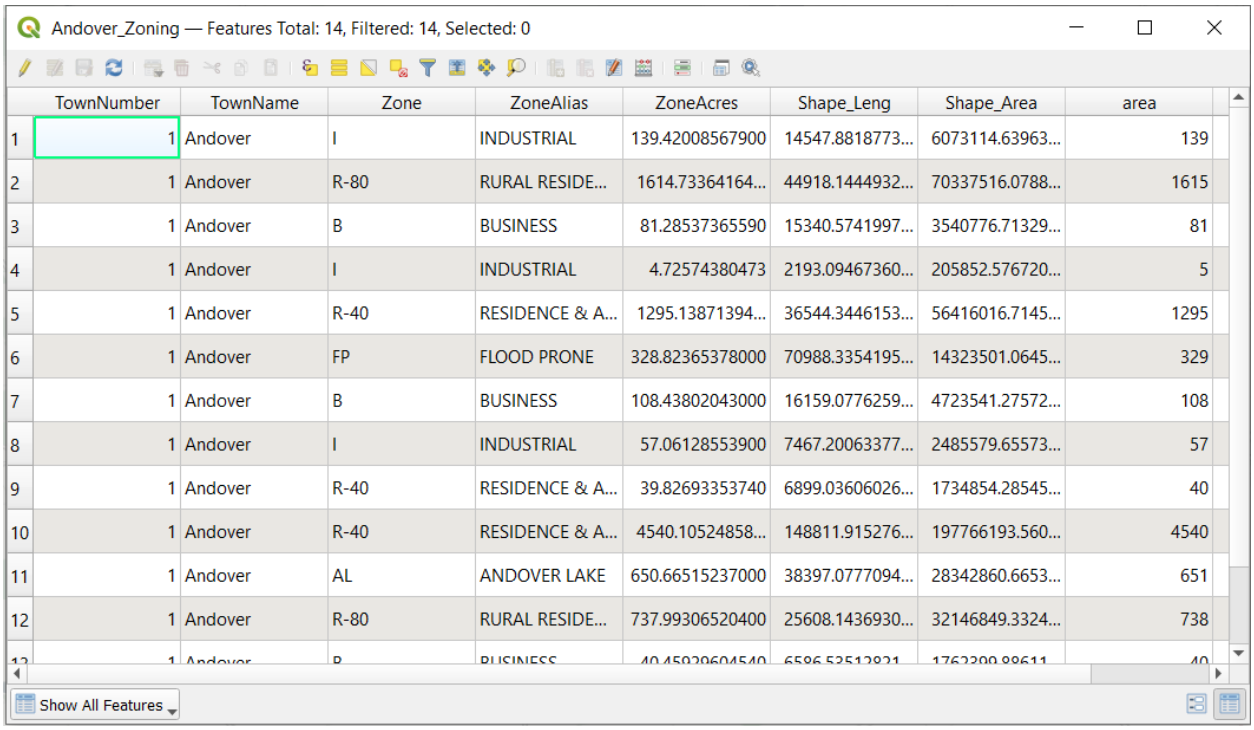
- County
- Jurisdiction
- Abbreviated District Name

To achieve this goal, you will need to create new fields, rename fields, and edit Abbreviated District Names before export and upload. You will do this in the attribute table (the table containing all of the fields and their associated data, also called attributes) after completing the cleaning steps outlined below. However, it is likely that you will also need to conduct some of these procedures earlier in the process as well, so we discuss them here.

Instructions on these steps using an example from Andover, Connecticut, for QGIS and ArcGIS Pro follow.

a. In QGIS

Right-click the layer in the **LAYERS** panel, and Open Attribute Table. This will list all polygons as rows, and all attributes as fields (also known as columns). It should look something like the table for Andover, Connecticut:



	TownNumber	TownName	Zone	ZoneAlias	ZoneAcres	Shape_Leng	Shape_Area	area
1	1	Andover	I	INDUSTRIAL	139.42008567900	14547.8818773...	6073114.63963...	139
2	1	Andover	R-80	RURAL RESIDE...	1614.73364164...	44918.1444932...	70337516.0788...	1615
3	1	Andover	B	BUSINESS	81.28537365590	15340.5741997...	3540776.71329...	81
4	1	Andover	I	INDUSTRIAL	4.72574380473	2193.09467360...	205852.576720...	5
5	1	Andover	R-40	RESIDENCE & A...	1295.13871394...	36544.3446153...	56416016.7145...	1295
6	1	Andover	FP	FLOOD PRONE	328.82365378000	70988.3354195...	14323501.0645...	329
7	1	Andover	B	BUSINESS	108.43802043000	16159.0776259...	4723541.27572...	108
8	1	Andover	I	INDUSTRIAL	57.06128553900	7467.20063377...	2485579.65573...	57
9	1	Andover	R-40	RESIDENCE & A...	39.82693353740	6899.03606026...	1734854.28545...	40
10	1	Andover	R-40	RESIDENCE & A...	4540.10524858...	148811.915276...	197766193.560...	4540
11	1	Andover	AL	ANDOVER LAKE	650.66515237000	38397.0777094...	28342860.6653...	651
12	1	Andover	R-80	RURAL RESIDE...	737.99306520400	25608.1436930...	32146849.3324...	738

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The table shown above already has the Jurisdiction and Abbreviated District Name fields, but they are called TownName and Zone, respectively. The table also lacks the County field, and it includes several extraneous fields.

NOTE: If the table looks different than this, it may be because QGIS is set to "Form View." To change it to "Table View," click **SETTINGS**. Select **OPTIONS**, then **DATA SOURCES.** Change **DEFAULT** view to **TABLE VIEW**.

i. Create New Fields

The existing table shows the jurisdiction name, Andover, but it does not show the county name. Andover is in Tolland County. To create the County field with the value of "Tolland" for all zoning districts, click the **FIELD CALCULATOR**  button within the table and fill in as follows:

- Output field name: `County`
- Output field type: **TEXT (STRING)**
- Expression: `'Tolland'`

Make sure you use single quotes for the text value. Click OK and ensure that the new field is listed as one of the fields in the **FIELDS** tab of the Layer Properties window. You may also do this for the Jurisdiction field when that information is missing.

ii. Rename Fields

In the Andover table, the Zone field appears to provide abbreviated names for zoning districts. This is good news; not all jurisdiction-provided tables will have such a field. To enable a smooth import into the Editor, you must rename the Zone field to Abbreviated District Name.

One way to do that in QGIS is to calculate a new field  as in the previous step and fill in as follows:

- Output field name: `Abbreviated District Name`
- Output field type: **TEXT (STRING)**
- Expression: `Zone`

In this case, you will not include any quotation marks in the Expression line on QGIS's Field Calculator pop-up. That will import the data from the Zone field into the new Abbreviated District Name field. Perform the same steps to the TownName field, renaming it Jurisdiction.

iii. Edit Abbreviated District Names

The entries in the Abbreviated District Name field must match what the zoning code analyst has recorded in the Editor. To edit an entry, turn on the **TOGGLE EDITING**  button located in the ribbon. In editing mode, double-click the entry and type the correct abbreviated district name.

To speed up this process, alphabetize the field entries by clicking the field name. Then look down the list and compare these entries with the Abbreviated District Name entries that have been

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entered into the Editor for the jurisdiction. These must match exactly, including spelling and punctuation.

Once you are done with this step, click the **SAVE EDITS** button on the ribbon.

iv. Delete Extraneous Fields

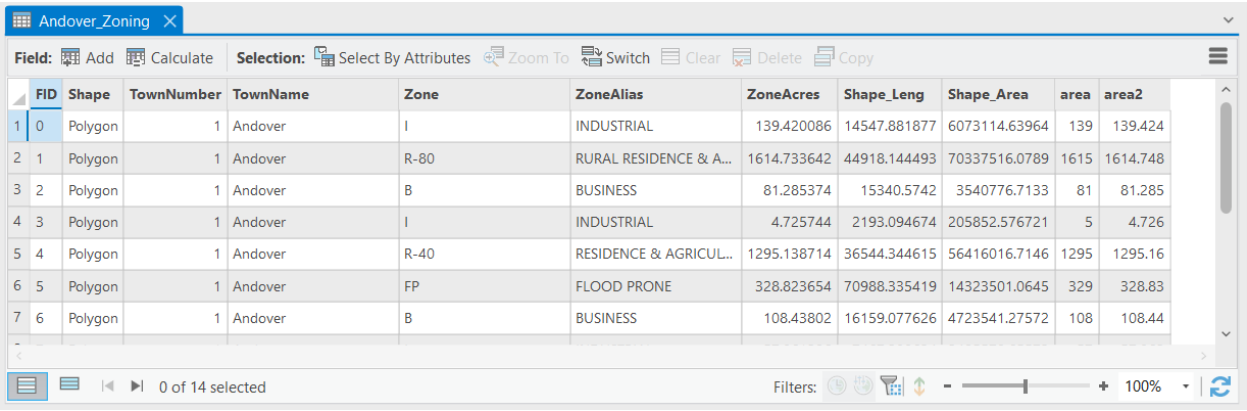
To delete unneeded fields, such as the TownNumber field in the example, click the **DELETE FIELD** button in the attribute table. This button is only available when **TOGGLE EDITING** on the ribbon is turned on.

Then, select the fields you wish to delete and click OK. This permanently deletes that field.

