D.I.Y. Zoning Code Audit: Step-by-Step Instructions

Instructions to accompany the DIY Code Audit Tool and "Breaking the Code" guidebook for Wyoming Communities

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Overview

Purpose: Enable local planners, residents, and policymakers to audit their zoning code and identify changes that allow for smart, affordable, sustainable development.

How to Use:

Follow this step by step

Use the spreadsheet tools

Document your results!

Steps in the Code Audit Process

1. Get familiar with the Zoning Research Matrix
2. Find your zoning code
3. Find and download key code sections
4. Fill out the Zoning Research Matrix
5. Get familiar with the Pro-Forma Tool
6. Create a model based on existing code standards
7. Confirm compliance with the code
8. Evaluate the model building
9. Test code changes
10. Share your results!

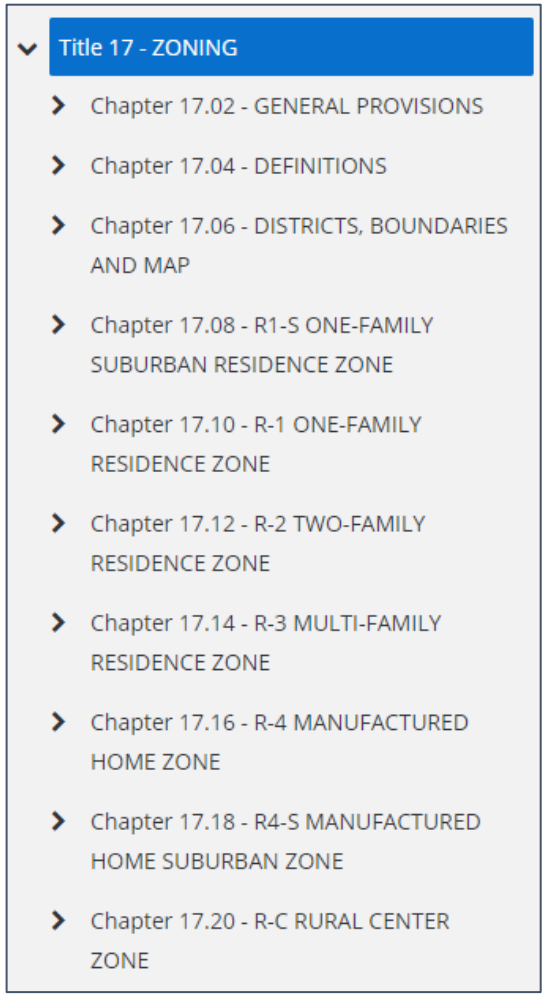
1 Test the Zoning Research Matrix

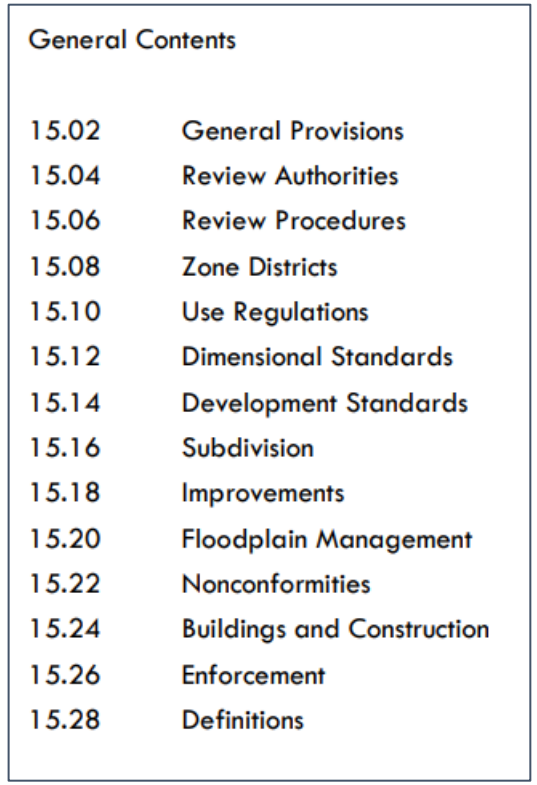
- The Zoning Research Matrix is a template for compiling all the key zoning information you need.
- This information will be put into the Pro-Forma Tool to understand what type of building can be built under the zoning code and the financial performance of the development.
- Get familiar with the layout and content of the spreadsheet so you know what you'll be looking for in the zoning code.

Zone District	CM1	CM2
Description	The Commercial/Mixed Use 1 (CM1) zone is a small-	The Commercial/Mixed Use 2 (CM2) zone is a medium-
Max Housing Units	N/A	N/A
Min Density (DU/Acre)	N/A	1 unit per 1450 SF of site area
Max Density (DU/Acre)	N/A	N/A
Max Building Coverage	85% (inner pattern area) 75% eastern, western, and river pattern areas	100% (inner pattern area) 85% eastern, western, and river pattern areas
Base Height	35'	45'
Max FAR - Base	1.5	2.5
Max FAR - w/Bonus	2.5	4
Min Lot Size	No minimum	No minimum
Min Lot Width	N/A	N/A
Min Frontage Width	N/A	N/A

2 Find your zoning code

- Try searching Google or the jurisdiction's website. The code may be formatted as a web page or a downloadable PDF.
- It may also be called a "development code" or "land use code". It may be a title or multiple titles in the jurisdiction's municipal code.
- Zoning codes are organized in different ways. Scan the table of contents to get familiar with the major articles or chapters.



