

ZONING PRACTICE

Unique Insights | Innovative Approaches | Practical Solutions

Eliminating Map-to-Text Discrepancies



In this Issue: [A Warning Sign](#) | [Potential Implications](#) | [Discrepancy Types](#) | [Potential Remedies](#) | [Final Thoughts](#)

Eliminating Map-to-Text Discrepancies

By Jonah Pellecchia and Melissa Hayashida

For a century, planners have relied on zoning as a core tool for promoting rational and orderly development. Typically, a zoning code in the United States is comprised of two components: a document describing land use rules and a map that assigns the rules geographically. But what are the consequences when a city's zoning map and zoning text don't match?

The [National Zoning Atlas](#) is the first attempt to centralize and standardize information from every municipality in the U.S. into a single publicly available database. As staff members of the National Zoning Atlas, we have found discrepancies in just over one third of the 42 jurisdictions we have jointly reviewed. To varying degrees, these discrepancies raise concerns over the reliability of public information about zoning. At a minimum, our findings suggest the need for local planning staff across the country to proactively identify and resolve discrepancies. Otherwise, zoning

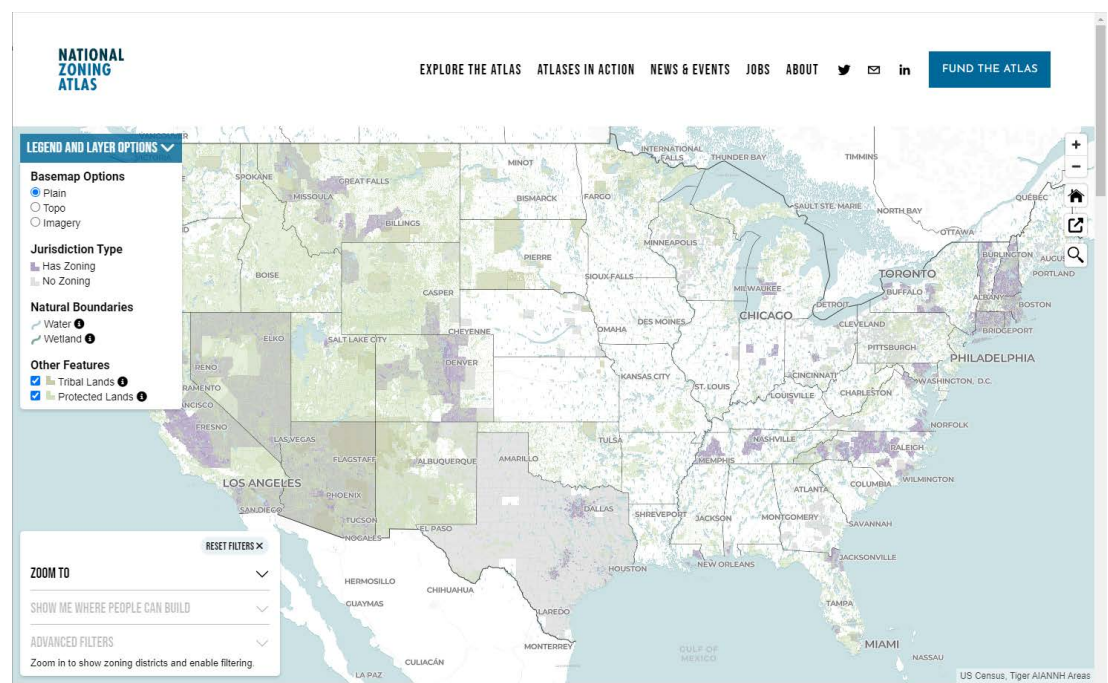
discrepancies many be found to deprive residents of their basic understanding of the rules that govern their actions, and in the most extreme cases may deprive them of the right to due process.

This issue of *Zoning Practice* explores the prevalence, political and legal implications, and types of map-to-text discrepancies. It concludes with recommended actions local planners and public officials can take to eliminate this problem.