After these steps, click the **SAVE EDITS** button on the ribbon.

b. In ArcGIS Pro

Right-click your feature layer in the Contents panel, and then click on Attribute Table. This opens a table that looks like the one above, showing the fields of the feature layer. Here is the same Andover, Connecticut, example as above:



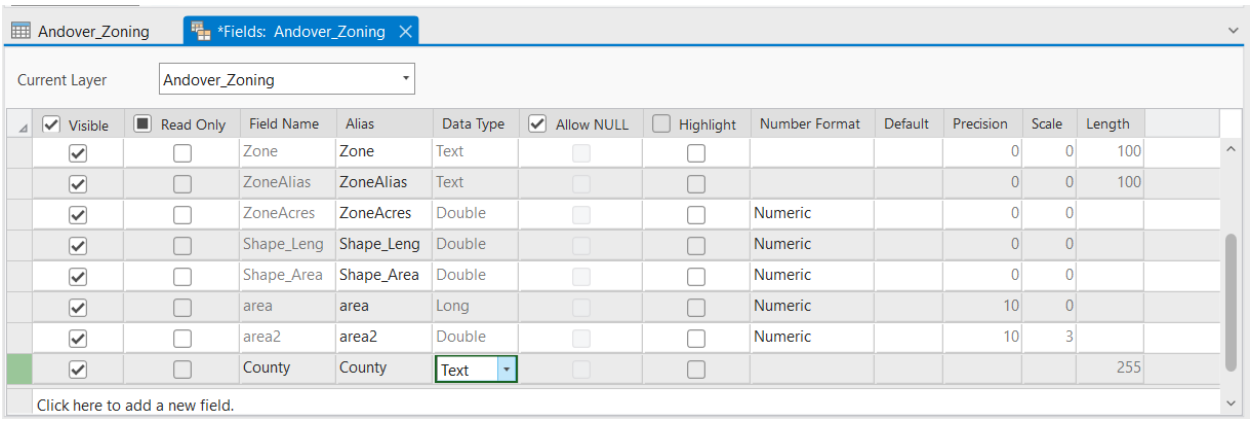
	FID	Shape	TownNumber	TownName	Zone	ZoneAlias	ZoneAcres	Shape_Leng	Shape_Area	area	area2
1	0	Polygon	1	Andover	I	INDUSTRIAL	139.420086	14547.881877	6073114.63964	139	139.424
2	1	Polygon	1	Andover	R-80	RURAL RESIDENCE & A...	1614.733642	44918.144493	70337516.0789	1615	1614.748
3	2	Polygon	1	Andover	B	BUSINESS	81.285374	15340.5742	3540776.7133	81	81.285
4	3	Polygon	1	Andover	I	INDUSTRIAL	4.725744	2193.094674	205852.576721	5	4.726
5	4	Polygon	1	Andover	R-40	RESIDENCE & AGRICUL...	1295.138714	36544.344615	56416016.7146	1295	1295.16
6	5	Polygon	1	Andover	FP	FLOOD PRONE	328.823654	70988.335419	14323501.0645	329	328.83
7	6	Polygon	1	Andover	B	BUSINESS	108.43802	16159.077626	4723541.27572	108	108.44

i. Create New Fields

The existing table shows the jurisdiction name, Andover, but it does not show the county name. Andover is in Tolland County. To create the County field with the value of "Tolland" for all zoning districts, click the **ADD FIELD** button within the attribute table. This will take you to the Fields panel. Under each field heading, input the following:

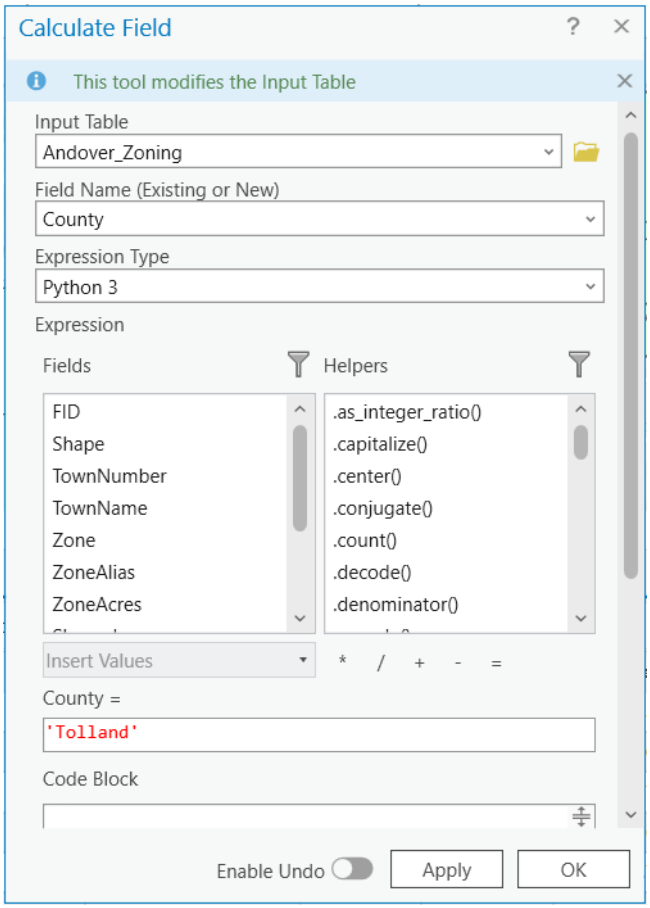
- Field Name: `County`
- Alias: `County`
- Data Type: **TEXT**

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Next, right-click the green box that appears on the left-hand side of the same row and click **SAVE**.

Now, switch from the Fields tab to your layer's tab in the attribute table panel. Your new County field will be all the way to the right. Scroll over to it, right-click County, and select **CALCULATE FIELD**. This opens the **CALCULATE FIELD** box.



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In the **CALCULATE FIELD** box, type 'Tolland' (using single quotation marks) in the box under "County =." Then click **OK**. Check the attribute table to make sure the new entry looks correct.

ii. Rename Fields

In the Andover table, the Zone field appears to provide abbreviated names for zoning districts. This is good news; not all jurisdiction-provided tables will have such a field. To enable a smooth import into the Editor, you must rename the "Zone" field to "Abbreviated District Name." However, for shapefiles, ArcGIS Pro caps attribute names at 10 characters. You must therefore change its alias.

1. In the attribute table, right-click the Zone heading and then click **FIELDS**. In the **FIELDS** tab, click in the alias entry next to the Zone Field Name (it likely also says "Zone"), and type Abbreviated District Name.
2. Right-click the green square to the left, and click **SAVE**.
3. Go back to your layer's **ATTRIBUTE TABLE** tab, and make sure the field heading has been updated.
4. Perform steps 1-3 for the TownName field, renaming its alias to "Jurisdiction."

iii. Edit Abbreviated District Names

The entries in the Abbreviated District Name field must match what the zoning code analyst has recorded in the Editor. To edit an entry, double-click the entry and type the correct abbreviated district name.

To speed up this process, alphabetize the field entries by clicking the field name. Then look down the list and compare these entries with the Abbreviated District Name entries that have been entered into the Editor for the jurisdiction. These must match exactly, including spelling and punctuation.

iv. Delete Extraneous Fields

To delete unneeded fields, such as the TownNumber field in the example, return to the Fields tab. There, right-click on the square on the left-hand side of the row you would like to delete, and then click the **DELETE** button. Then, right-click that same spot and hit **SAVE**. This will permanently delete that field.

4. Break MultiPolygons into Single Polygons

If your layer is of the MultiPolygon type, it may slow you down or block certain types of corrections when hand-editing in later steps. To break these MultiPolygons into single polygons, use the tool **MULTIPART TO SINGLE PARTS** in QGIS or ArcGIS Pro. After these edits and before exporting from your GIS, we will remind you to Dissolve your polygons back into MultiPolygons.

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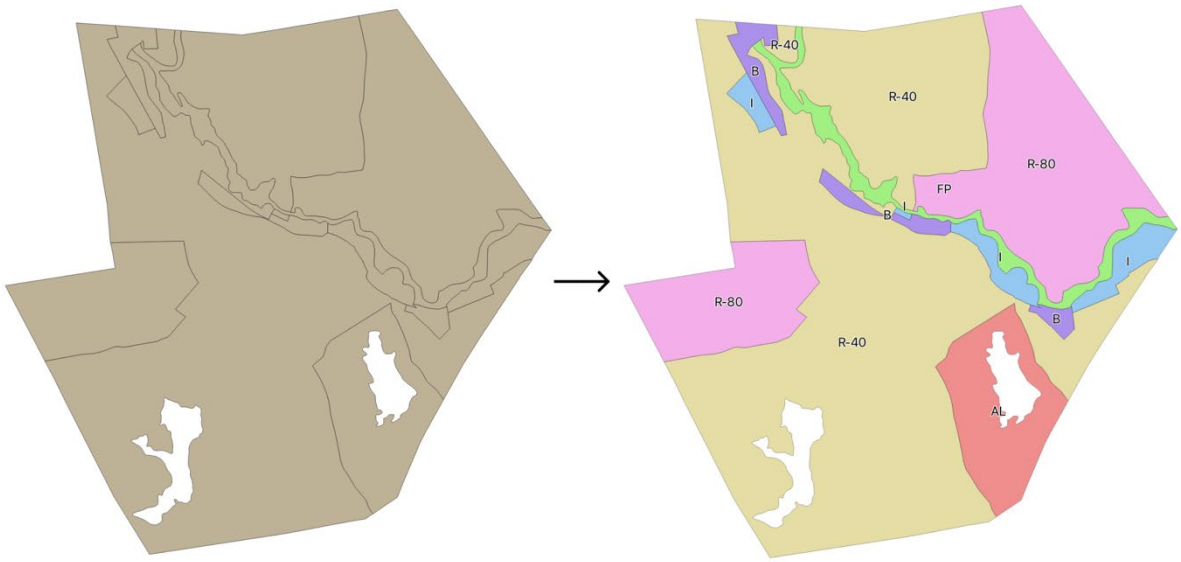
5. Add Labels & Color

By default, your GIS software will display all polygons in the same color, which is not very helpful for a visual assessment. This Subsection explains how to assign different colors to distinct zones, and label them to see the zoning better in QGIS and ArcGIS Pro.

a. In QGIS

1. Right-click anywhere on the toolbar. In the menu that appears, check the box for the **LAYER STYLING PANEL**.
2. In the first dropdown in that panel, make sure your Zoning Districts layer is selected.
3. In the **LAYER RENDERING** subsection, set **OPACITY** to **50%**.
4. Select **CLASSIFY**, then **APPLY**. This will apply different colors to zoning districts with distinct names.
5. Navigate to the **LABELS** tab, and select **SINGLE LABELS** from the dropdown. Once again, choose the appropriate field for **VALUE**, and hit **APPLY**.

   The zoning should appear much clearer now as shown below.



b. In ArcGIS Pro

1. Right-click the layer in the **CONTENTS** panel, then click **SYMBOLOGY**.
2. In the first dropdown, change **SINGLE SYMBOL** to **UNIQUE VALUES**.
3. In the next dropdown, choose the **ABBREVIATED DISTRICT NAME** field.
4. To change the opacity, click **FEATURE LAYER** on the ribbon (making sure the correct layer is highlighted in the **CONTENTS** panel).
5. Adjust **TRANSPARENCY** to **50%**.

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6. Verify Against the Official Zoning Map

Geospatial data provided by a jurisdiction or otherwise obtained from a public source should be checked against the official zoning map, since the latter carries legal weight, and the two sources of information are not always updated in sync. This Subsection offers instructions on how to georeference the official zoning map, then check it for visible discrepancies, and correct those discrepancies.

NOTE: In rare cases, the zoning text establishes the GIS as the official zoning map, and this task is not necessary; skip to the next Section.

a. Georeference

Georeferencing allows you to assign coordinates to an unreferenced image, plotting that image in a GIS. Start by converting the official zoning map (if in PDF) to an image file (e.g., TIFF, JPG, PNG) using a conversion tool, such as this free Adobe tool. After this image conversion:

- In QGIS, you will follow the steps outlined here.
- In ArcGIS Pro, you will follow the steps outlined here.