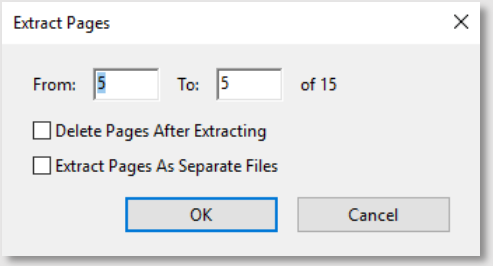


3 Download key code sections

- 90% of the content of the zoning code will not be relevant to the audit. The information you need can generally be found in a few sections.
- Once you find a section you need, download a PDF of that section. If the PDF includes multiple sections, some of which you don't need, we recommend extracting only the pages you need to make it easier and more efficient to reference in the future.
- To make it easier to copy-paste text from the code, we also recommend you convert the PDF to a Word document.

How to extract pages from a PDF

1. Right-click any page thumbnail.
2. Select "Extract Pages"
3. Choose the page range you need.



How to convert a PDF to a Word doc

In Adobe Acrobat, navigate to File > Export To > Microsoft Word.

3 Download key code sections

The information you need to fill out the Zoning Research Matrix can typically be found in one of these four sections of the zoning code:

1. **Zoning Districts**. May also be called “Zones” or “Land Use Districts”. Identify the zones you would like to analyze. The zoning district section will likely include use regulations, max height, max density, setbacks, and other key standards.

2. **Parking Standards**. May also be called “Off-Street Parking Standards” or “Parking and Loading Standards”. This section defines how many parking spaces are required for each type of use (parking ratios). Usually it is located in a separate section from zoning districts, but the zoning district section may include parking standards as well.

3 Download key code sections

The information you need to fill out the Zoning Research Matrix can typically be found in one of these four sections of the zoning code:

3. **General Development Standards.** May also be called “Site Development Standards” or “Community Design Standards”. This section includes any general development or design standards that apply in all locations. For example, landscaping standards may be included in this section. This section may also include standards specific to certain types of uses, such as multi-family housing, townhomes, or commercial development.

4. **Special Use Regulations.** This section includes any regulations specific to certain uses that apply citywide. Certain housing types may be included in this section, such as accessory dwelling units, cottage clusters, townhomes, or multi-family housing.

4 Fill out the Research Matrix

Now that you have all the code sections you need, it's time to input the key standards in the Zoning Research Matrix. Go through each standard in the matrix and find it in the code sections. Here are some tips:

- Some standards listed in the matrix may not apply to the zone or building type you are testing. If so, mark the field as N/A for future reference.
- The code may include standards that aren't listed in the matrix, but they may have an impact on what can be built. Make a new row and record the standard.

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Min Lot Width	N/A	N/A
Min Frontage Width	N/A	N/A

4 Fill out the Research Matrix

- Focus on the key quantitative standards that affect the basic form, size, and function of the building and the site. For example, it is not necessary to document standards related to architectural detailing or plant species for landscaping.
- Record the standard that applies in most situations. If there are exceptions, you can add a comment to the cell and note it.
- Some standards may be left to the discretion of the Planning Director or Planning Commission to define. In these cases, work with city staff to arrive at reasonable assumption for the standard that would apply to the building type and zone you are testing.

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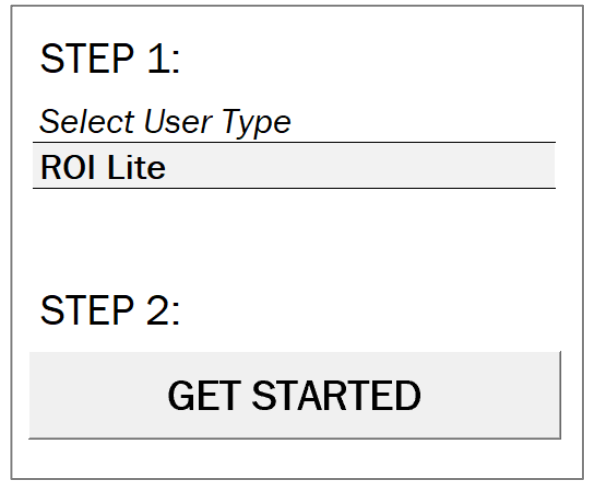
5 Get familiar with the Pro-Forma

1. Select Your User Type

- Open the Pro-Forma Tool and navigate to the Quick Start Guide tab.
- Select the desired user type from the drop-down menu.
- Click the “GET STARTED” button. Several new tabs will appear at the bottom of the excel workbook: Zone Matrix, Building Envelope, and Building Financials.



