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from the ground up

Inclusionary Housing Calculator User's Guide
Updated January 28, 2019

There are a number of different ways to get help using the Inclusionary Housing Calculator.

1. **Overview**
Explains the proper use of the calculator, its capabilities and limitations, and the methodology behind the calculations.

2. **Inputs Guide**
A glossary or guide to the calculator inputs. It provides definitions of terms and links to resources that help you understand reasonable inputs

3. **Additional Technical Questions**
Answers questions about how to model certain options, the limitations of the Calculator and how to properly convert data in order to input it.

4. **Contact Us**
Still have a question? Something you want to tell us? Email IHInfo@groundedsolutions.org

1. Overview

What is the Inclusionary Housing Calculator?

Grounded Solutions Network created the Inclusionary Housing Calculator (the "Calculator") to help advocates, policymakers and other interested stakeholders understand the economic issues involved in designing an affordable housing policy. The Calculator is a simple online static development pro forma which allows users to model a real or hypothetical development project and then add affordable housing requirements in combination with different development incentives. In this way users can get a sense of what might be economically reasonable for a given jurisdiction trying to set affordable housing requirements and offer developers meaningful incentives.

> *This manual provides a general introduction on how to use the Calculator and provides guidance on basic real estate terms and key assumptions. As with the Calculator itself, this manual is meant to provide general guidance and is not a replacement for professional financial feasibility analysis.*

What is the Calculator useful for?

The Calculator is both a teaching tool for illustrating the economic principles that are relevant to the creation of affordable housing, and a practical analytical tool for understanding the feasibility of requiring affordable housing in a specific project. The Calculator also provides users with a menu of different hypothetical prototypes to provide a starting place for understanding the feasibility of affordability requirements in the context of these prototypes.

What should the Calculator not be used for?

The Calculator should not be used as a replacement for a detailed financial feasibility analysis prepared by a trained professional. The Calculator can put users in the "ballpark" of what might be economically reasonable for a specific project or policy. However it does not replace the need for careful background market analysis to thoroughly assess assumptions used, nor does it provide the in-depth training needed to integrate those assumptions into a development pro forma.

What methodology does the Calculator use?

The Calculator is built off of a "static" pro forma, meaning that it takes a look at a single point in time in the future at stabilized occupancy for rental developments and at the completion of initial sales for for-sale developments. The Calculator is not a multi-year cash flow, which is another type of pro forma often used by developers, investors and real estate development consultants.   A cash flow model is likely to be more accurate but much more complex to set up.

Who should use the calculator?

Anyone who's interested in testing some assumptions on a development prototype to see if any affordable housing requirements would work can use the Calculator. This includes local government staff, housing advocates, elected or appointed officials, and any resident interested in trying to increase the supply of affordable housing in their communities.

Which inputs make the most difference?

There are just a few inputs that make the greatest difference to the bottom line results of the Calculator:

a. Hard construction costs. Usually between 60 and 70 percent of development costs can be attributed to materials and labor, so this assumption drives most of the cost side of the equation.

b. Average rental rates or market sale prices. Average monthly starting rental rates for new rental projects and average market prices for for-sale projects are the most important assumptions on the revenues side of the equation.

c. Capitalization rates. For rental projects, even small changes in the "cap rate" can make a big difference in terms of the profit calculation since this variable is used to translate net operating income in a year of stabilized occupancy into total project value.

Getting data to develop the estimates

The best source of data is usually a recent development pro forma for a comparable project to the one that is being tested using the Calculator. Developers sometimes share these with jurisdictions as part of development negotiations if the local jurisdiction is involved in the transaction through a land sale, the provision of a grant or some other type of public involvement. Otherwise it can be hard to get developer pro formas since many developers consider these proprietary. If consultant feasibility studies are available, these can also be a helpful source of information about both cost and revenue assumptions.

2. Inputs Guide

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Project

Description

You can enter a name for the project or a brief description of the type of project that you are modeling. This text will be used to identify the project in the list of saved projects and will appear on your output reports.

Base Units

Enter the number of residential housing units in your project. For most projects this is just the total number of all units in the building – including both market rate and any affordable units.

For projects that include a 'density bonus' this is the number of units before the bonus. You can add bonus units by adjusting the 'density bonus' slider under incentives. That will increase the number of units to a total that is higher than the number of 'base units' entered here.

There is no typical number of units but there are typical numbers of units per acre. Single detached homes can be as low as 1 or 2 units per acre, while high rise buildings can include more than 100 units per acre.