A Warning Sign

As a two-person analyst team working to collect, analyze, and prepare zoning information for integration into the National Zoning Atlas, we have had a unique opportunity to review zoning codes in detail. The [National Zoning Atlas methodology](#) requires us to scrutinize official zoning texts and maps to identify zoning districts and their legal requirements. As we have worked to analyze codes across

A screen capture of the [National Zoning Atlas](#) interactive map



the country, we have seen just how common it is for local zoning codes to be confusing, vague, and contradictory. More specifically, we regularly see varying degrees of inconsistency between official zoning maps and their corresponding zoning texts. These inconsistencies render zoning ambiguous on certain tracts of land. At times, these inconsistencies defy rational interpretation by a skilled practitioner.

Our two-person team has reviewed zoning maps and zoning codes for 42 towns, cities, and counties across seven states (Alabama, Arizona, Florida, Louisiana, Nevada, New Mexico, and Wyoming). These jurisdictions vary in population, land size, and metropolitan/rural character. While they serve as a modest random sample from among the thousands of jurisdictions posted to the National Zoning Atlas, discussions with our Atlas colleagues lead us to believe that the findings we offer here are relevant beyond the 42 jurisdictions we reviewed.

We found that 15 of the 42 reviewed jurisdictions had map-to-text discrepancies.

Our analysis focused on discrepancies between zoning maps and zoning texts that hindered our understanding of the legal requirements of the codes. [We did our best to resolve these discrepancies by contacting local planning staff and understanding how they would resolve the issue.] We found that 15 of the 42 reviewed jurisdictions had discrepancies between their zoning maps and corresponding zoning texts. These “map-to-text” discrepancies did not cluster in any particular geographic region.

While the National Zoning Atlas methodology requires adherence to the “official” zoning text and map, it was sometimes unclear whether a particular document was, in fact, official. Other times, the available zoning map does not conform to the description of the official map provided in the zoning text. Of the 15

jurisdictions with map-to-text discrepancies, nine had clearly labeled static (PDF, JPG, or PNG) official zoning maps or interactive web maps that serve as the official zoning map (as confirmed by jurisdiction staff).

Potential Implications

Generally speaking, jurisdictions adopt zoning to create clear rules pursuant to which staff may approve or deny development applications. In legal terms, map-to-text discrepancies are a problem because they create confusion about the legal rights and responsibilities of property owners within a jurisdiction. In practical terms, such discrepancies create tracts of ambiguously regulated land. These ambiguities may require interpretation by local planning staff, raising the possibility of potential biases in discretion. In cases requiring staff interpretation, the private citizen is faced with two decisions: accept the interpretation or challenge it through a long and costly legal process.

Most professional planners are familiar with the seminal 1926 Supreme Court case [*Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365](#), which held that municipal zoning regulations do not violate due process for property owners nor deprive them of liberty. While not the genesis of zoning practice in the United States, this case provided the legal basis for the rapid expansion and adoption of zoning ordinances throughout the country.

Less commonly discussed in planning schools, however, is another due process case decided by the Supreme Court earlier that year: [*Connally v. General Construction Co.*, 269 U.S. 385](#). This case established the vagueness doctrine, which holds that for a statute to be constitutional, it must be clearly written and specific enough for an average citizen to understand. Anything less constitutes a violation of due process. Since local zoning authority is derived from the police power provided to the states by the 10th Amendment, this ruling applies to any vague laws and arbitrary regulations provided by zoning ordinance.

To minimize ambiguity related to zoning maps, many zoning codes specify that the official zoning map is distinct from any

online or otherwise widely available version. Consider the following provision:

“The official [] zoning map shall be entitled [], and identified by the signature of the mayor, attested by the city clerk, bear the notations that it was adopted on the date this [] was passed, and bear the seal of the city. Regardless of the existence of purported copies of the official [] zoning map which may, from time to time, be made or published, the official [] zoning map, which shall be located in the office of the city engineer, shall be the final authority as to the current zoning status of land areas, buildings, and other structures in the city” (a city in Nevada)

Basic customer service in a digital age should always include accurate public-facing digital information.

