

CHAPTER 2

Planning and design

Planners today sit at the convergence of intense development pressure, rising expectations for transparency, and shrinking staff capacity. GIS is no longer a nice-to-have mapping tool on the edge of that reality. With urban and community planning driven by location, GIS is the organizing framework for how a planning department understands its community, evaluates proposals, and communicates decisions. Because current planning consumes most of a department's time, a geographic approach is the only way to keep up while improving the quality, sustainability, and consistency of decisions.

The role of GIS in current planning

Current planning—site plan reviews, subdivisions, rezonings, annexations, variances, and related hearings—has become the daily front line between communities and growth. For many departments, these workflows represent the majority of staff time and political attention. Even modest-sized jurisdictions report that performance-based planning and review requirements have increased staff workloads, and many agencies struggle with burnout and staffing shortages.

A geographic approach helps current planning in three fundamental ways:

- It anchors every decision to place, making it easier to see patterns across many small, project-level actions.
- It turns fragmented data, such as permits, plans, infrastructure, and demographics, into a single, visual context for each application.

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- It provides a shared language for planners, engineers, government officials, developers, and residents to see the same information and test what-if questions.

This chapter focuses on four practical messages for current planning teams: understanding community sentiment, automating and digitizing review workflows, integrating permitting data with location, and modeling development scenarios and design impacts.

Understanding community sentiment

Current planning decisions are never merely technical. They reflect who lives in the community today, who is likely to live there tomorrow, and how different groups experience change. GIS allows planners to move beyond intuition and isolated comments at public hearings to a systematic view of demographic and behavioral patterns.

At a basic level, planners can connect each proposal to a varied set of neighborhood indicators: population and household characteristics, housing cost burden, renter versus owner mix, age groups, behaviors, and commuting patterns. This information, mapped at appropriate scales (such as block groups, traffic analysis zones, or neighborhood boundaries), helps staff understand who may be the most affected by a rezoning, variance, or subdivision and where resource concerns may occur (figure 2.1).

A more advanced use of GIS gathers behavioral information and local datasets—transit ridership, crash history, code enforcement hot spots, sidewalk gaps, park use, or 311 data tied to place. When overlaid with proposed developments, these layers help planners see whether a project reinforces or undermines adopted policy goals, such as safety, housing affordability, or access to services. For example, a multifamily rezoning near frequent transit service in a low-crash area with strong sidewalk connectivity might align well with adopted transportation and economic mobility goals, whereas a large trip-generating use at a crash-prone intersection could prompt stronger mitigation conditions. In other words, a proposed development never exists in a vacuum. It's potentially being inserted into a neighborhood—an existing ecosystem—and it will have an impact outside its parcel boundaries. GIS helps planners analyze and visualize that impact.

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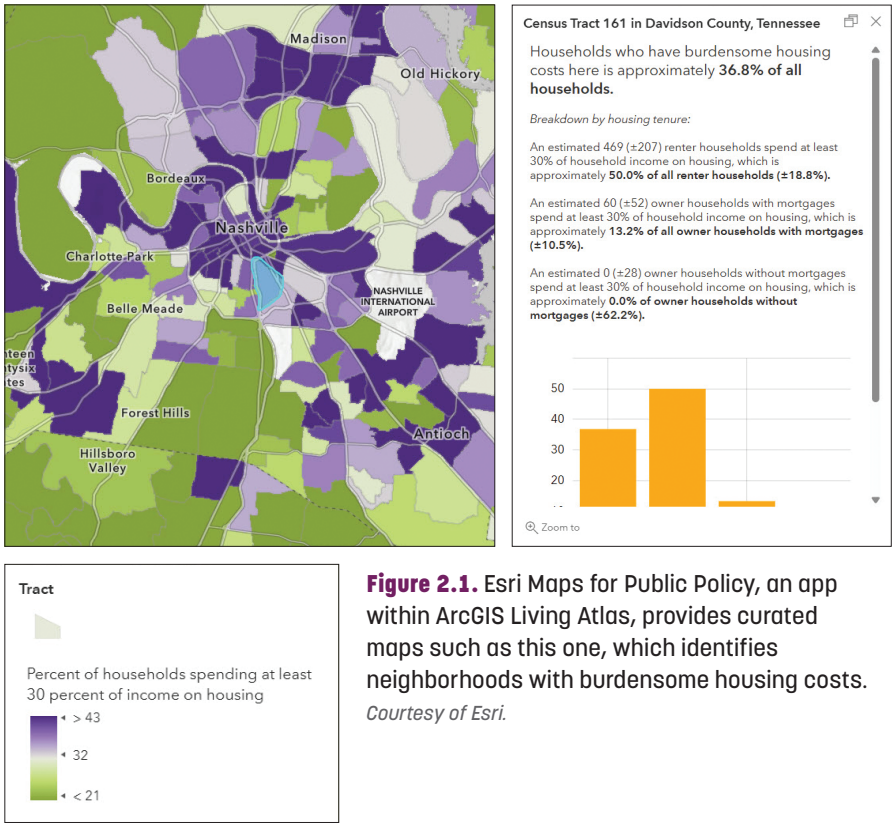