The Lincoln Institute of Land Policy has a helpful tool, Visualizing Density, which illustrates the number of housing units per acre for many common housing types. (datatoolkits.lincolninst.edu/subcenters/visualizing-density/tour/t4.aspx)

Make sure that the number of housing units (Base Units) is appropriate for the size of the parcel. The calculator shows the units per acre in an info box in the right panel.

If you set the Site Area to 1 acre, it is easier to understand the density of your project because whatever you include for the number of units is also the number of units per acre.

Site Area

Enter the size of the parcel of land that the project will be built on.

If you are unsure of the parcel size, you might want to assume a 1 acre site. Make sure that the number of housing units (Base Units) is appropriate for the size of the parcel.

The Lincoln Institute of Land Policy has a helpful tool, Visualizing Density, which illustrates the number of housing units per acre for many common housing types. (datatoolkits.lincolninst.edu/subcenters/visualizing-density/tour/t4.aspx)

Parking Ratio

The parking ratio is the number of parking spaces per housing unit.

The calculator asks for the cost of building parking spaces in the Cost Per Parking Space field under Development Costs. In addition, under Incentives there is a Parking Reduction field to lower the parking ratio by a given percentage.

Some buildings will have as many as 2 parking spaces per housing unit but, increasingly, builders are including fewer parking spaces. Because parking spaces are expensive, particularly in higher density buildings, lower parking ratios can dramatically reduce the cost of a building and make it more profitable.

Common Area

This is the total percentage of a building's square footage dedicated to common areas. Space within a residential building is generally put into two categories: individual units and common areas. Common areas include hallways, lobbies, community rooms and other common spaces not inside of individual residential units.

A typical common area percentage for most residential buildings is from 10% to 20%.

Recently developed projects in the local area are the best place to look to understand what common area percentage to use. In some type of buildings, larger community spaces are more popular. In areas where land is expensive, developers try to maximize the amount of space they can rent or sell in the form of individual residential units.

Commercial Space

The Calculator is built to model residential buildings but, in urban areas, many residential buildings include ground floor commercial (often retail) space. It may be easier to understand the project economics if you assume no commercial space but for modeling real projects, the Calculator offers the option to include some commercial space and commercial rent. However, in order to keep the calculations simple enough to explain, the Calculator assume that any commercial space costs as much to build as residential space. This may not be a realistic assumption so it works best when the share of commercial space is small.

Commercial Rent

Enter the rent per square foot per month for commercial tenants, if there are any. If there is no commercial space, this won't make any difference.

You can find commercial rents by speaking with a commercial real estate broker. In some communities, it is more common to talk about commercial rent per square foot per year. In those cases, you will have to divide by 12 before entering the rent into the calculator.

Other Rental Income

Enter any other expected rental income (per month) such as income from parking or storage space rental. If you are modeling a real project, you can adjust this number to match the total revenue that the developer is expecting. If you are not modeling a particular project, it may be simpler to leave this at $0.

Unit Mix

You can drag the circular handles in the Unit Mix pie chart to adjust the mix of unit sizes in a project. The calculator tracks the percentage of units of each type. If you change the number of units it will keep the same mix.

Unit Specifications (Detailed Mode)

Average unit size is measured by square feet per unit. Units within a building can vary by type (studio, one-bedroom, two-bedroom, etc.) and by size. This combination of unit sizes is called a unit mix. You can adjust the number of units by type and size and also change the average unit size and approximate price or rent for each unit type.

Average unit sizes for a building vary because of market preferences and locations. In general, you can assume:

o 500-750 square feet for a studio unit,

o 600-850 square feet for a one-bedroom unit,

o 750-1,000 square feet for a two-bedroom unit, and

o 1,000 square feet and more for three- and four-bedroom units.

Websites like Trulia.com and Zillow.com provide listings of currently renting or selling units in your local area. These listings can help find average unit sizes. The best source of information is usually a developer or market analyst. They will have current information on what types of units are most popular in the local market.

Average Market Rent (Basic Mode)

This field refers to the average market rent that would be charged for units *in this specific development,* not the average market rent for all units on the market in your community. The average rental rate is measured per unit per month. The average is based off of the detailed unit mix listed under Unit Specifications (Detailed Mode).

You can adjust the average market rent either by changing the Average Rental Rate slider or by changing either the rents for each type of unit or the number of units of each type under Unit Specifications (Detailed Mode).