NOTE: Georeferencing is also an important step when creating geospatial files for zoning districts from scratch (i.e., digitizing them), as discussed in Part V.C.3.

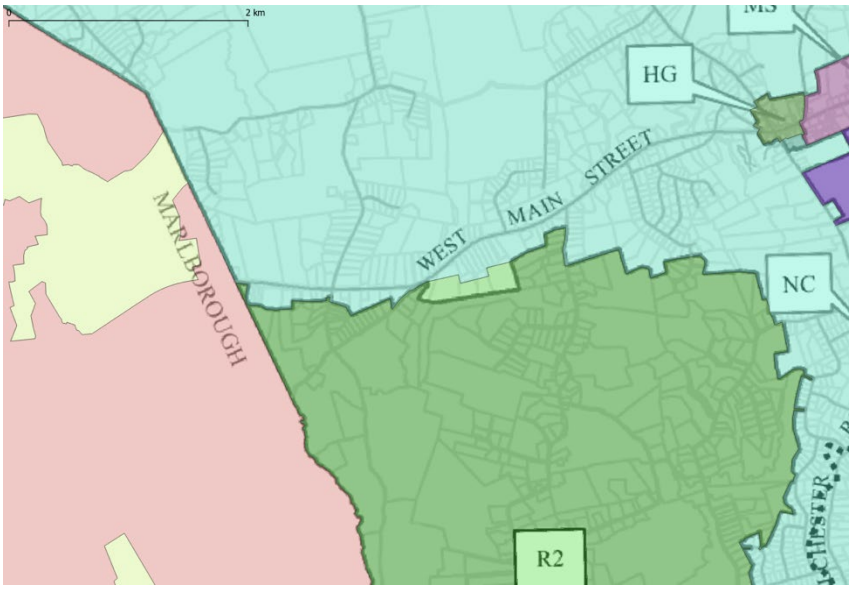
b. Check for Visible Discrepancies

After georeferencing the official zoning map, check for visible discrepancies between the georeferenced file and the geospatial vector files you have begun to prepare. There are two discrepancies a visual inspection will most commonly reveal. One results from either a changing boundary of an existing zoning district or a poorly digitized zoning district. The other issue results from the addition of a new zoning district.

With their transparency set to 50%, you should be able to see discrepancies between your GIS layer and the official map. Toggle the vector layer on and off as needed to improve legibility.

For example, in the center of the following image, a light green area depicting the R2 zoning district in the geospatial vector file extends past the heavy black line marking the R2 zoning district in the georeferenced file of the official map:

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c. Correct Discrepancies

Discrepancies revealed upon visible inspection must be corrected by changing the GIS layer to match the official zoning map layer. Again, there are two issues that can most commonly be revealed with a visible inspection.

The first – a district boundary change or poorly digitized zoning district – can be corrected by editing the polygon's vertices. To adjust the shape of your zoning districts (editing vertices), see QGIS instructions here and ArcGIS Pro instructions here.

The second – the addition of a new zoning district – can be fixed by adding a feature (i.e., a new component) to the polygon. To create new districts (i.e., create new polygon features), see QGIS instructions here and ArcGIS Pro instructions here.

NOTE: When adding polygon features or editing vertices, make sure that the new boundaries you draw snap to the existing boundaries. In QGIS, use the **TOPOLOGICAL EDITING** tools. For documentation, see here. In ArcGIS Pro, use the **TRACE** and **SNAP** tools. For more on the **TRACE** tool, see here, and for more on the **SNAP** tool, see here.

C. CREATE NEW GEOSPATIAL DATA FOR ZONING DISTRICTS

This Section should be used for jurisdictions that do not provide their zoning map in a GIS format. Start by following the georeferencing steps outlined in Part V.B.6.a. Once your map image has been georeferenced, there are three approaches you can take, depending on what data is available to you. This Section covers these approaches. View a related video tutorial, "Creating New Geospatial Data for Zoning Districts," on our website.

The two best scenarios – dissolving parcels and assigning parcels – require you to have access to parcel-level data, which is usually available through the county tax assessor's office or a state GIS

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clearinghouse. For many counties across the country, parcel data can be supplied by the National Zoning Atlas team, so contact us if you need our help. The third scenario, digitizing the map, takes longer and is only required for places lacking parcel data.

1. Dissolve Parcels

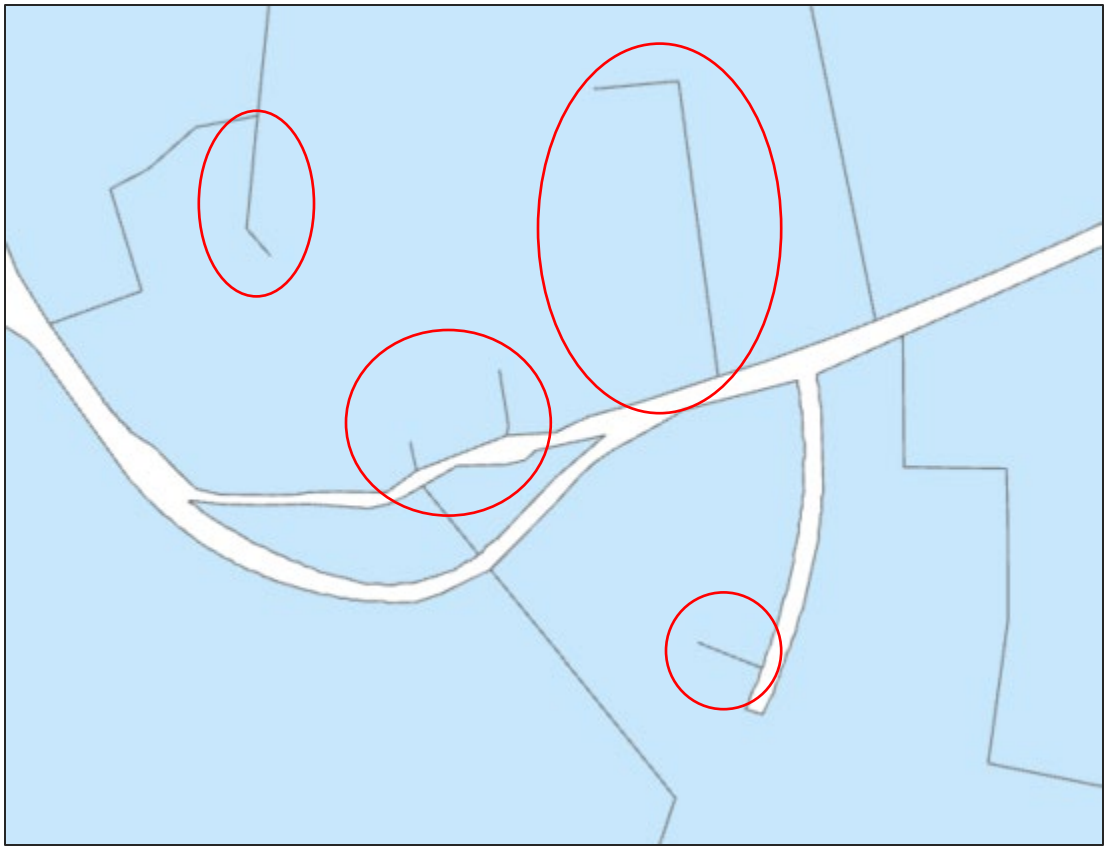
The best scenario would be to have access to parcel data with a zoning district attribute. This is rare, but if you have this data, simply aggregate the parcels by their County, Jurisdiction, and Abbreviated District Name equivalents using the **DISSOLVE** tool in either QGIS or the **PAIRWISE DISSOLVE** tool in ArcGIS Pro. Ensure that the **KEEP DISJOINT FEATURES SEPARATE** option is *not* checked if using QGIS, or that the **CREATE MULTIPART FEATURES** option *is* checked if using ArcGIS Pro.

In most cases, parcel data is available at the county level and may not include jurisdiction information. If it does, great! If not, assign a jurisdiction to each parcel before conducting the dissolve. If you already have a vector file showing the state's jurisdiction boundaries, assign jurisdictions to parcels using the **SPATIAL JOIN** tool in QGIS and ArcGIS Pro.

After conducting the **DISSOLVE**, the output will be a vectorized zoning district layer. You are almost there! In addition to cleaning the attribute table, you should double-check that the vector file districts overlay what is on the official zoning map. The parcel data could be outdated, and sometimes, parcels are split by zoning districts. In such cases, you must follow the vector editing steps discussed in Part V.D.2.b.

It is also sometimes the case that the parcel data is itself messy, so look out for strange little gaps in the data (such as those in the image below). These must be fixed before export and upload. Most of these can be fixed by creating a small buffer (e.g., 0.5 meter) followed by a negative buffer of the same size (e.g., -0.5 meter). This procedure can be done using the **BUFFER** tool in both QGIS and ArcGIS Pro.

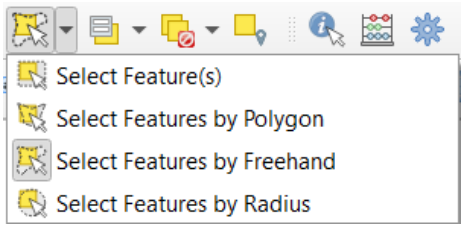
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2. Assign Parcels

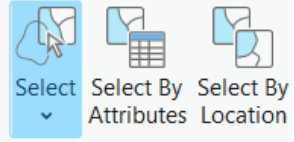
More commonly, parcel data will not include a zoning district attribute. Indeed, most of the parcel data the National Zoning Atlas team has on hand has no zoning data. In these cases, before you do the dissolve and check, first add a text field as outlined above for QGIS and ArcGIS Pro to include the Abbreviated District Name. Then, run the Multipart to single parts tool in QGIS or ArcGIS Pro to break the parcel file into single polygons. Next, overlay the georeferenced official zoning map on top of the vector parcel data and select the parcels by district to assign them their zoning district attribute.

In QGIS, use the **SELECT FEATURES BY FREEHAND** dropdown located in the ribbon.



In ArcGIS Pro, use the **LASSO** tool in the **SELECT** dropdown located in the ribbon.

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After making your parcel layer the only selectable layer and choosing these selection tools, draw a selection range around each zoning district. After selecting the parcels in one zoning district, you may calculate the new Abbreviated District Name field you created, specifying the corresponding zoning district name. Field calculator instructions are provided in Part V.B.3. for both QGIS and ArcGIS Pro. Note that when a selection has been made, the field calculator only operates for those selected features.

Once you have assigned zoning districts to all parcels, follow the steps outlined in Part V.C.1. to dissolve the data.