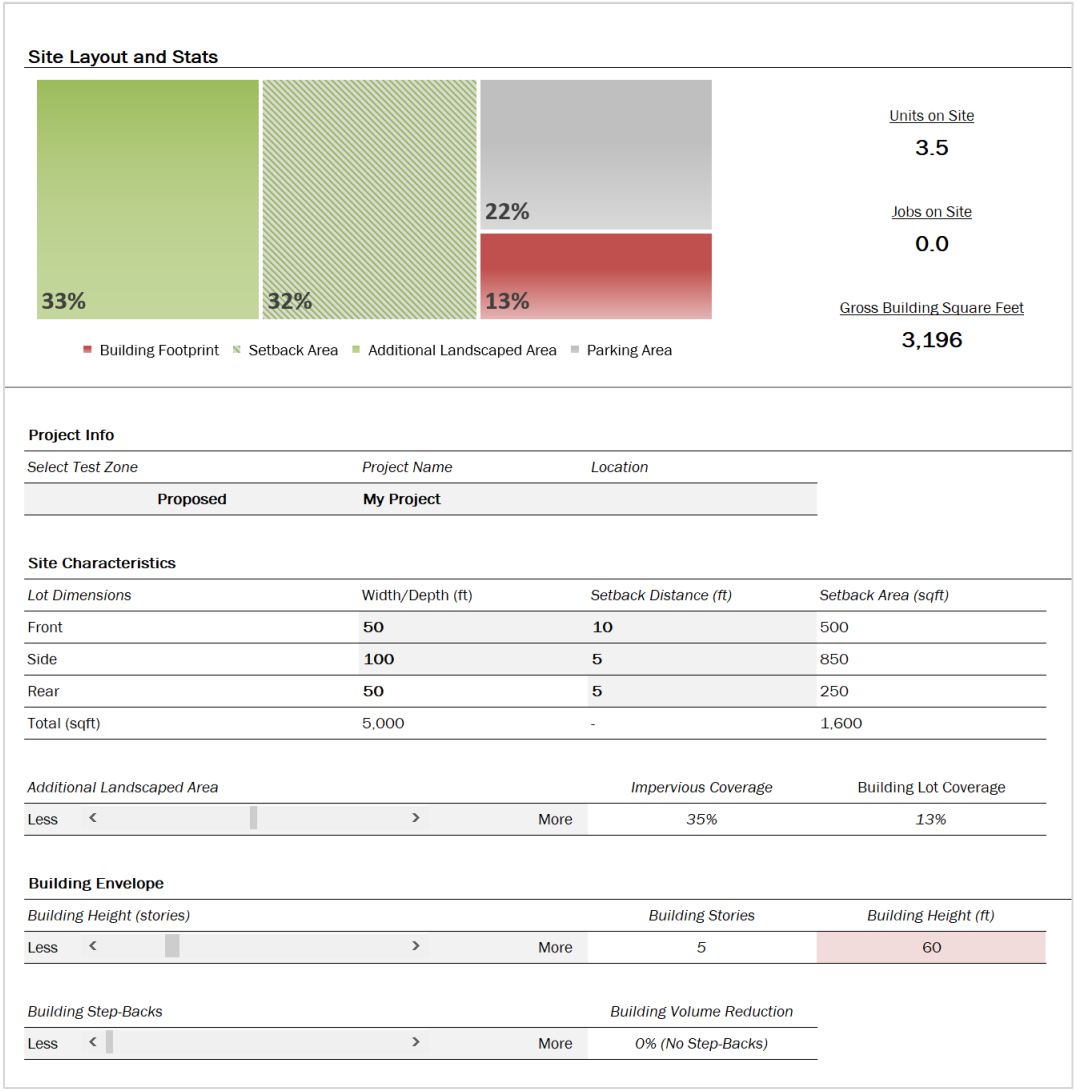
USER TYPES

Building Envelope Only	ROI Lite	ROI All
Allows users to test building forms possible within code requirements.	Adds the ability to assign cost and lease rate / sales price assumptions to calculate a return on investment for the project.	Exposes advanced financial calibration options and gap financing tools.

5 Get familiar with the Pro-Forma

2. Explore the Pro-Forma Tool

- The Pro-Forma Tool allows users to evaluate what type of building could be developed under the zoning code and the financial performance of the building. This can help you to understand how likely it is to be developed and if there are barriers to development.



Site Layout and Stats

Project Info

Select Test Zone	*Project Name*	*Location*
Proposed	**My Project**	

Site Characteristics

Lot Dimensions	Width/Depth (ft)	*Setback Distance (ft)*	*Setback Area (sqft)*
Front	**50**	**10**	500
Side	**100**	**5**	850
Rear	**50**	**5**	250
Total (sqft)	5,000	-	1,600

Additional Landscaped Area	*Impervious Coverage*	Building Lot Coverage
Less < > More	*35%*	*13%*

Building Envelope

Building Height (stories)	*Building Stories*	*Building Height (ft)*
Less < > More	5	60

Building Step-Backs	*Building Volume Reduction*
Less < > More	*0% (No Step-Backs)*

5 Get familiar with the Pro-Forma

3. Review the Tool's Cell Types

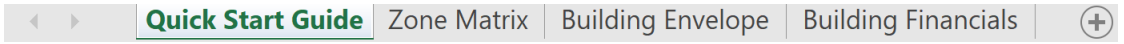
- Gray cells are inputs. You can modify these cells.
- White cells are outputs. These cells often make calculations using gray input cells. You shouldn't have to modify output cells.
- Cells turn red when the input or output is incompatible with what your zoning allows or what is physically possible (e.g. your residential unit-type percentages can't sum to more than 100%)