There is no typical average rental rate. Market conditions differ from place to place. The rental rates used in the Calculator are for actual developments in three market scenarios:

• strong (ex. San Francisco, New York City),

• mixed (ex. Denver, Salt Lake City, Chicago), and

• soft (ex. Detroit, Cleveland).

The best source of rental rate information is usually a developer or market analyst. These individuals often have current information on trends and comparable projects. Websites like Trulia.com and Zillow.com can also provide listings of current market rents in your local area.

Data Sources:

• Trulia provides for-sale and rental housing market data in an accessible and easy to use format. Trulia data should be used with caution as it is not always current or comprehensive. (trulia.com)

• Zillow provides estimates of housing market data for free through an easy to use online format. Like Trulia, it should be used with caution as the data is not always current or reliable. (zillow.com)

• HUD collects rental housing data for both small and large markets. When other sources are not available, HUD's 50% percentile rent estimates are a good place to start.(www.huduser.org/portal/datasets/50per.html)

• NAHB/Wells Fargo Home Price Index provides for-sale and rental housing market data in an accessible and easy to use format. This index should be used with caution as the data is not always current or comprehensive. (www.nahb.org/en/research/housing-economics/housing-indexes/housing-market-index.aspx)

Average Market Price (Basic Mode)

This field refers to the average market price for units *in this specific development,* not the average price for all units on the broader market in your community. The average market price is measured per unit. The average is based off of the detailed unit mix listed under Unit Specifications (Detailed Mode).

You can adjust the average either by changing the Average Market Price slider or by changing either the prices for each type of unit or the number of units of each type under Unit Specifications (Detailed Mode).

There is no typical average market price for either detached units or units in a condo building. Market conditions differ across the country. The market prices used in the Calculator are for realistic developments in three market scenarios:

• strong (ex. San Francisco, New York City),

• mixed (ex. Denver, Salt Lake City, Chicago), and

• soft (ex. Detroit, Cleveland).

As with rental rates, the best source of information is usually a developer or market analyst. These individuals often have current information on trends and comparable projects. Websites like Trulia.com and Zillow.com can also provide listings of current market sales in your local area.

Realtors can also sometimes have a sense of what market prices are in a given location. Realtors base these estimates on their experience and access to Multiple Listing Service (MLS) data.

Data Sources:

• Trulia provides for-sale and rental housing market data in an accessible and easy to use format. Trulia data should be used with caution as it is not always current or comprehensive. (trulia.com)

• Zillow provides estimates of housing market data for free through an easy to use online format. Like Trulia, it should be used with caution as the data is not always current or reliable. (zillow.com)

• NAHB/Wells Fargo Home Price Index provides for-sale and rental housing market data in an accessible and easy to use format. This index should be used with caution as the data is not always current or comprehensive. (www.nahb.org/en/research/housing-economics/housing-indexes/housing-market-index.aspx)

Affordability

Affordable Units as % of Total Units

Enter the percentage of the total units in the project that will be offered at below-market rents or prices to low-income households. This is often 10%-25% of total units.

The affordable units will be distributed across unit types in the same ratio as the market-rate units.

Affordable Housing Fee

A fee charged for each new market rate residential unit to help fund the provision of affordable housing outside of this project. The fee could be an impact fee or an 'in lieu' fee. Note: be sure to set Affordable Units as % of Total Units to 0% if you intend for this fee to be used instead of onsite units.

Area Median Income

The Area Median Income is a standard measure of the incomes in each community in the United States. You can find the AMI for your area on the website of the US Department of Housing and Urban Development (HUD): (https://www.huduser.gov/portal/datasets/il.html).

Local housing and community development departments also publish an annual update of AMI levels. These updates are always the best source if available, as the AMI targets might be adjusted according to local housing needs.

This input will be the same for every project in a metro area. You should be able to set it once and never change it until HUD publishes a new AMI the following year.

Affordability Standard

The affordability standard is the percentage of a person's total income available for all housing costs. Total housing costs include rent, mortgage payments, utilities, and other housing costs.

For rental housing, a common standard is 30%. This means that a housing unit is considered "affordable" when the occupants spend no more than 30% of their total income on housing costs. For ownership housing (and occasionally in some rental housing programs), the standard is sometimes adjusted up to 33% or 35%.

Local housing and community development departments are the best places for affordability standards. Note that standards can differ among affordable housing programs. Standards are usually available in municipal program documents or from program staff.