3. Digitize

If neither you nor the National Zoning Atlas team has access to parcel data for a jurisdiction, you will need to digitize the zoning map, converting the raster image into a vector. Once you have a georeferenced map image loaded in the GIS interface, you can trace the vector polygons you need from it by following the following steps.

a. In QGIS

1. Create a new layer for the zoning districts.
    a. Go to **LAYER**.
    b. Select **CREATE LAYER**, then select **NEW GEOPACKAGE LAYER**.
    c. In the first fields, select a save location and a table name.
    d. Set **GEOMETRY TYPE** to MultiPolygon and **PROJECTION** to EPSG:4326.
2. In the **NEW FIELD** section, add the County, Jurisdiction, and Abbreviated District Name fields individually.
    a. When doing this, make sure that **TEXT (STRING)** is selected as the type, and click **ADD TO FIELDS LIST**.
    b. Click **OK**.
3. The new layer will appear in your Layers window. Right-click it and enable **EDITING** mode.
4. Now click **CREATE NEW FEATURE**, and trace over a feature on your raster image.
5. Right-click when done.

When creating each feature of a polygon, write in the correct attribute in its attribute table. The County and Jurisdiction name should be the same for all features in the polygon. To save time and to avoid typos, enter these using the **CALCULATE FIELD** method described in Part V.B.3.a.

Because the Abbreviated District Name often differs by feature (i.e., single component of a polygon), you can directly write the correct attributes into the attribute table as you create each feature. Be sure to click the **SAVE** button regularly.

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b. In ArcGIS Pro

1. Create a new layer for the zoning districts by using the **CREATE FEATURE CLASS** tool; for more information, see here.
2. Select **POLYGON** for the Geometry Type.
3. In the **EDIT** tab of the ribbon, click **CREATE**.
4. Trace a district by adding vertices with each click, then double-click your last point to finish editing.
5. Open the attribute table and add the County, Jurisdiction, and Abbreviated District Name fields. All should be specified as Text fields.

The County and Jurisdiction name should be the same for all features in the polygon. Assign those values using the field calculator method described in Part V.B.3.b.

Because the Abbreviated District Name often differs by feature (i.e., single component of a polygon), you can directly write the correct attributes into the attribute table as you create each feature. Be sure to save your edits regularly.

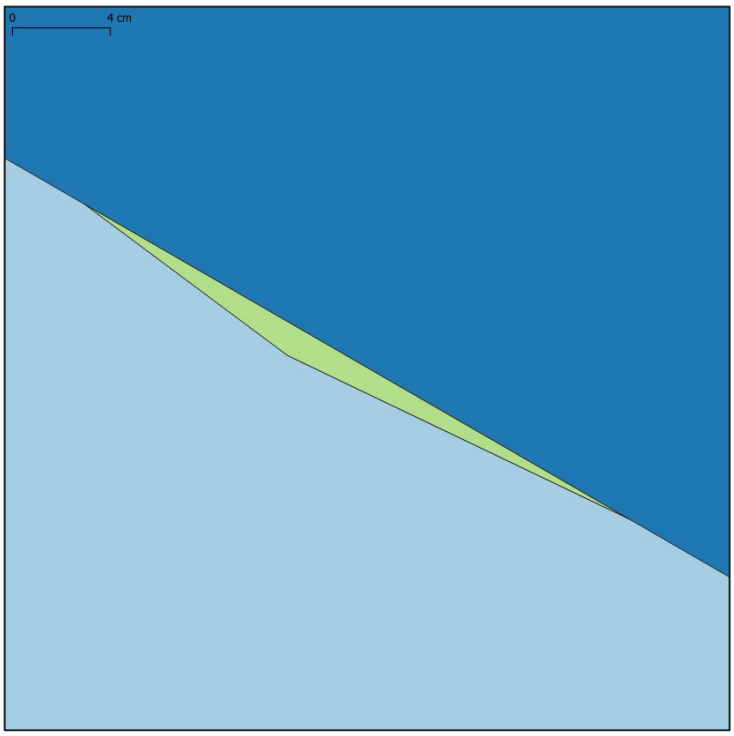
D. CLEAN & CONFORM GEOSPATIAL DATA FOR ZONING DISTRICTS

The quality of geospatial files varies greatly between jurisdictions, and extensive cleanup to standardize them before upload will often be required. This Section explains how to remove slivers, snap the zoning district boundaries, and treat four types of special circumstances. View a related video tutorial, "Cleaning & Conforming Geospatial Data for Zoning Districts," on our website.

1. Identify Slivers

Some geospatial files may contain slivers, or unwanted polygons resulting from previous layer cropping or other vector operations. They may be large enough for you to notice, although they will typically be very small in area.

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A 256mm x 12mm sliver between two zoning districts in Connecticut. Though small, this was easily found using the steps below.

To detect and remove such slivers:

a. In QGIS

1. Open the attribute table and create a new field in which you calculate polygon areas. To do so, click **OPEN FIELD CALCULATOR** and fill in as follows:
    a. Output field name: `area`
    b. Output field type: **DECIMAL NUMBER (REAL)**
    c. Expression: `$area`
2. As soon as you hit **OK**, the new Area field will be added to the table.
3. Sort it by clicking the field header and then inspect the polygons with the smallest areas.
4. If any of them have areas that are 0 or very close to zero, delete them by selecting row numbers to the left of the leftmost field (column) and clicking **DELETE SELECTED FEATURES**.
5. Save edits when you are finished.

Read more about working with the attribute table in the official QGIS guide.

b. In ArcGIS Pro

Use the **CALCULATE GEOMETRY ATTRIBUTES** tool to add or update an attribute for feature area. Then, view the attribute table sorted by your new area attribute.

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2. Snap the Zoning District Boundaries

Even after correcting the slivers, many gaps and overlaps may remain. Gaps are tricky because they are not always the result of poor digitization. Sometimes, they are meant to be there, especially when areas are separated by roads or waterways. Overlaps, on the other hand, are almost always the product of either improper data management or incompatible data sources. This Subsection discusses a series of procedures you can take to correct these mistakes.

a. Auto-Snap to Jurisdictions

The snapping tools in QGIS and ArcGIS Pro are good places to start for fixing small gaps and overlaps. Running the **SNAP GEOMETRIES TO LAYER** tool in QGIS or the **SNAP** tool in ArcGIS Pro on the entire zoning district layer using TIGER jurisdiction boundaries as the reference layer will snap the former to the latter, resolving many minor discrepancies that resulted from imprecise digitization. To ensure zoning districts are being snapped to the proper jurisdiction boundary, set a conservative snapping distance of *two meters* (double-check your projection and units). As before, you may wish to experiment with larger snapping distances, but beware that higher thresholds are more likely to lead to unexpected errors.

For QGIS documentation on the **SNAP GEOMETRIES TO LAYER** tool, see here.

For ArcGIS Pro documentation on the **SNAP** tool, see here. Note that auto-snapping zoning districts to jurisdictions will still leave gaps that are larger than the set snapping distance. In many cases, these are okay to leave as they are since they may be the result of a purposefully unzoned area such as a water body or road. Overhangs, on the other hand, usually require further manual adjustment, with the exception being cases where municipalities have been granted the right to zone adjacent unincorporated areas outside their boundaries (see Part V.D.3.e.).

b. Fix Topology

To correct district boundaries, start an Edit session in QGIS or ArcGIS Pro. In the Edit session, you will be able to adjust your district boundaries manually by adding, deleting, or moving vertices, or by dragging entire polygons. You can also add new districts if needed.

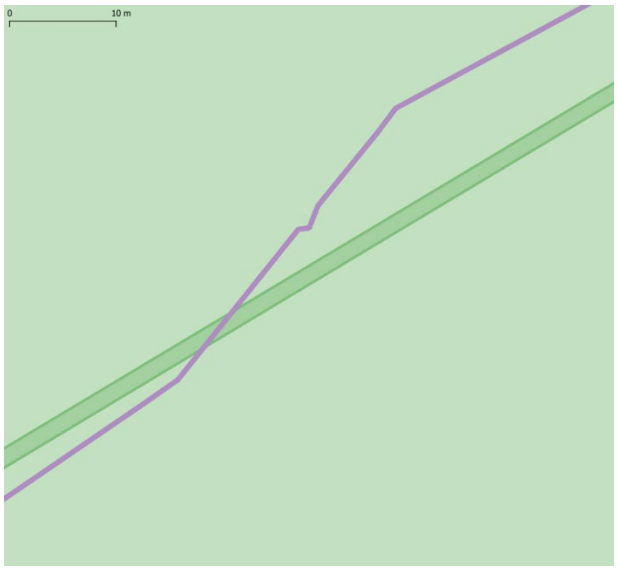
In QGIS, the best approach is to start with the **SNAP** tool, with a relatively low tolerance of two meters. You may wish to experiment with larger thresholds, but beware that higher thresholds are more likely to lead to unexpected errors. Learn more about snapping in QGIS here. After using the tool, you may need to interactively correct some remaining gaps and overlaps. To start this process, use the Topology Checker to find overlaps and gaps. Then, start an Edit session and use the Reshape and Vertex tools to correct the found errors. The Topology Checker is a built-in plugin; if you do not see it in your QGIS interface, go to the Plugins Manager to add it (for documentation, see here).

In ArcGIS Pro, load your data as a Feature Dataset within a File GeoDatabase, create a topology on that data set, and then validate the topology. When creating a topology, we recommend setting

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an XY Cluster Tolerance of two meters. Again, you may wish to experiment with larger thresholds, but beware that higher thresholds are more likely to lead to unexpected errors. Instructions for creating a topology can be found here, and documentation for validating that topology can be found here. You can then manually fix the overlaps in an Edit session. We recommend using the Trace tool to improve the process; for more information, see here.

In the following image, the darker green area represents an overlap of two districts, and the heavy, purple line is a jurisdiction boundary. Both districts should be edited to snap to the jurisdiction boundary, resolving the overlap and avoiding other issues.



In addition to manual snapping, there are a series of other adjustments that can ensure your district boundaries are properly aligned with each other. These procedures are discussed in more detail in Part V.D.2.

c. Fix Small Gaps: Buffering

Small gaps and holes in the zoning districts can also be corrected fairly easily. They can be closed by buffering your layer by a small amount, then buffering the result by the negative of that same amount. For example, buffering by 0.5 meters and then by -0.5 meters can close tiny holes, which may be artifacts of zoning layers dissolved from parcel layers. To do this, you can use the **BUFFER** tool in both QGIS and ArcGIS Pro.

d. Fix Larger Gaps

After using the buffering trick to close small gaps, you may still need to close larger gaps manually. Gaps between districts or between district and jurisdictional boundaries can be legitimate if they are demarcated by roads, rights-of-way, or water, but you will often see erroneous gaps resulting from discordant digitization. These cases, where identified using the reference layers listed in Part V.D.2.g., should be rectified.