Additionally, some zoning codes include a provision delegating the authority to resolve apparently conflicting regulatory provisions to staff or planning commissions. Most commonly, codes will attempt to clarify by instructing staff to give priority to the “more restrictive” of competing applicable provisions in the ordinance. Take the following examples:

“Where conflict occurs within this chapter or between the provisions of this chapter and any other city ordinance, chapter, resolution, guideline, or regulation, (such as, but not limited to, fire codes, building codes, or engineering standards) the more restrictive provision shall control, as determined by the Director, unless otherwise specified herein” (a city in Arizona).

“Whenever these regulations contain an actual, implied, or apparent conflict with other laws and

regulations, including an internal conflict within this Ordinance, the more restrictive regulation applies, unless otherwise specified” (a city in Louisiana).

Provisions like these provide planning staff with some guidance to defer to the more restrictive of two competing regulations, but how does that guidance apply in instances where no regulations exist for the districts represented on the official map?

As important as what the zoning code says is how it is made available to the public. Basic customer service in a digital age should always include accurate public-facing digital information. We recognize that some of the issues we identify in this article may be a result of poor record-keeping on the part of the local jurisdiction, or they may be due to understaffing or a lack of suitable budget. But we caution that some discrepancies may burden property owners planning for a project and may erode the trust residents have in their local government.

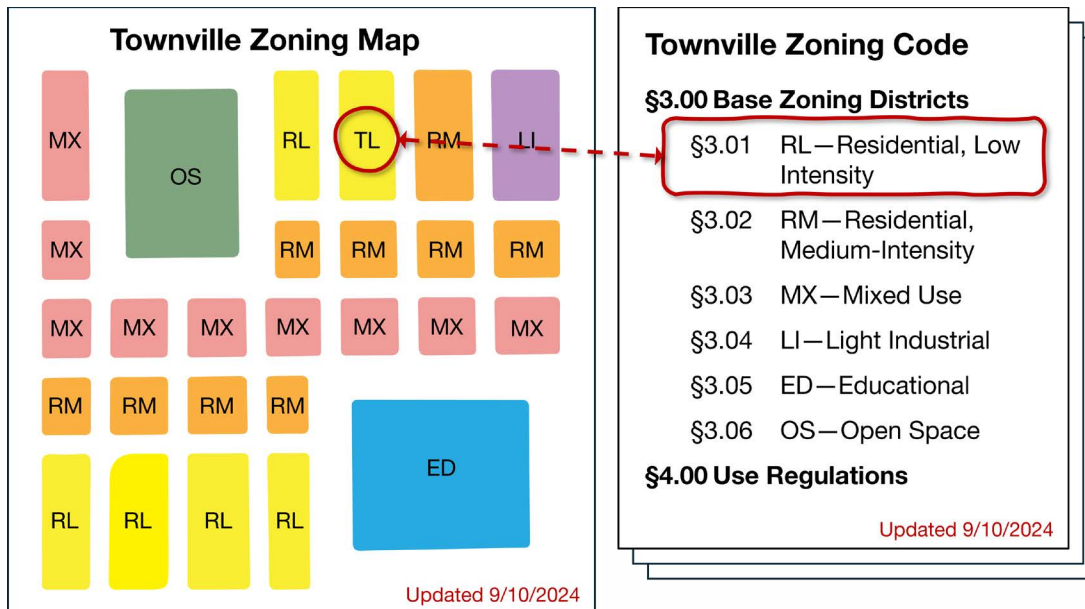
Discrepancy Types

Our team came across a variety of inconsistencies between zoning maps and zoning texts. We classified these problems into five types and identified situations in which a problem could rise to the level of a serious transparency or public trust issue and situations in which a problem could rise to the level of a legal issue for the jurisdiction.

The Zoning Map Contains a Clerical Error

A zoning map may contain one or more clerical errors. These include typographic errors and errors of omission. Clerical errors can also occur due to erroneous recordings of the status of proposed ordinances.