Input Cell	[Do modify]
Output Cell	[Don't modify]
Incompatible Cell	[Review for error]

Get familiar with the Pro-Forma

4. Review the Tool's Tabs

"Zone Matrix" tab

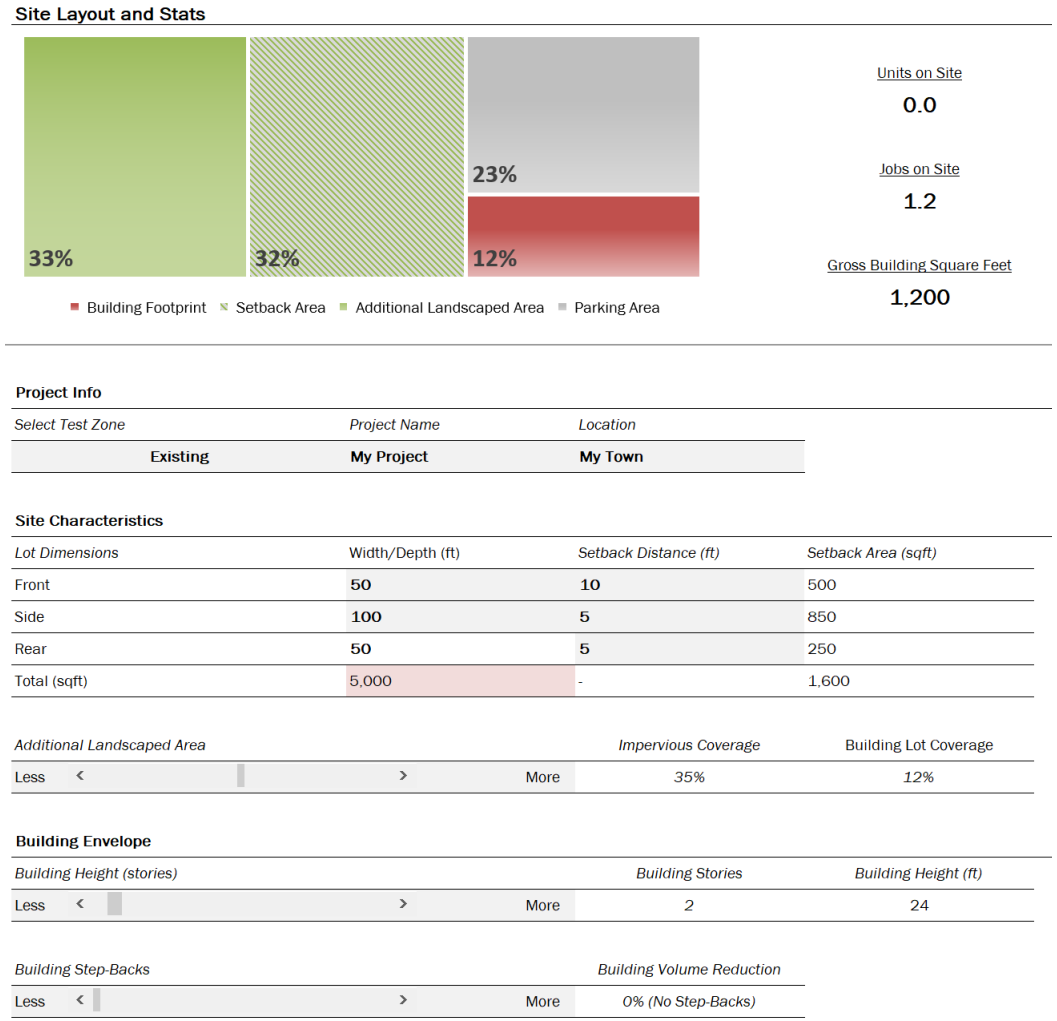


- This is where you tell the Pro-Forma tool the development standards for an existing zone you would like to model. The inputs for this tab come from the Zone Research Matrix you completed.
- When you adjust inputs on other tabs, the Pro-Forma tool will reference the "Zone Matrix" and turn cells red if they exceed the allowed development standard.
- You can add proposed standards for a zone in the "Zone Matrix" tab. For example, you could increase the maximum unit density and decrease the parking minimums. Later, the Pro-Forma tool will let you compare the likely financial and built outcomes of your existing and proposed zones.

5 Get familiar with the Pro-Forma

"Building Envelope" tab

- This tab models the physical dimensions of a proposed development in the zone you are analyzing.
- The tab's top section summarizes the built and financial outcomes of the development. These cells are outputs that change as you modify inputs below. Note that financial outputs are not visible in "Building Envelope Only" mode.
- The tab's bottom section is where you input development details, like building height and setbacks. Select the zoning standards to compare the development with by selecting "Existing" or "Proposed" in the Test Zone dropdown menu.