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e. Fix Geometry

You should also use your GIS's tool to check for invalid geometry. Self-intersecting geometry is the most common. The **FIX GEOMETRIES** tool in in QGIS and the **REPAIR GEOMETRY** tool in ArcGIS Pro can take care of many of these problems, but some may need to be resolved in a manual editing session.

NOTE: You should also check if the entire zoning district layer is offset because you can fix multiple topological errors at once by moving the whole feature rather than its vertices.

NOTE: Not all zoning districts need to be snapped to their jurisdiction boundary. In many cases, roads or rivers separate jurisdictions, meaning that zoning district polygons should not go all the way to the jurisdictional line. As with all of the geospatial procedures outlined in this Section, use your best judgment about where zoning district boundaries should be drawn. The following Subsection provides some tips to help you with these edge cases.

f. Adjudicate Boundary Disputes with Reference Layers

When correcting boundaries in the steps outlined above, you will likely come across apparent boundary disputes in which zoning districts from one jurisdiction overlap zoning districts from another. In some cases, zoning districts within the same jurisdiction may even conflict. To resolve these disputes, make use of reference layers. The most important will be the TIGER and parcel files we provide. When there are boundary conflicts, the state TIGER boundaries are the ultimate authority. At the local level, parcel data can serve as the authority.

Within jurisdictional boundaries, TIGER files will only be of limited use. The following external references can help you resolve conflicting data in these cases:

- Satellite imagery basemaps
- Parcel data layers
- Official zoning maps
- Road layers (to determine if zoning boundaries are meant to follow road centerlines)
- Water line and area layers (to determine if zoning boundaries are meant to follow lakes or stream centerlines)
- Protected Areas Database (PAD-US) found here
- Shoreline boundary (to clip zoning districts to the shoreline); the National Zoning Atlas layer found here

Remember to save often! If you get stuck, contact National Zoning Atlas staff for assistance.

3. Districts Requiring Special Treatment

The instructions thus far have pertained to base zoning layers requiring no special treatment. This Subsection covers overlay districts, planned residential developments (PRDs), unmapped districts, and external districts (sometimes called "fringe" districts). Each may require special treatment.

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a. Overlay Districts

Overlay districts, by definition, are not part of the base zoning layer. Accordingly, you should upload overlay districts to the Editor *separate* from the base zoning layer. First, upload all original overlay district GIS files as GeoJSONs into the Files and Documents section in the Editor as demonstrated in Part II.D.4. Then, upload a cleaned GeoJSON of your overlay district(s), either each as separate files or together after conducting a **MERGE**, with the same fields as the base layer (i.e., the County, Jurisdiction, and Abbreviated District Name fields) in the same way as outlined in Part V.E.1. Instructions on merging vector layers in QGIS can be found here, and for ArcGIS Pro, they can be found here.

Some overlay districts, you may notice, cross their jurisdiction's boundaries into neighboring jurisdictions. In most of these cases, you should **CLIP** the overlay district geometry to its jurisdiction's boundaries before uploading it to the Editor, saving a copy of the original overlay district geometry for later potential use. Airport and flood overlays, for example, often do apply to multiple jurisdictions.

However, in states that allow extraterritorial zoning, you should also keep the parts of the overlay district that cross into neighboring unincorporated counties *if* those unincorporated counties do not exercise zoning in the affected area. You should still clip out the parts that cross into incorporated jurisdictions. See Part V.D.3.e. below for further explanation.

b. Planned Residential Developments

Planned residential developments (PRDs) refer to a type of housing explained in Part III.C.3.b. You are not expected to map individual PRDs (i.e., individual housing developments) that may have been approved as part of a zoning process.

You are only expected to map zoning districts. We refer to districts that only contain PRDs as PRD-only districts, but these PRD-only districts have no special instructions for geospatial file purposes. These districts can be either base districts or overlay districts. How you treat their corresponding geospatial file should reflect their treatment in the Overlay field. If that field is marked "Yes," then you treat the PRD-only district as an overlay. If it is marked "No," then you treat the PRD-only district as a base district.

c. Highly-Tailored Districts

Highly-tailored districts, often site-specific districts created pursuant to broad authorities (such as umbrella districts or conditional zoning), are further defined in Part III.A.1.b.v. These districts might appear differently in the GIS files than in the zoning text. In some cases, they may need to be combined geospatially into one umbrella district. For example, a jurisdiction might store a highly-tailored district as a base district in its GIS data, but it might be more appropriate in the Atlas methodology to treat them as an overlay. In that case, you would need to create an overlay district from the conditional districts and reallocate the original geometry to the respective general use districts.

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It is important to work with the zoning analyst to determine the best method for documenting these jurisdictions on the geospatial side.

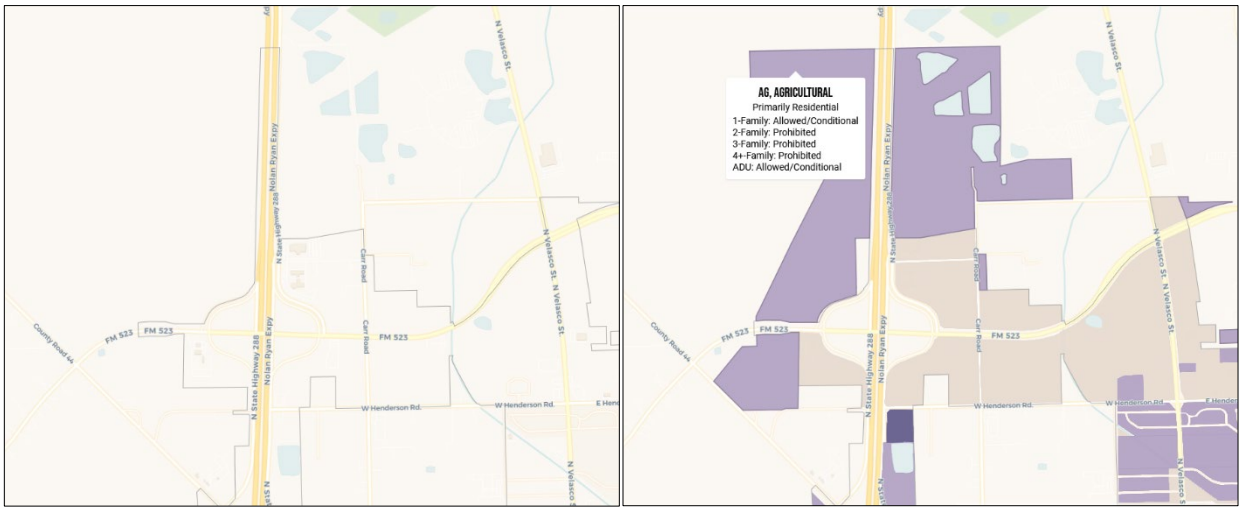
d. Unmapped Districts

If a district is unmapped, it by definition does not have a corresponding GIS layer. Geospatial analysts can ignore these unmapped districts but may need to help zoning code analysts confirm the status of a district's mapping, as explained in Part III.C.1.

e. External Districts

The zoning enabling legislation in some states allows municipalities to regulate land uses outside their boundaries and into the surrounding unincorporated county area up to a certain distance. For example, Indiana allows some cities to zone unincorporated areas of their county, up to two miles outside their municipal boundaries. North Carolina, Texas, and many Southern and Western states with unincorporated counties have similar rules. These "fringe" districts, or extra-territorial jurisdictions (ETJs) as they are sometimes called, do not need to be handled any differently than regular zoning districts, as long as their County, Jurisdiction, and Abbreviated District Name are correctly specified.

Although it may appear strange that these districts fall outside their jurisdiction's legal boundary, this should not pose any complications with uploading the files to the Editor and documenting the particular areas of land subject to the jurisdiction's extra-territorial (ETJ) zoning authority. The images below of Angleton, Texas, show what this looks like on **ATLAS MAP**. On the left, you can see the thin jurisdiction boundary on the city's northwestern edge. On the right, you can see that the AG (Agricultural) district falls outside of that boundary.



f. Jurisdictions Following a County Zoning Code

For jurisdictions following a county zoning code, geospatial data is often maintained at the county level. This means that the geospatial analyst will need to break these zoning districts up by

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jurisdiction. Do that by splitting the zoning district polygons by the jurisdiction footprint polygons via the **INTERSECTION** tool in QGIS and the **PAIRWISE INTERSECT** tool in ArcGIS Pro. After conducting this step and ensuring that each zoning district feature is assigned the appropriate jurisdiction name, upload the output into the Editor.

The incorporated political subdivision, which is not a county, must be retained as a separate jurisdiction in the Editor; do not attempt to combine the jurisdiction into the county or delete the subcounty jurisdiction. Zoning analysts should follow instructions in Part II.C.5.b.

g. Unzoned Areas Within a Zoned Jurisdiction

A small number jurisdictions that exercise zoning authority decided to only zone some, but not all, of their land. For example, Nye County, Nevada, exercises zoning over a small part of its land, leaving the rest of the county unzoned. What does a geospatial analyst do with the areas that are left unzoned, in an otherwise zoned jurisdiction? Add a feature to the zoning district layer by drawing in that polygon in Edit mode, then label its Abbreviated District Name "Unzoned," and finally ensure that a corresponding district called "Unzoned" has been entered into the Editor by the zoning code analyst. (Zoning code analysts should follow the instructions for these unzoned areas in Part IV.A.1.b.vii.) The unzoned "district" will appear gray on the **ATLAS MAP**, this same color as land depicted as "No Zoning" in the **ATLAS MAP** key.

Unzoned "districts" are distinct and mutually exclusive from rights-of-way, tribal, and protected land. The latter categories of land will be removed from the Unzoned "districts" by National Zoning Atlas staff in accordance with Part V.D.4.

4. Punching Out Water, Protected Lands, Tribal Lands, & Rights of Way

When gathering geospatial zoning data, you will likely notice that jurisdictions are highly inconsistent about which areas they show as zoned and not zoned. Some, for example, remove federal parkland from their zoning categories, while others do not, even though their local zoning ordinance does not apply to federal lands. Similarly, some jurisdictions remove rights-of-way from their zoning categories, while others leave them in. This inconsistency can undermine the validity of analyses comparing zoning coverage across places.

Before publication, then, National Zoning Atlas staff renders jurisdictions comparable by punching out areas in which regular zoning rules usually do not apply. These areas include water surfaces, protected lands, tribal lands, and rights of way. The first three of these categories appear as toggleable layers on the **ATLAS MAP**, while rights of way are visible in the **ATLAS MAP** basemaps.