For example, in one county in Arizona, staff said the county parcel web map is the most up-to-date source of zoning district boundaries and is the only zoning map available. However, the county’s zoning code does not specifically call out the web map as the official zoning map. The web map shows two zoning districts that



A zoning map with a clerical error (Credit: American Planning Association)

aren't mentioned in the zoning ordinance. Staff clarified that these aren't official zoning designations and provided the correct zoning designation for each. Staff did not say which source they referenced to get the correct designations, nor did they say why there were incorrect designations on the web map. For our part at the National Zoning Atlas, we logged the districts provided by staff, rather than the districts shown on the web map, using our best judgment to determine how our map's users would expect to see information portrayed.

If an area is mistakenly zoned one way on the publicly available zoning map, but the actual zoning designation, according to a legal boundary description or map shown in an adopted ordinance, is different, this can erode public trust. But if zoning for an area is inconsistent between the official map and the zoning text, this is a legal problem.

The Zoning Map Is More Up to Date Than the Zoning Text

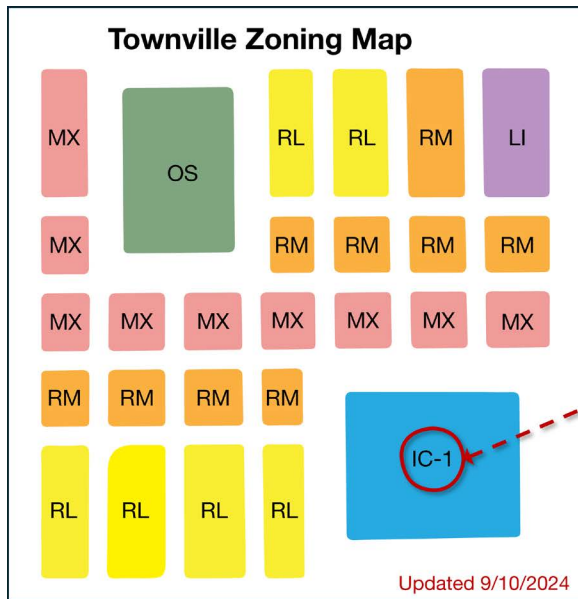
A zoning map may show one or more new zoning districts before those districts appear in the zoning text.

For example, the publicly available zoning map for a county in Nevada is an interactive web zoning map. The web map shows a district that is not found in the zoning text, yet according to county staff, the GIS data shown in the web

map is more up-to-date than the publicly available zoning text. Based on the information provided to us by county staff, it is unclear how this discrepancy occurred. It's possible that a map amendment ordinance naming a new district was adopted without a corresponding text amendment ordinance, or perhaps both text and map amendment ordinances were adopted, but the text change was never transmitted to the person or entity that maintains the official version of the zoning code. Staff did not mention whether an official zoning map, separate from the web map, is available for viewing in person.

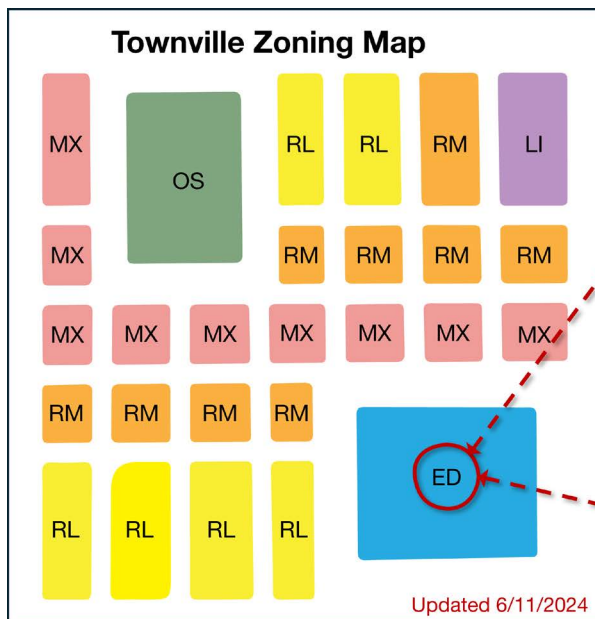
In this case, the county's planning department is working on a comprehensive plan revision which will require zoning code updates, so it's possible that the map-to-text discrepancy will be resolved with the next round of zoning code updates. In other cases, this issue could be highly problematic. In the meantime, the National Zoning Atlas logs these districts as "Mapped but Extinct" according to our methodology, which requires us to use this designation when a district is mapped without textual information provided in the code.