Homebuyer Mortgage Rate

Enter the interest rate that buyers of Below Market Rate affordable homes in the project will expect to pay on their first mortgage loans. This is used to calculate the maximum affordable purchase price.

Regional mortgage rate averages are available at BankRate.com. Some cities have adopted rules for pricing affordable homes which include specific assumptions that should be used here.

Property Taxes

Enter the annual property tax rate in the jurisdiction. This is used to calculate the maximum affordable purchase price for Below Market Rate units.

The local property tax assessor (or any local homeowner's tax bill) is the best source for the local tax rate. The national average for residential property taxes is 1.38%. The Tax Foundation publishes averages for each state (taxfoundation.org/how-high-are-property-taxes-your-state).

Insurance

Enter the annual cost of homeowner's insurance as a percent of the value of the home. The calculator assumes that homeowners insurance costs 0.35% of purchase price. Most users will not need to adjust that assumption.

Some cities have adopted rules for pricing affordable homes which include specific assumptions that should be used here.

HOA and Other Costs

Enter the monthly cost of Homeowners Association (HOA) dues or charges, if any. These charges are common for condominium or planned unit development projects.

In 2015 the average HOA fee was $331 but the amount varies quite a bit by type of project and even between different regions.

Trulia tracks average HOA fees in different parts of the country.
(www.trulia.com/blog/trends/hoa-fees)

Assumed Down Payment

Enter the assumed level of a homebuyer's downpayment as a percent of the total sales price. This number is used to estimate the maximum affordable purchase price for below market rate homeownership units.

For affordable homes, this is typically 3% or 5%.

Some cities have adopted rules for pricing affordable homes which include specific assumptions that should be used here.

Affordability Levels

Inclusionary Below Market Rate units are restricted for sale or rent only to households that earn less than some target income. The income targets are set as percentages of Area Median Income (AMI). Different programs target different income levels. The lower the income level targeted, the more deeply discounted the rent or sales price will be.

The most common targets are 30%, 50%, 60%, 80%, 100%, and 120% of AMI. The calculator adjusts the income targets to reflect different household sizes that are expected to occupy each unit size. The calculator assumes a total household size of one person per bedroom plus one additional person (so, for example, a 3-bedroom unit would house four people and a 1-bedroom unit would house two people). As a result, a larger units will rent or sell for more than a smaller units even when both are targeting 80% of AMI, because, for example, AMI for a household of 4 people is greater than AMI for a household of 2 people.

Make sure to update the Area Median Income above to the AMI for your area.

Note, in less expensive markets it is important to be careful not to set affordability targets that are so high that 'below market' units are actually priced at or above market rate. Even if they are priced slightly below market, they may still be hard to sell or lease, as buyers and renters may not find the small reduction in price to be worth the restrictions that come with the unit.

Affordable Units Breakdown

Many inclusionary housing programs target all of their affordable units to households at or below a single income limit or price level. However, the Calculator allows for including affordable units priced at up to three different target income or price levels. This allows modeling more complex policy alternatives where some units are more deeply subsidized than others. Setting a single income target or price level is recommended for simplicity. Programs with multiple income targets or price levels can be much more difficult to administer.

Incentives

Developers often receive incentives to include a certain percentage of affordable housing units. The Calculator allows users to adjust the following types of incentives:

Density Bonus

Density bonuses let developers build more units in the same building than standard planning and zoning rules allow. The density bonus is the most common type of incentive. Density bonuses usually allow between 10% and 25% more units. When a Density Bonus is specified, the calculator calculates the given percentage of the base units in the projects and adds that many additional units. For example, in a 100 unit project a 25% bonus would add 25 additional units for a total of 125 units.

Parking Reduction

Many jurisdictions require developers to build a certain number of parking spaces per unit, known as a parking ratio. This number is specified in the Parking Ratio field in the Project Description section. Some jurisdictions will reduce this parking ratio for a developer if they include a certain amount of affordable housing. This reduction of the parking ratio is usually between 10% and 25%.

Streamlined Processing

Some jurisdictions will speed up planning and permit processing in exchange for including affordable housing. This streamlining could save between 1-12 months for a developer. Cost reductions due to streamlined processing can vary greatly. The calculator reduces costs by 1% of soft costs for each month that processing is streamlined; this number is meant to be a very rough estimate of potential cost savings. It is important to note, while many jurisdictions offer streamlined processing, these programs might not always translate to real savings to developers.