The punchout process involves two steps. The first step requires importing the geospatial polygons to be used in the punchout. The second step involves cleaning up the unwanted byproducts that result from the punchout step.

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NOTE: Team members should notify National Zoning Atlas staff if they plan to upload new geospatial data to avoid overwrites.

a. Punchout Data

National Zoning Atlas staff uses the following data sources to complete the first step of the punchout process (importing geospatial polygons to punch out):

- Water Surfaces: To remove water bodies and water ways, National Zoning Atlas staff use the NHDPlus High Resolution water dataset prepared by the US Geological Survey (USGS).
- Protected Lands: To remove protected areas, National Zoning Atlas staff use the Protected Areas Database US (PAD-US) 3.0 maintained by USGS. Before punching these areas out, we exclude those PAD-US areas that are owned by non-governmental, private, joint, territorial, and unknown entities.
- Tribal Lands: To remove tribal lands, National Zoning Atlas staff use the US Census Bureau's American Indian/Alaska Native/Native Hawaiian (AIANNH) Areas shapefile available through TIGER (excluding Tribal Statistical Areas and Hawaiian Home Lands).
- Rights of Way: To remove rights of way, National Zoning Atlas staff use national parcel data purchased from Regrid. In many localities, the parcel file itself excludes rights of way. In others, Regrid provides a code indicating the method they used to identify rights of way, allowing us to selectively query those cases.

b. Post-Punchout Cleanup

National Zoning Atlas staff also completes the second step of the punchout process. Two byproducts result from these procedures that require post-processing from National Zoning Atlas staff.

First, since these data sources are collected and maintained at different resolutions by different agencies, they commonly do not align perfectly with the zoning data, leaving behind a series of unsightly slivers and strands. After the punchout step, then, National Zoning Atlas staff manually removes these.

Second, the parcel data in some localities does not include the grounds of entities like condo associations, apartment complexes, or business parks. In these cases, the parcels cover only the building footprint and not the shared common space. The right-of-way removal procedure can mistakenly remove these grounds, requiring National Zoning Atlas staff to redraw the zoning district polygons around these areas.

E. UPLOAD TO THE EDITOR

View a video tutorial for this Section, "Uploading Geospatial Data to the Editor," on our website.

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1. Dissolve to MultiPolygon

Many zoning districts are not contained within a single, contiguous polygon. Rather, there are "islands." GISystems will often treat these islands as separate entities from each other and from any "mainland" zoning district. The **DISSOLVE** tool allows users to combine these into a single entity called a MultiPolygon. This tool is important because each zoning district in a jurisdiction must appear only once.

If the zoning district has multiple polygon areas, aggregate them into a single MultiPolygon per Abbreviated District Name using the **DISSOLVE** tool in QGIS or ArcGIS Pro. Ensure that the **KEEP DISJOINT FEATURES SEPARATE** option is *not* checked if using QGIS, or that the **CREATE MULTIPART FEATURES** option *is* checked if using ArcGIS Pro.

2. Export as GeoJSON

a. From QGIS

Once you are done with editing, save your geospatial file as a GeoJSON by right-clicking the layer name, then **EXPORT** > **SAVE FEATURES AS...** Select **GEOJSON** as the file type, and check that **EPSG:4326** is selected as the projection.

b. From ArcGIS

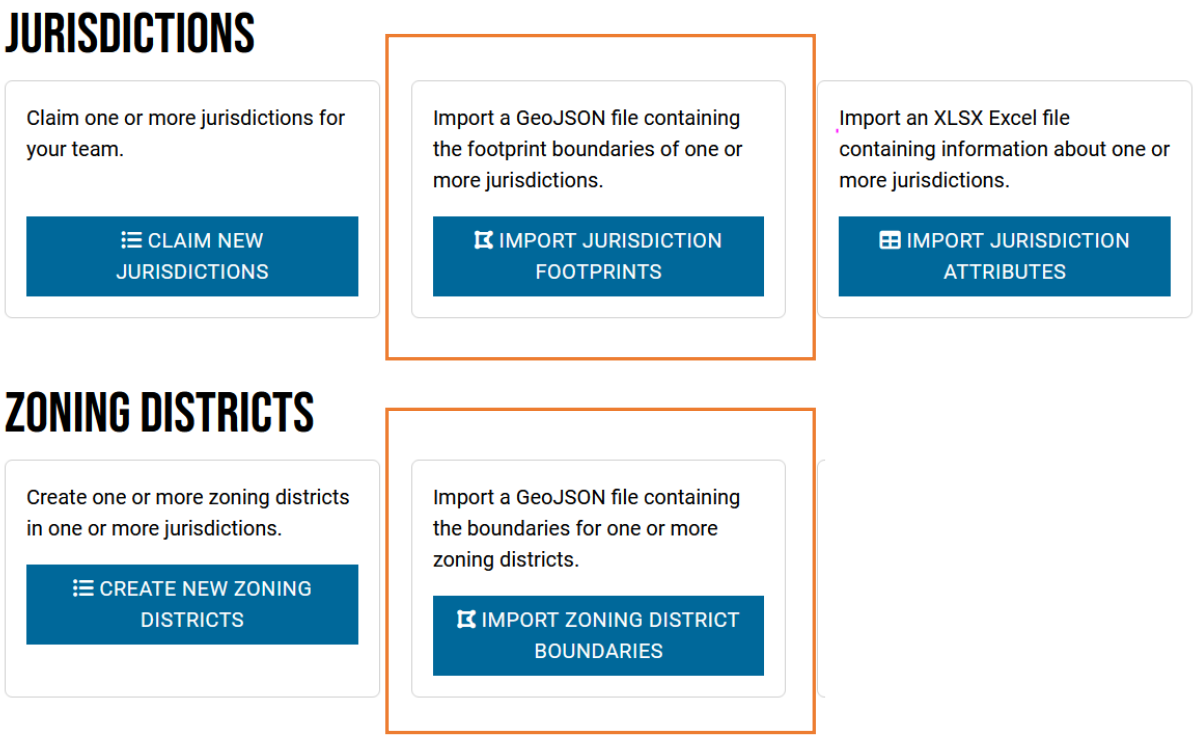
Use the **FEATURES TO JSON** tool. Check the **OUTPUT TO GEOJSON** box. Then, check the **PROJECT TO WGS_1984** and **USE FIELD ALIAS** boxes.

3. Import Multiple Features in One File

Multiple jurisdictions and zoning districts can be uploaded at one time via the Import page of the Editor. However, please note that importing data this way will overwrite any data in the Editor that has matching key attributes. For jurisdiction uploads, the required attributes are County and Jurisdiction. For zoning district uploads, the required attributes are County, Jurisdiction, and Abbreviated District Name.

To upload a GeoJSON containing more than one jurisdiction or zoning district, go to the Import page of the Editor. Then click, as applicable, **IMPORT JURISDICTION FOOTPRINTS** or **IMPORT ZONING DISTRICT BOUNDARIES** (shown below). Fill out the fields, select the file, then click **UPLOAD**.

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NOTE: Your GeoJSON files related to zoning district boundaries cannot be imported until a corresponding Abbreviated District Name has been entered into the Editor. However, not all Abbreviated District Names in the Editor need to be accounted for in the GIS layer for the import to be successful. Once filled in, they appear on your jurisdiction page.

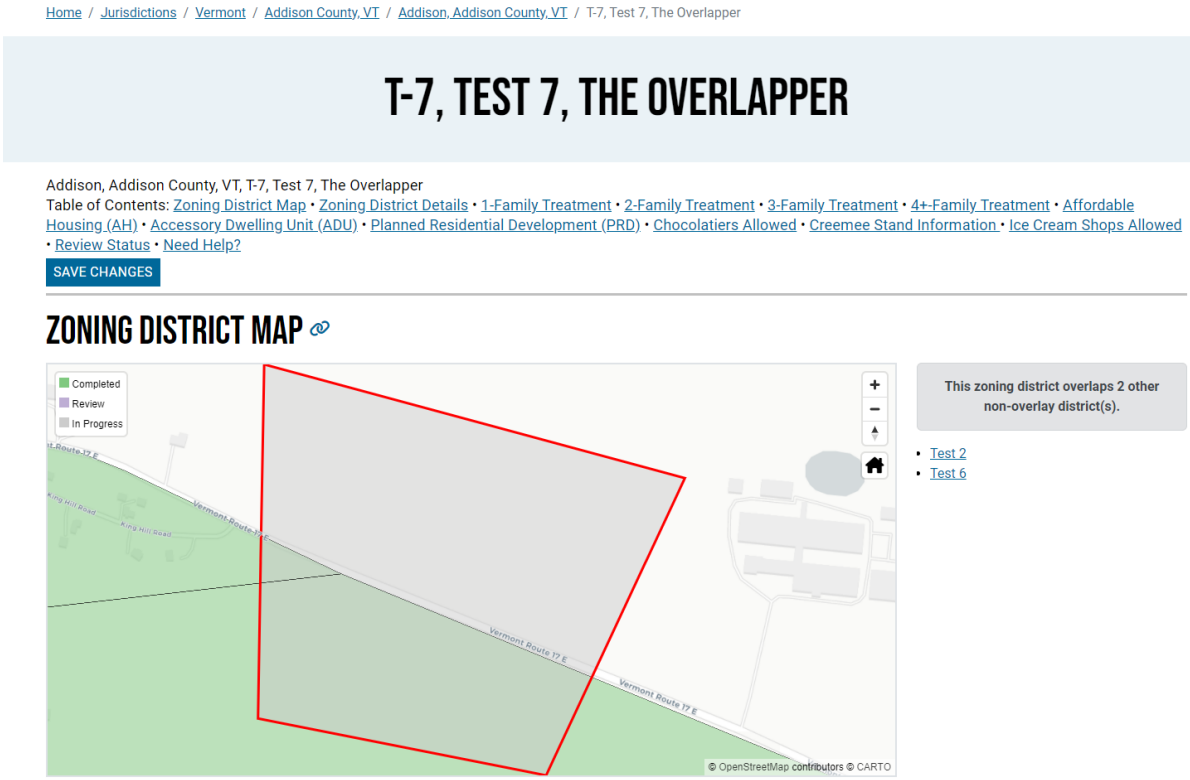
4. Import Single Feature Per File

While on the page for a jurisdiction or zoning district, you can upload a GeoJSON containing a *single* polygon feature to add or replace the footprint for that feature. Find the button to do this near the top of the jurisdiction or zoning district page, labeled **UPDATE JURISDICTION FOOTPRINT** or **UPDATE ZONING DISTRICT BOUNDARY**. Note, however, that importing data this way will also overwrite any data in the Editor that has matching key attributes.