Site Layout and Stats

Units on Site: 0.0

Jobs on Site: 1.2

Gross Building Square Feet: 1,200

Project Info

Select Test Zone	*Project Name*	*Location*
Existing	My Project	My Town

Site Characteristics

Lot Dimensions	Width/Depth (ft)	*Setback Distance (ft)*	*Setback Area (sqft)*
Front	50	10	500
Side	100	5	850
Rear	50	5	250
Total (sqft)	5,000	-	1,600

Additional Landscaped Area			*Impervious Coverage*	Building Lot Coverage
Less	<	> More	*35%*	*12%*

Building Envelope

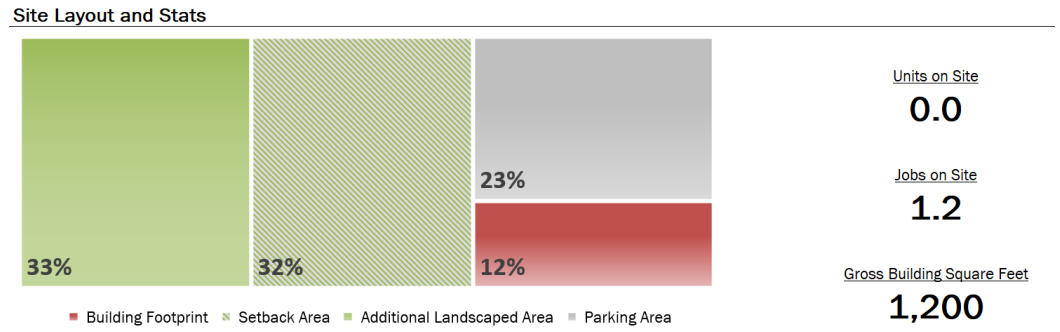
Building Height (stories)			*Building Stories*	*Building Height (ft)*
Less	<	> More	2	24

Building Step-Backs			*Building Volume Reduction*
Less	<	> More	*0% (No Step-Backs)*

5 Get familiar with the Pro-Forma

"Building Financials" tab

- This tab models the financial aspects of a property development in your zone.
- As in the "Building Envelope" tab, the top section summarizes the built and financial outcomes of the development. These outputs adjust as you modify the inputs.
- The tab's bottom section is where you input financial details, like construction costs and rental income.
- Note: This tab will not be visible unless the ROI Lite user type is selected.



Costs

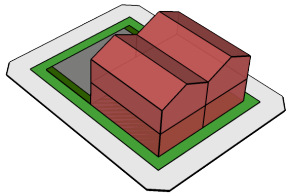
Hard Costs	*Per Square Foot or Stall*	*Project Total*	*Percent of Total Cost*
Residential	**$145**	$0	0%
Retail	**$160**	$192,000	63%
Office	**$160**	$0	0%
Parking	$3,200	$11,520	4%
Land	$10	**$50,000**	16%
Total	-	*$253,520*	*83%*

Soft Costs	*Per Square Foot or Stall*	*Project Total*	*Percent of Hard Costs*
Impact Fees	$11	$12,676	**5%**
Other Soft Costs	$32	$38,028	**15%**
Total	-	*$50,704*	*20%*

Cost Summary	*Per Square Foot*	*Project Total*	*Percent of Total Cost*
Hard Costs	$211	$253,520	83%
Soft Costs	$42	$50,704	17%

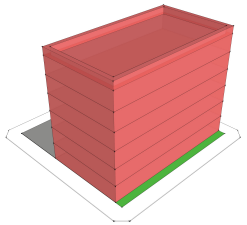
6 Model your existing code

Now for the fun part: creating a building! There are two types of model buildings you can create.



1. **Targeted Building Type.** If you have a building type in mind, you can attempt to create it under the zone standards. For example, you may want to test if a fourplex can be built in your city's medium density residential zone.

Build to an existing concept or design



2. **Maximum Building Envelope.** If you don't have a building type in mind, then you can create the largest building that is possible under the zone standards. For example, you may want to know how many units could be built on a typical property in your city's high-density residential zone.

Maximize size of building and number of units

6 Model your existing code

1. **Settings and Project Info:** In the "Building Envelope" tab, name your development, enter the location, and set the Test Zone to "Existing."

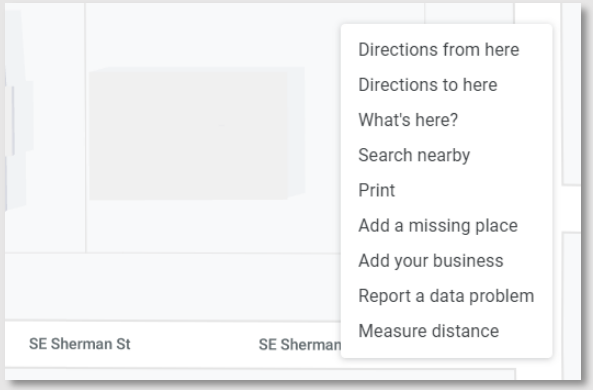
2. **Lot Size.** Choose a lot size and enter the dimensions (side = depth, front = width). Three main options:

   - Minimum lot size required by the zone.
   - Typical lot size found in the zone. See sidebar for how to measure a typical lot size.
   - Specific lot size for a site you have in mind.

3. **Setbacks.** Enter the minimum setbacks of the zone. When you enter setbacks, the tool calculates the area of the site that is in the setback area and assumes it will be landscaping.