If an unofficial zoning map shows zoning districts that don't yet exist in the zoning text, this can erode public trust. However, if the official zoning map shows zoning districts that are not present in the current zoning text and have no legal basis



Townville Zoning Code	
§3.00 Base Zoning Districts	
§3.01	RL—Residential, Low Intensity
§3.02	RM—Residential, Medium-Intensity
§3.03	MX—Mixed Use
§3.04	LI—Light Industrial
§3.05	ED—Educational
§3.06	OS—Open Space
§4.00 Use Regulations	
Updated 6/11/2024	

A zoning map that is more up to date than the zoning text (Credit: American Planning Association)



Townville Zoning Code	
§3.05	IC-1—Institutional Campus 1
§3.06	OS—Open Space
Updated 9/10/2024	

Townville Ordinance 04-24	
An ordinance to designate all parcels previously designated as Educational District (ED) as Institutional Campus 1 (IC-1).	
First Reading and Adoption: 9/9/2024	

A zoning text that is more up to date than the zoning map (Credit: American Planning Association)

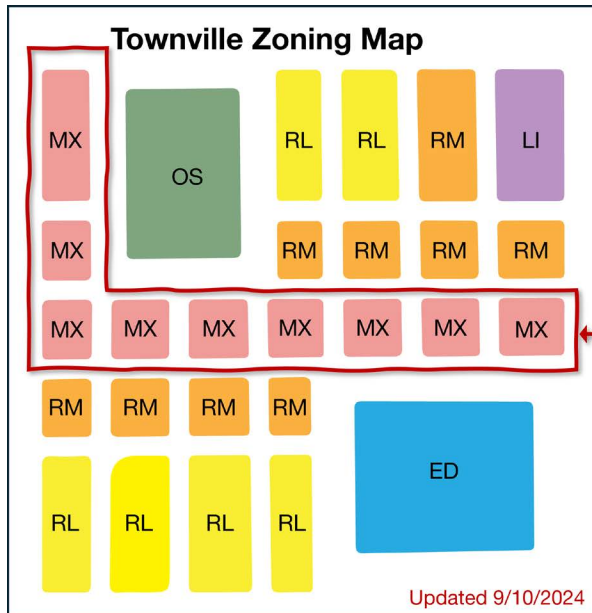
(in that they have not been established by any adopted ordinances and are not present in former zoning codes), this is a legal problem.

The Zoning Text Is More Up to Date Than the Zoning Map

A zoning map may omit a new zoning district established in the zoning text and assigned to specific parcels by local officials.

For example, the official zoning map

for a city in Arizona was last updated in 2018. The city's zoning text was last updated more recently in 2023. There are three zoning districts that appear in the zoning text but not on the publicly available zoning map. According to staff, there is currently land that has these three zoning designations, but the publicly available zoning map doesn't reflect this. City staff say they are working on updating the publicly available zoning map to show current zoning conditions.



Townville Zoning Code	
§3.00 Base Zoning Districts	
§3.01	RL—Residential, Low Intensity
§3.02	RM—Residential, Medium-Intensity
§3.03	MX-L—Mixed Use, Low Intensity
§3.04	MX-M—Mixed Use, Medium Intensity
§3.05	LI—Light Industrial
§3.06	ED—Educational
Updated 6/11/2024	

A zoning map that includes a single district to represent two different districts in the zoning text (Credit: American Planning Association)

Discrepancies such as this are challenging to evaluate. Without staff providing us with the ordinance which mapped these districts, we logged these districts in the National Zoning Atlas as present but unmapped. Until we have confirmation of the legal change, we defer to the available codes.

If the zoning text includes a district that has been applied to land in the jurisdiction, but the district is not present on any publicly available map, this can erode public trust. But if the official zoning map omits a new zoning district that has been applied to land in the jurisdiction, this is a legal problem.