5. Respond to Overlap Warnings

After an upload, you may get an overlap warning, like the text in the gray box to the right of the image below:

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This warning indicates that the geometry in question overlaps another geometry of the same type (i.e., a zoning district overlaps another zoning district, or a jurisdiction overlaps another jurisdiction). To fix this, return to QGIS or ArcGIS, start an editing session, and edit the data to resolve the overlap. You can use topology checking tools described in Part V.D.2.b and reference sources (such as the official zoning map, imagery layers, or parcel layers) to find the specific parts of features that overlap, and to verify that all have been fixed before uploading again.

Once the overlap has been fixed, export the relevant features (either jurisdiction footprints or zoning districts) from your GIS to a GeoJSON (it is not necessary to include features that were not changed in this new GeoJSON file). Upload this GeoJSON through the Import section of the Editor.

NOTE: All features in the GeoJSON you import will overwrite their corresponding features in the Editor. For example, if you are importing corrected zoning district boundaries for the DD-R Downtown Development-Riverfront district in Cincinnati, Ohio, those new boundaries will automatically replace Cincinnati's previously uploaded DD-R district boundaries.

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VI. PUBLISH & MAINTAIN ATLAS DATA

We conclude with information about how to publish and maintain atlas data.

A. PUBLISH ATLAS DATA

Team leaders are responsible for publishing any atlas. This Section identifies common errors that should be identified and fixed before publication and explains the process of publication.

1. Identifying Common Errors

In Part IV.F.2.a., we describe several common errors for individual zoning jurisdictions, including agricultural or residential districts classified incorrectly, nonsensical numbers, errant zeros, text not using abbreviations, and ghost data.

In addition to checking for those errors at the stage of reviewing and approving individual zoning districts, a team leader should check to confirm the following actions have been taken prior to finalizing an entire jurisdiction for publication:

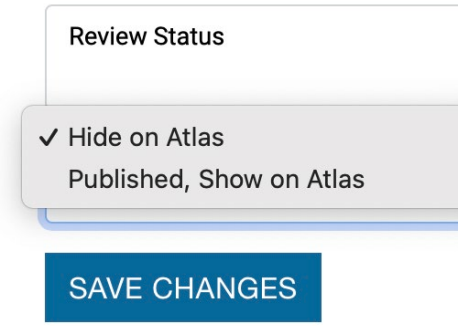
- Identically named jurisdictions are distinguished by the type of government in a parenthetical per Part II.C.3.
- Submunicipal jurisdictions have the Parent Jurisdiction field filled out per Part II.C.5.d.
- Subcounty jurisdictions (i.e., all jurisdictions other than counties) have the Does This Jurisdiction Follow a County Zoning Code? field filled out
- Correctly-named zoning code and official zoning map files have been uploaded per Part II.D.4.
- Districts shown on the official zoning map as overlays are marked as a "Yes" in the Overlay field.
- The Abbreviated District Name field is consistently used across zoning code information and GIS files, tying the zoning code data to the right parts of the map
- All entries logged as "Alternatives" or "Contextual" follow the abbreviations and use the terms contained in Part IV.A.1.c.
- Overlay districts that do not affect use are marked with an "Overlay Not Affecting Use" in the Type of District field per Part IV.B.1.f.
- Where the Affordable Housing Treatment field is marked Allowed/Conditional or Public Hearing, the definition of any mandatory or optional affordable housing is included word for word per Part IV.C.5.b.
- GIS files have been verified against the official zoning map per Part V.B.6.
- GIS files have been cleaned to eliminate slivers, fit to jurisdiction boundaries, and properly account for overlay districts, PRDs, unmapped districts, and external districts per Part V.D.
- The correct, clean version of all GIS files, including overlay districts, have been uploaded per Parts II.D.4. and V.

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As noted in Part IV.F.2.c., you can use the Bulk Edit function to correct some of these issues.

2. Processing Publication

Publishing your atlas to the public **ATLAS MAP** is simple. After the team leader has confirmed that that the geospatial and zoning data are correct, or has confirmed that a jurisdiction lacks zoning, the team leader can head to the Jurisdictions page. In the Publish field, just below the Review Status field, the team leader can change the status from **HIDE ON ATLAS** to **PUBLISHED, SHOW ON ATLAS**:



The Editor will do the work of matching zoning text analysis and GIS files through the Abbreviated District Name field, and if all is well, your jurisdiction will appear on the **ATLAS MAP** immediately.

NOTE: Don't forget to complete this step for the jurisdictions without zoning, i.e., those jurisdictions that have "No" marked in the Does This Jurisdiction Have Zoning? field. Publishing the fact that those jurisdictions lack zoning will help the public understand the regulatory landscape (or lack thereof) and keep the **STATUS MAP** current.

B. MAINTAIN ATLAS DATA

Here, we offer some ideas to help National Zoning Atlas staff track zoning changes, and then we identify how to input updates, for individual jurisdictions, entire jurisdictions, and entire states.

1. Tracking Zoning Changes

National Zoning Atlas staff are taking responsibility for tracking and maintaining the atlases and are working on a system for more systematically tracking zoning change updates. In the meantime, consider helping National Zoning Atlas staff collect updates using any or all of the following strategies:

- Contacting staff planners and asking them for updates.
- Soliciting the public to report zoning code changes and identify errors.
- Directing planners and the public to our website to make us aware of any errors.

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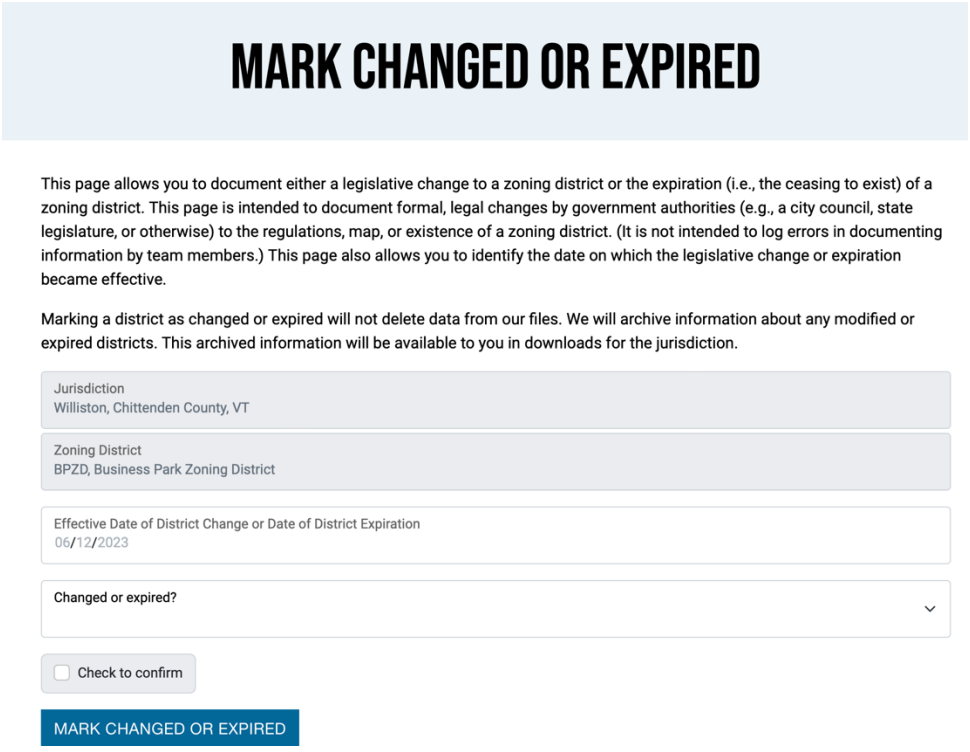
2. Inputting Zoning Changes

Zoning updates can take three forms: zoning text only, map only, or a combination of text and map. They can also come at three scales: individual zoning districts, entire jurisdictions, and entire states. This Subsection describes how you input all forms of zoning changes at all scales.

a. For Individual Zoning Districts

A zoning authority in a jurisdiction in your atlas has just made changes to its zoning code, which affects one or more zoning districts. You will need to follow these instructions for each zoning jurisdiction affected by the zoning code change. But before you do, save the text and/or map of the amended zoning code per Part II.D.4. It is essential to ensure that you have uploaded the amended code, so that we can track changes appropriately.

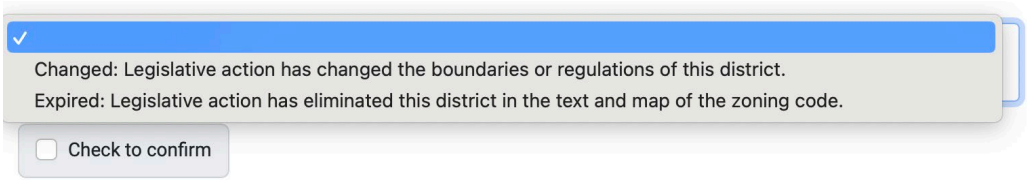
Next, turn to the home page for the zoning district affected. Scroll to the very bottom. You will see the **MARK CHANGED OR EXPIRED** button. This button enables you to, as applicable, indicate that the district has changed (in either textual regulations or spatial boundaries) or that it has been superseded or eliminated. Clicking on this button brings you to a screen that explains the purpose of the page and requires you to make a few inputs:



You should know and input the effective date of the change or expiration of the district. If you have an effective date that is simply month and year, use a "1" for the day. This number may be imprecise, but it allows you to come close enough for our purposes. If you cannot find an effective date and do not hear from jurisdiction staff in a timely manner, the Editor will automatically enter the effective date as the date of upload.

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Next, you will use the drop-down menu in the Changed or Expired? Field to indicate whether the district has changed (in text or map) or has actually been written out of the zoning code (i.e., "expired"):



If you have any questions about which of these choices is appropriate, please contact National Zoning Atlas staff.

Once you check the box confirming you would like to make this change, and press the **MARK CHANGED OR EXPIRED** button, the Editor will save the old version of the district as well as the new one. Check out this screenshot from Williston, Vermont showing what happens at the bottom right-hand corner of the page after updating the district effective June 1, 2023:



The first version has an effective date of November 23, 2022, but then something about it changed as of June 1, 2023. The current version does not have an end date. When you click on the prior version, you receive a message at the top of the screen like the one that follows, showing the Williston district has a more updated version:



Finally, you can return to the district and then enter the changes that the zoning amendment actually effectuated. Press the **SAVE CHANGES** button.