How to measure a lot on Google Maps

1. Navigate to the area and zoom in until you see lot lines
2. Right-click and select "Measure distance". Measure the width and depth.



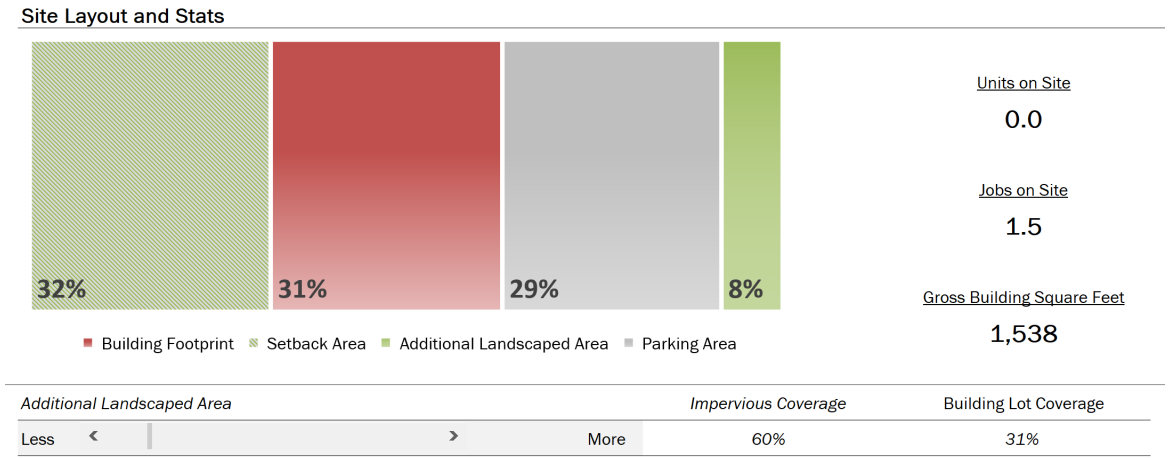
Setback Distance (ft)	*Setback Area (sqft)*
10	500
5	850
5	250
-	1,600

6 Model your existing code

4. **Landscaping.** Often, setbacks include and count toward landscaping requirements.

   - If your zone's lot coverage, impervious coverage, or landscaping requirements **are not met** by the setback area of your development, add additional landscaping to meet the requirement.

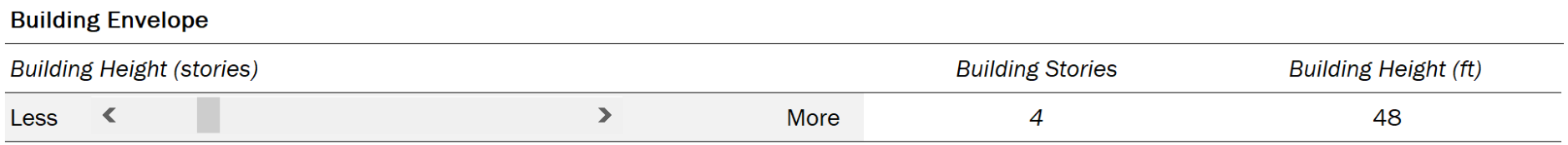
   - If the amount of landscaping in the setback area **meets** the minimum requirements of the zone, then you do not have to add additional landscaping.



6 Model your existing code

5. **Height.** Enter the height of the building in stories using the slider bar. If the development standard for maximum height of a building is in feet and you want to assume your model building is built to the maximum, then use the following rules of thumb to convert feet to stories.

   - Retail on the ground floor of a mixed-use building or as a single-story building: 15 feet
   - Residential: 1 story = 10 feet
   - Office: 1 story = 12 feet
   - Note: building height is calculated based on number of floors and average floor height specified in the zone matrix tab.



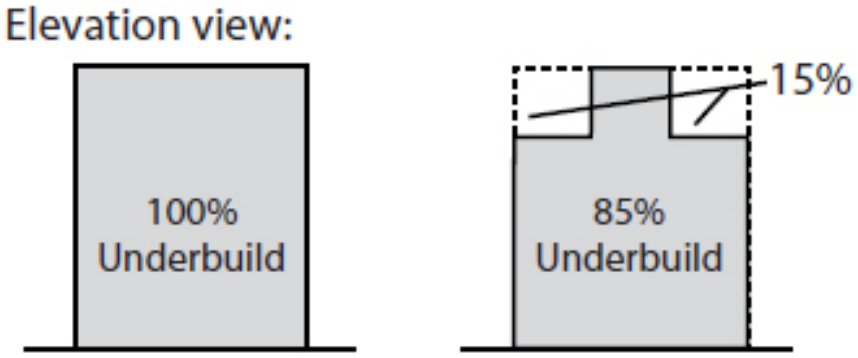
Building Envelope

Building Height (stories)			*Building Stories*	*Building Height (ft)*
Less	‹	› More	*4*	48

6 Model your existing code

6. **Step-Backs.** Enter the building's step-backs. In the Pro-Forma Tool, building step-backs represent architectural features that reduce the building's total volume from what it would be if the building were a plain box. Step-backs commonly come from building articulation or from a building design in which upper stories have less floor area than the building's first story. Step-backs—and architectural features that result in step-backs by reducing building volume—are sometimes required by zoning code.