The Zoning Map Shows Multiple Districts as a Single District

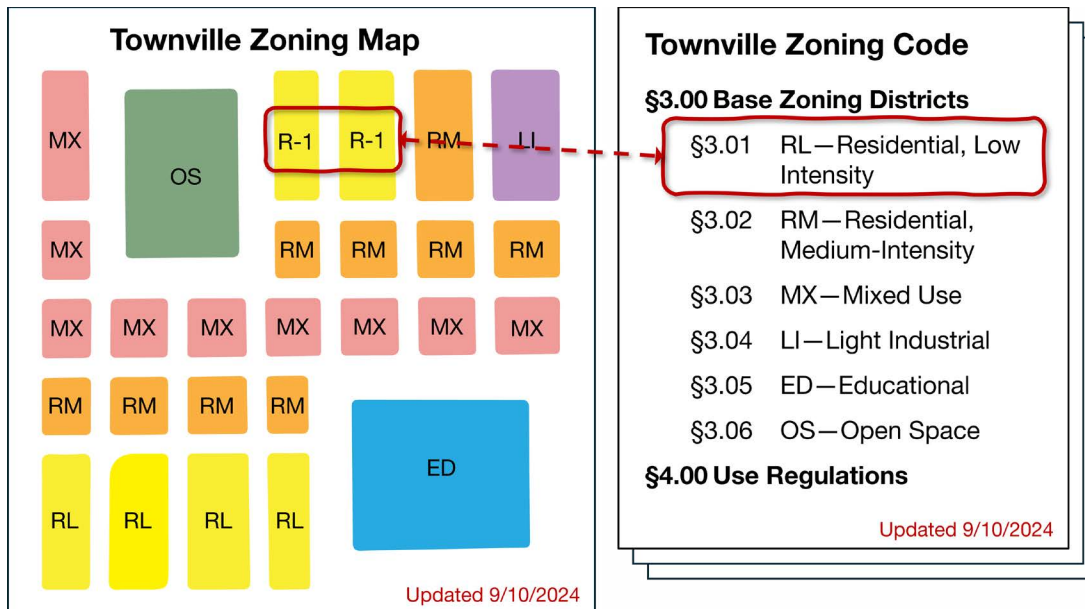
A zoning map may combine two or more related, but distinct, zoning districts into one designation.

For example, the zoning text for a city in Louisiana lists the R-1A and R-1B zoning districts as two separate districts and provides separate regulations for each. The official zoning map, however, combines these two districts into a single R-1A/R-1B district. The official zoning map also combines two separate townhouse districts into a single R-2A/R-2B zoning district. According to city staff, there is a separate

map distinguishing R-1A from R-1B and R-2A from R-2B, but this map was never adopted by the city council. Staff did not confirm whether an ordinance had been adopted specifying the exact zoning designations for parcels shown on the map as “R-1A/R-1B” and “R-2A/R-2B”, and no clarification on this issue is provided in the zoning text.

In another example, the zoning code for a different city in Louisiana identifies the Townhouse Zoning District and Condominium Zoning District as two separate districts. However, the zoning web map, the official map according to city staff, shows these two districts as a single Townhouse/Condominium Zoning District. In the zoning code, the Townhouse Zoning District and Condominium Zoning District share some but not all standards. It may be that one designation is the base zoning district and the other is an overlay district, but the zoning text offers no clarification on the matter.

In these examples, we relied on staff communications to determine how to depict the combined or undefined districts in the National Zoning Atlas, reasoning that our users expected us to address discrepancies in good faith and that we were at least providing them with some guidance as to how the jurisdictions would interpret their own ordinances.



A zoning map that shows an extinct district (Credit: American Planning Association)

If the unofficial zoning map shows combined districts or districts with vague or broad names, and there is no official zoning map available on public-facing platforms, this can erode public trust. However, if the official zoning map shows combined districts or districts with vague or broad names, and there are no ordinances specifying the exact zoning designations for the areas in question, this is a legal problem.