Fee Reduction

Cities can provide a per unit dollar savings to a developer for including affordable housing. These savings take the form of reduced local development and impact fees, and can be thousands of dollars per unit. The 'base' amount of development and impact fees is set in the Residential Impact Fees field in the Development Cost section. Users should ensure that the fee reduction amount is not greater than the base fee amount.

Tax Abatement

Some jurisdictions provide annual abatement (or forgiveness) of property taxes per rental unit. Taxes can be abated for all units in the project or only for the affordable units. The abatement increases the amount of income that the property generates which can then be turned into value. This abatement varies by jurisdiction but is usually no more than $1,000 per unit per year. Users can also specify the term of the tax abatement, which can vary from 5 to more than 30 years, with 10 years being a common length.

Grant

Some jurisdictions provide a direct cash incentive or grant to help offset the costs of building inclusionary units. Grants are usually only used in areas where no other incentive is workable or meaningful. This grant is usually no more than $10,000 per affordable unit.

Annual Operating Grant

This field can be used to enter any annual grant or operating subsidy, including Tax-Increment Financing (TIF). If the value changes over time, enter the average amount. Users can also specify the term of the annual operating grant in years.

Development Cost

Construction Costs

Construction hard costs are among the most important numbers for a developer. In most jurisdictions and for most projects, construction hard costs make up between 60 and 70 percent of total development costs.

Construction hard costs include all construction material, labor, and general contractor overhead. An extra 15% is often included as a contingency to account for costs above what was estimated.

These hard costs do not include expenses like architectural fees or permitting costs. These costs are included in the input for Soft Costs.

When measured per square foot, hard costs are for the gross area, not the net area. "Gross" area means the total space of all residential units and common areas in a building including hallways, lobbies, and other common space. Some sources will list construction hard costs per net square foot. The net area of a building includes only the space inside the residential units and excludes hallways and other common areas.

Construction costs differ among locations and are not always related to land cost. For instance, some jurisdictions have low land costs but high labor and construction costs. Construction costs also depend on building type. Buildings built with wood frames are much cheaper than those built with steel frames. However, steel frames are required for taller buildings for reasons of fire safety.

Detailed construction cost data can be purchased through RSMeans.com. Yet, RS Means estimates can often be very different from the actual costs for real projects. To accurately estimate the cost of construction, it is best to find the costs for several projects of similar location, design, and construction type.

Note that the calculator breaks out the cost of constructing parking from the cost of constructing the residential structures. When looking up construction costs in other sources, pay attention to whether parking is included. If it is included, you may need to remove parking costs from the total construction cost and enter the result here.

Land Cost

Often the hardest single assumption to get right is the cost of land. Unlike other assumptions, there are fewer good sources of data on land. Speculation in the land market also makes it difficult to get reliable information.

Land costs are determined by factors like: how many stories you can build on an acre (zoned density), how much demand there is for land, and landowner expectations.

There is no one typical land cost, even for similarly-zoned parcels in the same city. In cities like San Francisco or New York, there is a high demand for land and land costs can be as high as $10-$25M per acre. In cities where there is less demand for land, land prices might be $500,000 or less per acre.

The best data is often from companies who buy and sell land. These companies include real estate brokers and appraisers familiar with the local market. Data is also available in real estate market reports called "comps." These reports, written by professional consultants, list land sales of similar types of properties.

Data can also be found in a study of land prices by state published by the Lincoln Institute of Land Policy. (datatoolkits.lincolninst.edu/subcenters/land-values/land-prices-by-state.asp)

Cost Per Parking Space

Parking costs are measured by cost per parking space. The Calculator breaks parking costs out by space to allow for easy changes to the Parking Ratio. The parking ratio is the number of parking spaces compared to the number of units in the building. Some jurisdictions require a specific parking ratio to ensure enough parking for residents. However, developers have an incentive to reduce the number of parking spaces because of the high cost to build parking. In some cases, developers incorporate the cost of building structured parking into the per square foot construction costs.

Parking is one of the biggest costs involved in building multifamily buildings. Parking costs grow in areas where surface parking isn't possible or desirable. There are several different types of parking in residential and mixed-use buildings including:

o Above-grade parking garages ($20-$35K per space);

o Below-grade or underground parking ($35-$45K per space); and

o Surface parking (~$1,000 per space depending on the site and the landscaping involved).