Building Step-Backs			*Building Volume Reduction*
Less	‹ ›	More	*5% (Minimal Step-Backs)*



6 Model your existing code

7. **Building Uses.** Define the use of the building. If it includes a mix of uses, estimate the percent of floor area for each use, and make sure it sums to 100%.

   If it is residential building, then select the type from the options below so the tool can accurately calculate floor areas:

   - Single-family: One detached house.
   - Duplex or townhome: This type assumes the units are side-by-side and do not have common hallways or entryways.
   - Multi-family: 3 or more units in one building with common hallways/entryways.

Building Uses	
Use Mix	
% Residential	75%
% Retail	25%
% Office	0%
Total (check)	*100%*

6 Model your existing code

8. **Residential Unit Size.** To calculate the number of residential units, the tool needs to know the size of each unit in the building. The tool is pre-populated with typical unit sizes based on the number of bedrooms.

   Once you have defined unit sizes, you need to decide how many of each unit type are in the building. Enter the percentage of units in each size category.

Residential Unit Mix	*Avg. Unit Size (Net SF)*	*% of Units in Building*
Affordable	975	0%
4+ Bedroom	2,000	0%
3 Bedroom	1,200	0%
2 Bedroom	900	50%
1 Bedroom	725	50%
Studio	575	0%
Avg. Residential Unit Size ◊	*813*	*100%*

6 Model your existing code

9. **Parking Type.** Adjust the sliders to specify the parking type(s).

- Parking is usually provided on a single-level surface parking lot. This is the least expensive method of providing on-site parking.
- Adding levels of surface parking creates an above ground parking garage.
- For multi-story buildings on a small site or in an area with high land costs, a portion parking may be provided underground or on the building's first floor, called tuck-under parking).

Parking

Parking Type	*Parking Levels*	*Yield*
Surface or Structured Parking	‹ ▯ ›	1 Level of Surface Parking
Tuck-Under Parking	‹ ▯ ›	0 Levels of Internal Parking
Underground Parking	‹ ▯ ›	0 Levels of Underground Parking

6 Model your existing code

10. Parking Requirements. Enter the number of parking spaces that are required.

- Residential: Enter the # of spaces required per unit.
- Retail/Office: Requirements are based on floor area. Enter the # of spaces required per 1000 square feet.

Parking Requirements	*(Stalls per unit, or 1,000 SF)*	
Residential	1.0	4 Spaces
Retail	2.0	2 Spaces
Office	2.0	0 Spaces
Total	-	6 Spaces

7 Confirm compliance with code

Double-check that the building complies with the zoning standards you specified in the Zone Matrix tab. A quick way to check is to look for red cells. Troubleshooting tips:

- **Density too high?** If density exceeds the maximum allowed in the zone, then determine the max # of units allowed on your site and adjust the stories, unit sizes, or other details to make your building compliant. Density is usually calculated by acre. Use this formula:

  (lot size (sq. ft.)/43,560) x max units per acre = max # of units on that lot

- **FAR too high?** If the zone has a Floor Area Ratio (FAR) standard and the building exceeds it, then you need to shrink the building. To do this, calculate the max floor area allowed on the site and equivalent # of units. Then adjust stories, unit sizes, and other details to make your building compliant. Use this formula:

  max FAR x lot size (sq. ft.) = max floor area
  max floor area / average unit size = max # units on that lot

7 Confirm compliance with code

- **Landscaping too low?** If the landscaped area falls below the minimum standard, then increase the landscape area.
- **Lot coverage too high?** Lot coverage is the percent of the lot covered by either buildings or buildings and parking areas. Review the zoning code to understand how it is measured in your community (look in the "definitions" or "measurements" section or chapter). Sometimes building or lot coverage is regulated, sometimes impervious surfaces are regulated, and sometimes neither is regulated.
  - If lot coverage = building footprint + parking or other impervious areas, then increase landscaping to equal the inverse of the maximum lot coverage. For example, if maximum lot coverage is 60%, increase landscaping to 40%.
  - If lot coverage = building footprint, then adjust landscaping, stories, unit size, and other factors to model a building with a smaller footprint.

Evaluate the model building

Now that your building is compliant with the code, its time to think critically about the feasibility that this type of building would be developed. Consider these questions:

- **How large is the building relative to the lot?** Is the building footprint less than 40% of the lot? If the building is small relative to the lot, then it may not be economically viable as the value of the building is low relative to the cost of the land.
- **Is the building height logical given the size of the building footprint?** A building that is three or more stories on a relatively small footprint will not be economical to build.
- **How many units are possible?** Is it possible to meet the max density of the zone? More units/higher density usually improves feasibility.
- **What size are the units?** If units are unnecessarily large due to low-density zoning, then they will require a higher selling price, and may not be marketable. If the density standard allows a high number of units, but the units must be small to meet other standards (such as FAR or parking) then the units may be too small to be marketable.

Evaluate the model building

Next, we'll move on to the "Building Financials" tab.