The Zoning Map Shows an Extinct District

A zoning map may show a district that is no longer in the current zoning text (i.e., the district previously existed but is now extinct or a relic of a superseded code).

For example, the zoning map for a city in Nevada shows zoning districts from a superseded zoning text. Local officials have not adopted any ordinance remapping the parcels designated with the extinct districts.

In other cases, we understand that staff sometimes maintains a copy of prior zoning text relevant to the extinct district and uses that text to regulate the land in the extinct district, even though that text is no longer in force. According to National Zoning Atlas methodology, this is another example of a district that must be marked “Mapped but Extinct.”

If the discrepancy is due to an incremental remapping process that has left an

otherwise superseded zoning designation in effect for one or more parcels, and the former version of the zoning code that describes the extinct district is not available on public-facing platforms, this can erode public trust. Members of the public must go through extra steps to determine the regulations of the extinct district. In contrast, if staff apply regulations from zoning districts in the current text, or regulations no longer in force but applicable to the extinct district, this is a legal problem.

Potential Remedies

Local officials involved with the creation and maintenance of zoning codes can use the five suggestions below to help reduce map-to-text discrepancies.

Have Staff or a Consultant Review Discrepancies Between the Zoning Map and Zoning Text

GIS staff or planning staff can complete regular comparisons of the map and text. Those that work part-time can also be provided with longer project horizons to ensure more detailed review of zoning map and text changes. Alternatively, if the zoning map to zoning text comparison requires specialized skills beyond in-house capabilities and resources, a locality can hire consultants to conduct periodic reviews.

By cross-examining zoning districts

shown on the zoning map with the established districts listed in the zoning text, reviewing professionals can identify potential issues. GIS tools can facilitate the review of mapped zoning district names. If the GIS data used to create the zoning map is accessible to staff, staff can export a list of unique zoning district names from the data, then compare this list with the zoning districts in the zoning text. This can be more effective than conducting a cursory visual review of the map or simply reviewing the zoning districts shown in the map legend. (Some map legends depict zoning districts that aren't on the map itself, while other legends omit zoning districts that are on the map.)

Ensure Public-Facing Zoning Information Is Regularly Updated, Clearly Labeled, and Accurate

It is difficult to determine whether a zoning map serves as the official zoning map when the map is missing a clear title. The locality can ensure that zoning maps available on public-facing platforms are clearly labeled to indicate whether the map is official. They can also include identifying information on web maps by using descriptive titles, pop-up windows that open upon web map initialization, or informational side panels. For GIS zoning data available through open data portals, GIS staff or consultants can input meta-data that indicates whether the GIS data functions as the official source of zoning district boundaries.

During our team's analysis of zoning maps, we came across a variety of map formats. Some jurisdictions provide a static zoning map in PDF, JPG, or PNG format. Some of these static maps are clearly labeled as the official zoning map, while others are missing any information that identifies them as official. Other jurisdictions offer only a web-based, interactive zoning map. Some of these web maps and the GIS data they contain include disclaimers cautioning that they are for reference only and are not guaranteed to be accurate or complete. In these cases, there is no official zoning map available to the public online. Other jurisdictions provide both a static digital zoning map and an interactive web map without any information on either map clarifying which,

if any, is official. We've seen some web maps that, according to jurisdiction staff, are more up to date than the static map, yet the web map is not designated as the official zoning map.

We strongly recommend that all jurisdictions provide online access to a static (PDF/JPG/PNG) map clearly labeled as the official zoning map or a dynamic map that allows viewers to look up official zoning designations. However, a lack of resources may make this more difficult for certain jurisdictions.

Apart from clearly labeling zoning maps, the staff or consultants for a locality can promptly update online zoning maps and texts. As mentioned above, jurisdictions with fewer resources may find it more difficult to ensure quick updates of online zoning documents. However, when newly adopted ordinances require zoning map changes, swift updates to the publicly available map can reduce discrepancies between the zoning text and map.