Figure 2.1. Esri Maps for Public Policy, an app within ArcGIS Living Atlas, provides curated maps such as this one, which identifies neighborhoods with burdensome housing costs. *Courtesy of Esri.*

GIS also supports more structured engagement. Public-facing web maps and story-based applications give residents context before they show up at a hearing, and these applications let staff collect georeferenced comments rather than free-form narratives. Instead of sorting through email, planners can see clusters of concern around specific intersections, schools, or natural features. This spatial understanding of sentiment can guide staff recommendations and conditions of approval, and it often reduces the department's feeling that decisions are arbitrary or opaque.

For the GIS-literate planner who isn't a GIS professional, the key is not learning every spatial method but learning which questions to ask:

- Where are the residents most sensitive to displacement, and how does this project overlap with these areas?

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- How many potential affordable versus market-value housing units will be created? How does that compare with housing needs in the neighborhood?
- What's the potential property or sales tax revenue from the development? Is it financially feasible for the city or county in both the short and long term?
- Does the neighborhood have the infrastructure capacity (water, sewer, roads, transit, broadband, and so on) to sustainably handle such a development?
- How does the proposal align with the geography of adopted plans for growth, conservation, or reinvestment?

When those questions are answered in a consistent geographic framework, staff reports gain depth without becoming longer, and public discussions become more grounded in shared facts.

Automating and digitizing review workflows

In the scheme of things, current planning is a workflow issue. Planners will tell you, there are too many applications, too many checks, too much manual data entry, and too many systems that don't talk to one another. A high volume of paper-based or PDF-based reviews strains staff and slows approvals, even as developers and residents expect faster, more transparent government services.

Digital permitting and plan review platforms integrated with GIS have changed that baseline. Jurisdictions that have moved to online permitting see substantial reductions in manual data entry, fewer calls about status, and more permits processed with the same staff. When GIS is part of that digitization, the gains extend beyond speed to accuracy and risk reduction (figure 2.2).

Practical GIS-enabled automation in current planning includes the following:

- Autopopulating application fields from authoritative GIS layers (parcel ID, zoning, overlay districts, floodplain, wetlands, and so on) at the time of submittal, reducing errors and rekeying.
- Automatically running standard spatial checks, such as distance to schools or major intersections, building height and floor area ratio (FAR),

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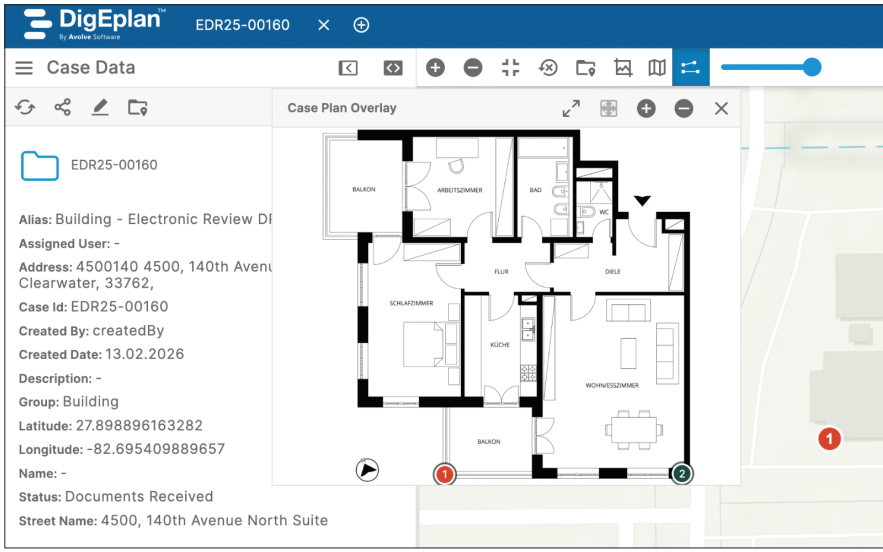


Figure 2.2. Digital plan review apps, such as Avolve's DigEplan, help streamline and standardize review workflows and complement permitting systems. *Courtesy of DigEplan.*

presence in special districts, or conflicts with environmental constraints, so reviewers start with a curated set of issues rather than building each review from scratch.