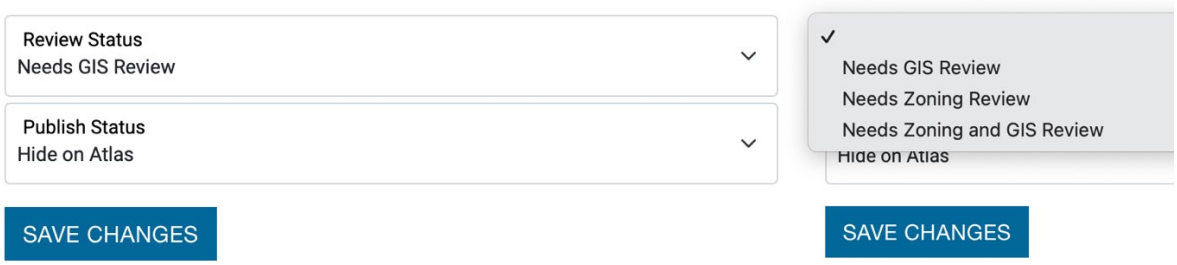
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NOTE: You may notice the **DELETE** button to the right of the **MARK CHANGED OR EXPIRED** button. This should rarely be used, and it should not be used when a district existed at one point in the zoning code but then was written out of the code. For instructions on how to delete a zoning district in those narrow circumstances in which it should be deleted (e.g., duplication or clear error), refer to Part III.E.

b. For Entire Jurisdictions

There are times when a jurisdiction changes the way it treats certain kinds of uses on a jurisdiction-wide basis. For example, a jurisdiction may legalize accessory dwelling units anywhere single-family housing is allowed. The Editor's bulk corrections feature, described in Part IV.F.2.c., is not currently configured to log changes in zoning text, because it does not mark a district as changed or expired. Until we make that feature applicable to zoning code text changes, memorialize a jurisdiction-wide change per Part VI.B.2.a.

For now, we have also created the ability for your team to alert each other that the full jurisdiction must be reviewed. On the Jurisdiction home page, toward the end of the Jurisdiction Details section, is the Review Status field:



The Review Status field enables any team member to indicate whether the jurisdiction needs a review of the geospatial files ("Needs GIS Review"), of zoning code text ("Needs Zoning Review"), or both ("Needs Zoning and GIS Review"). Each jurisdiction's review status appears on a team's home page, which lists the jurisdictions; under normal circumstances, where nothing has changed, the review status will be left blank.

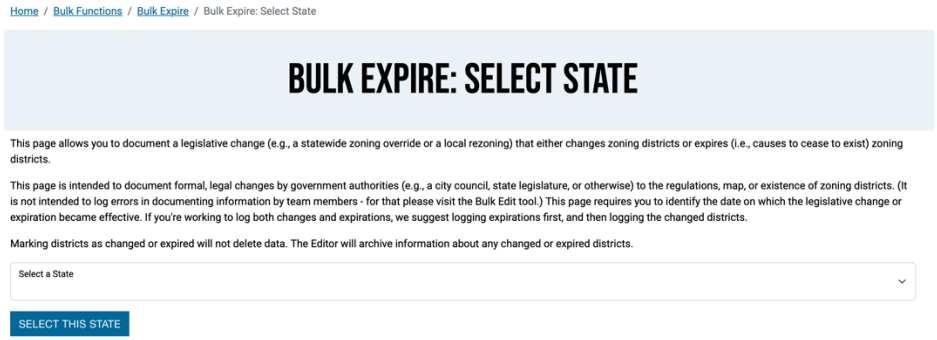
c. For Entire States Using the Bulk Expire Function

There are times when a state changes the way local zoning works on a statewide basis. For example, a state legislature may eliminate minimum lot sizes for duplex or triplex housing. You can certainly mark individual zoning districts as changed or expired using the instructions in Part VI.B.2.a. But a more efficient way to mark multiple districts as changed or expired is to use the "Bulk Expire" tool. This tool is intended to document formal, legal changes by government authorities (e.g., a city council, state legislature, or otherwise) to the regulations, map, or existence of zoning districts. It allows you to identify the date on which the legislative change or expiration became effective. If you're working to log both changes and expirations, we suggest logging expirations first, and then logging the changed districts.

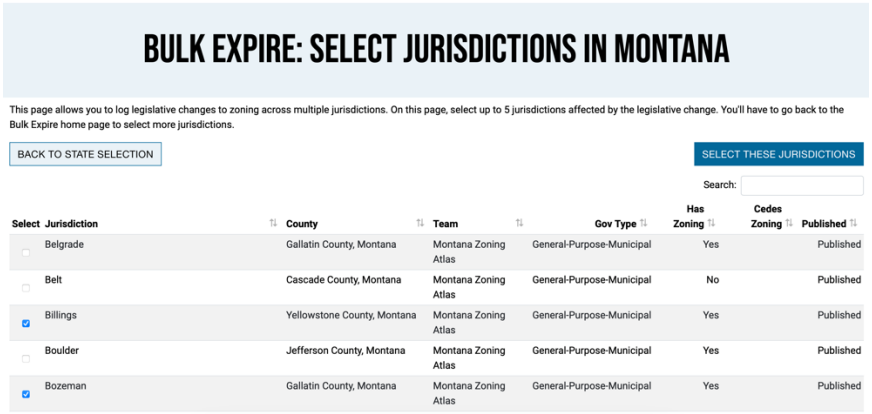
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To mark districts as changed or expired in bulk, navigate to the **BULK FUNCTIONS** tab, which brings you to the two different Editor functions that should be reserved for experienced users only. The "Bulk Edit" tool allows users to correct data that was incorrectly inputted or check or update data at scale. The "Bulk Expire" tool allows users to log the date upon which allows users to log the date upon which multiple zoning districts' rules changed, or the date upon which multiple zoning districts expired (i.e., ceased to exist), due to a legislative change (such as a statewide zoning override or a local rezoning). To get to the Bulk Expire menu, select "I am logging a LEGISLATIVE CHANGE to the zoning code."

Select the state you would like to edit from the drop-down menu:

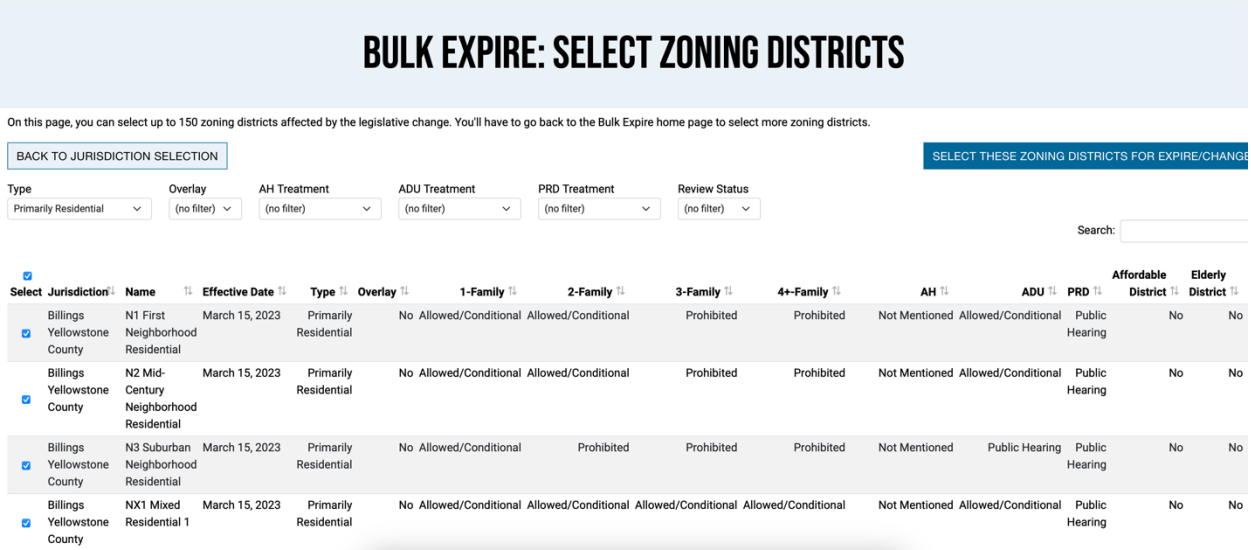


After you click on the **SELECT THIS STATE** button, you will get a list of jurisdictions. Check boxes for up to 5 jurisdiction(s) to change or expire by clicking on the **SELECT THESE JURISDICTIONS** button. In the example, we have selected Montana and chosen two jurisdictions:

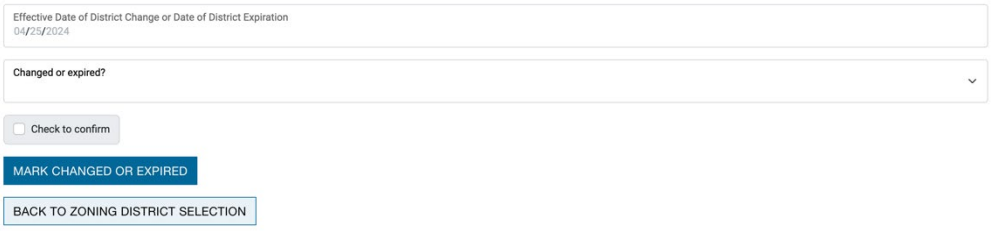


Next select up to 150 zoning districts to change or expire by clicking on the **SELECT THESE DISTRICTS** button. In the Montana example, originally 40 zoning districts (listed under "Name") appeared available to change or expire, but we used the "Primarily Residential" filter at the top left to identify 14 districts. We selected those to mark as changed due to the recent state legislative override:

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Selecting those zoning districts bring you to a page where you need to provide two pieces of information. First, you need to identify the date on which the district was changed or expired. A "change" means that legislation has modified the regulations or the physical boundaries of the districts, but the districts still have the same names. In the Montana example, the date of the change was the effective date provided in the Montana statewide legislative override. An "expiration" means that legislation has eliminated the districts altogether from the zoning map. If you mark the districts as "changed," then you will be directed to the Bulk Edit tool, so that you can then log any text-based regulatory changes per Part IV.F.2.c. (For geospatial changes, upload a new shapefile instead of going through the Bulk Edit feature.) If you mark the districts as "expired," then you will be returned to the Bulk Expire page, in case you need to select more jurisdictions. The options look just like the options for an individual district to be marked changed or expired, per Part VI.B.2.a.:



Marking districts as changed or expired will not delete data. The Editor will archive information about any changed or expired districts.

NOTE: Only *after* you go through the Bulk Expire process should you log the actual regulatory changes. You can do that for up to 5 jurisdictions and up to 150 zoning districts using the Bulk Edit tool, per Part IV.F.2.c.

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* * *

That's all for now. Thank you for collecting zoning data in your community. With your help, we can get one step closer to a national zoning dataset that can help us better understand the impact of zoning, and in turn help us make better decisions about the regulatory constraints that dictate our lives.

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