Similarly, planners can reduce perceived conflicts between the zoning map and zoning text by updating the online, public-facing zoning code in a timely manner. Planners can also improve transparency by clearly indicating the date of the most recent update to the codified zoning ordinance and by providing a link where users can find uncoded ordinances, including those assigning zoning designations to specific parcels.

Clarify in the Zoning Text Which Map is the Official Zoning Map

Jurisdictions sometimes offer publicly available copies of zoning maps in different formats, including web-based formats, PDFs or image formats, and/or even paper copies kept in the zoning office. Sometimes, it is unclear which functions as the official zoning map.

The zoning text itself can be used to clarify which zoning map is official, reducing confusion when more than one zoning map exists. But some zoning texts mention an official zoning map by name only. Other zoning texts do not provide any detailed identifying information about the zoning map. These texts may simply include a general statement about the zoning district boundaries being identifiable on the official zoning map. No map

title, date, physical location, URL, or further identifying information (such as an official's signature), is included.

A better practice is for the zoning text to specifically identify which map is official. For example, in its zoning ordinance, a county in Arizona specifically mentions the name of the GIS layer that serves as the official source of zoning district boundaries.

The zoning text itself can be used to clarify which zoning map is official, reducing confusion when more than one zoning map exists.

Keep a Record of all Concurrent Map/Text Changes

Local governments should maintain a record of all concurrent map and text changes with dates and the specific action taken by the implementing body. For example, a locality's staff or consultants can input ordinance numbers into the attribute table of GIS zoning data to provide context for zoning map amendments. If discrepancies between the map and text arise later, future staff or consultants can reference these records to better understand applicable law.

Provide Online Access to Former Versions of the Zoning Code as Long as Extinct Zoning Districts are Mapped

Finally, since zoning maps commonly show extinct zoning districts (again, districts that don't appear in the current zoning code but were part of a former zoning code), planners can provide online access to former versions of the code until the current code is mapped to the entire extent of the jurisdiction.

Final Thoughts

The National Zoning Atlas exists because zoning codes themselves are often inscrutable—even those without the map-to-text discrepancies presented in this issue. Our surprisingly numerous encounters with map-to-text discrepancies illustrate an additional layer of opaqueness. As the National Zoning Atlas continues to refine its methodology to address these issues in our own map, local leaders can do their part to put forward a civically responsible code: namely, one that is rational, consistent, precise, and accessible. To achieve this, a proactive approach is essential.

By providing the public with accessible, up-to-date zoning maps and zoning codes, local leaders promote positive constituent service experiences and foster greater trust in local government. Improving the constituent experience and building greater public trust can also help planners working to enact positive community changes through zoning to gain public support for these changes. Reducing discrepancies between zoning maps and zoning codes can also improve the public's understanding of local zoning, empowering residents with a greater ability to engage in zoning decisions. We hope that these critiques and solutions can help local leaders establish and maintain zoning texts and maps that best engage with and respect the rights of their residents.

About the Authors



Jonah Pellecchia is a zoning code analyst with the National Zoning Atlas. Prior to joining the National Zoning Atlas, Pellecchia worked at several levels of the planning process including regional agencies, local governments, nonprofit housing developers, and private planning consultants.



Melissa Hayashida is a geospatial analyst with the National Zoning Atlas. Previously, Hayashida worked on COVID-19 GIS response efforts with the Tacoma-Pierce County Health Department in Washington and as a GIS analyst for local and state government in Washington, Colorado, and California.



American Planning Association

Creating Great Communities for All

ZONING PRACTICE OCTOBER 2024 | VOL. 41, NO. 10. Zoning Practice (ISSN 1548–0135) is a monthly publication of the American Planning Association. Joel Albizo, FASAE, CAE, Chief Executive Officer; Petra Hurtado, PHD, Chief Foresight and Knowledge Officer; David Morley, AICP, Editor; Scarlet Andrzejczak, Assistant Editor. Subscriptions are available for \$65 (individuals) and \$120 (organizations). © 2024 by the American Planning Association, 205 N. Michigan Ave., Suite 1200, Chicago, IL 60601–5927; planning.org. All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means without permission in writing from APA.