- Generating standard map exhibits directly from the system, ensuring that every staff report uses the same symbology, scale, and data sources. This is essential for leadership in its decision-making.

These automations aren't about replacing planners…far from it. They're about eliminating repetitive, process-driven tasks. Many jurisdictions find that when basic validations and lookups are automated, staff can focus more time on conditions, design quality, and trade-offs instead of hunting down parcel data or drawing buffers by hand. In environments where burnout is rising and workloads are heavy, reducing manual steps is a workforce strategy as much as a technology choice.

For planners, the tactical implications are clear:

- Treat GIS data as part of the application completeness check. If a submitted site plan doesn't align with parcel boundaries, zoning, or known constraints, the system should flag it early.

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- Work with IT or GIS staff to codify recurring checks as rules in the permitting system rather than informal steps on a checklist. This can also be done through available commercial-off-the-shelf (COTS) solutions.
- Use GIS-based dashboards to track review times and bottlenecks geographically—by zoning district, neighborhood, or development type—to inform staff and elected officials and process improvements.

Integrating permitting data with location

For virtually every planning department, the permitting system is the system of record. Most planning departments already store a wealth of information in these systems, such as application types, dates, statuses, conditions of approval, fees, and inspections. Without geography, though, this data offers only a partial picture. When permitting data is integrated with location in GIS, it becomes a powerful lens on development patterns and policy outcomes.

Embedding GIS in plan review systems empowers reviewers to see parcel data, zoning, utilities, floodplains, historic districts, and aerial imagery in one environment rather than switching across multiple applications. This integration improves speed and consistency because every review starts from the same authoritative spatial context. It also reduces the chance that staff will miss a critical overlay or constraint, which can lead to costly rework or disputes.

Mapping permits over time supports the following:

- Identifying growth corridors and areas of persistent underinvestment, informing rezonings, and targets for capital improvement planning
- Monitoring how frequently variances are granted in specific council districts and neighborhoods, which can indicate where development standards are misaligned with on-the-ground conditions
- Visualizing where conditions of approval (such as required sidewalk segments or landscaping) are being delivered or not delivered
- Generating a new, high level of context for government officials to understand patterns, trends, and needs in their city or county

Jurisdictions that adopt integrated, location-aware permitting gain not only efficiency and stronger citizen perception but a perception from developers that a community is serious about bringing in attractive and sustainable projects that

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will create a thriving city. For developers, time is money; they increasingly compare jurisdictions on the predictability and clarity of their processes, and a GIS-informed system gives staff the tools to provide clearer guidance.

For planners, this integration changes their daily practice in several ways:

- Staff reports can reference mapped histories: "This is the fifth rezoning in this corridor in three years," or "Four similar variances have been granted within a half mile."
- Policy discussions can be grounded in mapped evidence of how existing standards and processes are performing rather than by anecdote.
- Interdepartmental coordination improves when transportation, utilities, stormwater, recreation, and fire review all look at the same spatial representation of an application.

The goal isn't to turn planners into database administrators and certainly not to rubber-stamp every development proposal that comes through. It's to ensure that every permit, plan, and inspection lives in a geographic context and that this context is available at the click of a button during review and policymaking.

Modeling development scenarios and design impacts

Even in the realm of current planning, project-by-project decisions add up to long-term change. GIS-based modeling tools allow planners to test those accumulated effects, both at the scale of a single site plan and at the corridor or district scale.

Scenario planning isn't new in land use and comprehensive planning, but its use is expanding into the day-to-day work of development review. Many communities now use scenario-based techniques to compare land-use alternatives, visualize build-out under different zoning regimes, and test the cumulative effects of site-level decisions on housing, jobs, and infrastructure. As these tools become more accessible, their logic has migrated directly to current planning and site plan review, helping planners and decision-makers understand how today's project choices shape tomorrow's patterns of development.

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