1. Hard Costs

Costs

Hard Costs	*Per Square Foot or Stall*	*Project Total*	*Percent of Total Cost*
Residential	**$145**	$463,382	74%
Retail	**$160**	$0	0%
Office	**$160**	$0	0%
Parking	$3,200	$11,122	2%
Land	$10	**$50,000**	8%
Total	-	*$524,504*	*83%*

The costs table allows users to enter per square foot "hard costs" for different use types. Note that these costs are only for core, shell, and improvement costs and the labor associated with them. Other costs such as taxes and fees are handled elsewhere.

2. Soft Costs

Soft Costs	*Per Square Foot or Stall*	*Project Total*	*Percent of Hard Costs*
Impact Fees	$8	$26,225	**5%**
Other Soft Costs	$25	$78,676	**15%**
Total	-	*$104,901*	*20%*

Soft costs include impact fees, architectural or developer fees, and in some cases, site prep and remediation costs.

8 Evaluate the model building

3. Taxes

Taxes	Percent of Hard Costs	Project Total
Year 1 Property Taxes	**2%**	$10,490

Taxes are a necessary cost input and are represented as a percent of hard costs in year 1 of the project. Use the total project hard cost output in row 29 to help estimate the proper percentage input for the project.

4. Residential Revenues

Revenues

Residential Rental Revenue	*Monthly Rent*	*Monthly Rent per Square Foot*	*Avg. Unit Size (Net SF)*
Affordable	**$1,486**	$1.52	975
4+ Bedroom	**$1,981**	$0.99	2,000
3 Bedroom	**$1,816**	$1.51	1,200
2 Bedroom	**$1,651**	$1.83	900
1 Bedroom	**$1,486**	$2.05	725
Studio	**$1,321**	$2.30	575
Project Average	$1,568	$1.93	828

Change Rent for All Product Types

- +

Residential revenues are only required for projects with a rental residential component. Users should enter appropriate monthly rents by unit type. Note that not all unit types need be present in a project.

Tip: in order to test “across-the-board” changes to rents, use the plus and minus symbols to change rental rates proportionally across all product types.

Evaluate the model building

5. Residential Sales Revenue

Residential Sales Revenue	*Sales Price*	*Sales Price per Square Foot*	*Average Unit Size (Gross SF)*
Owner Residential	**$250,000**	$302	828

Residential sales revenue is where the user enters the sales price per home, for for-sale residential product. Note that projects with no for-sale residential component can ignore this input.

6. Non-Residential Revenue

Non-Residential Revenue	*Annual Rent per Square Foot*	*Average Monthly Rent*	*Leasable Square Feet*
Retail	**$18.00**	$0	0
Office	**$22.00**	$0	0

Non-residential revenue is where a user can enter lease rates for retail and office uses in the project, if they exist. Note that these lease rates are gross, meaning they do not include real estate taxes, insurance, or building maintenance.

Test code changes

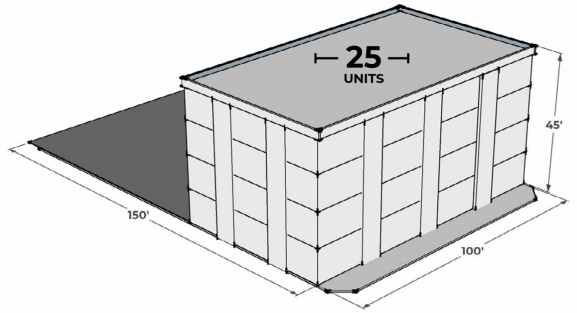
Now that your building is dialed in, the next step is to test the impact of changing the code. Here's how:

- **Choose a standard to test.** Maximum density and minimum parking requirements often have the most influence.
- **Test one change at a time.** We recommend you test code changes one at a time to understand the individual impacts of each change.
- **Test incremental changes.** For example, test if the parking requirement was reduced from 1 space per unit to 0.75 or 0.5 spaces per unit.
- **Document the impact.** Document the impact of the change on the physical features of the building.
- **Test combinations.** After you've tested individual changes, test the cumulative impact of combinations of changes. For example, increase density and reduce parking.

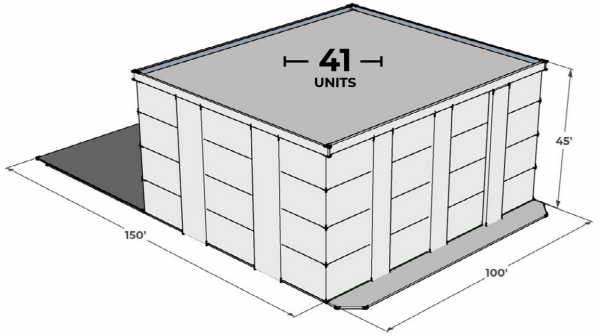
Share your results!

Share the results of your audit with fellow planners, policymakers, and residents. Here are some tips:

- Start by sharing the model building that complies with the code. Point out any features of that building that make it unrealistic or undesirable to be developed.
- Show the impact of individual code changes. People often feel encouraged when they see how small tweaks can have real impacts.
- Look for images or graphics that are representative of a building that could be built if the code changes you suggest were implemented. It is much easier to demonstrate that a building is compatible or desirable with images in addition to numbers.



EXISTING ZONING



REDUCED PARKING