Like construction hard costs, parking space cost estimates can be purchased through RSMeans.com. The best way to get information, though, is to look at similar recent developments with the same type of parking.

Be careful not to double count construction costs for parking. Parking construction costs should be entered here and not included in the hard Construction Costs input above.

Sales and Marketing Costs

Enter the sales commission and other marketing costs as a percent of the sales price of the property. This will typically be 3-5% of the price. Enter 0% if sales costs have already been included in Soft Costs.

Soft Costs

Most costs that are not related to materials and labor are referred to as soft costs. Soft costs are measured as a percentage of total hard costs. Soft costs include:

o architectural and engineering costs;

o legal and insurance fees;

o planning approval fees;

o environmental approvals and building permits (also called entitlements);

o development impact fees; and

o Other professional consulting fees or costs not connected to the physical building of the project.

Soft costs range from 20 to 30 percent of hard costs. This range depends on how complicated the project is to design and build and how long the planning and permit process takes.

Developer "pro formas" are a good source for soft costs. Local real estate experts and city planning staff familiar with local development conditions can also help.

Note that the Calculator separately itemizes Financing Costs, Sales and Marketing Costs, and Residential Impact Fees. These costs are often included in soft costs. If you find a source for soft cost information, check to see whether it includes these items, and if it does, subtract them out and enter them separately in those fields.

Other Development Costs

Use this input for any other cost of development that might be separately itemized. For example, some jurisdictions require developers to make significant improvements to the area as part of the project. These improvements include things like new sewers, streets, or sidewalks, which can be very expensive. Since these requirements vary by jurisdiction, it's difficult to estimate a range of costs.

Residential Impact Fees

Impact fees, sometimes called development charges or development fees, are measured in dollars per unit. Impact fees are sometimes used to assist jurisdictions in paying for a portion of growth-related capital costs incurred to provide services to new residents and businesses.

In more expensive cities, $10,000 per unit and more is typical. In other cities, fees are relatively insignificant or may not exist.

A summary of a jurisdiction's development fees can often be found online. This summary is often on the Planning or Housing & Community Development department website. Local developers are also sometimes a good source of information based on recent projects that they've built.

The Brookings Institution also has published this report on residential impact fees: www.brookings.edu/~/media/research/files/reports/2003/6/metropolitanpolicy-nelson/nelsonimpactfees.pdf

Condo Wrap Insurance

Condo Wrap Insurance is measured by dollars per unit. This insurance is only relevant for ownership projects. Developers of for-sale condominiums buy "wrap insurance" that covers any potential risks and liabilities during the construction and sale of all the units. Once the units are sold, a homeowners association (HOA) is usually responsible for paying insurance costs.

Costs vary according to how risky the particular development is and how long the initial sales period is likely to take.

The best sources for wrap insurance costs are developers and insurance brokers that specialize in wrap insurance. They will be able to provide how much wrap insurance will cost for a given development type and location.

Read more about wrap insurance here: www.ccim.com/cire-magazine/articles/its-wrap/?gmSsoPc=1

Operating Cost

Rental Vacancy Rate

Enter the expected share of units that will be vacant in a typical month after the building has been fully leased up. Even a well-managed building with high demand will have some vacancy

rate because of the time it takes to fill vacancies. Where demand is high, vacancy rates may be 5% while in softer-market locations they may be 10% or higher.

Rental Operating Cost

Enter the percentage of annual revenue that a rental property owner must spend to manage and operate the building. This cost will include things like utilities, trash, security, property management, maintenance, insurance, and taxes but should not include mortgage payments.

These costs generally run somewhere between 25 and 40% of income. Differences in operating cost assumptions can make a big difference to feasibility.

A 2015 National Apartment Association survey found that the average operating cost for properties less than 5 years old was 35% of income.

Financing

Often projects require multiple sources to finance and create profit for a project. This layering of sources is complex and can be difficult to understand.

This section describes several of the main methods used to finance and make profit on a development. To simplify the pro forma analysis, the Calculator assumes a single source of debt (i.e. loans) and also a single source of equity (i.e. existing developer or investor funding).

Construction Loan Interest Rate

The construction loan interest rate is what a developer pays on the loan that they take out to build the project.

Interest rates fluctuate depending on conditions in the national economy. These conditions include the Federal Reserve prime rate, local market conditions, and lender underwriting standards. We've seen interest rates anywhere from 4.5% to 8% in recent years, with 4% to 5% being typical in strong market settings in 2015.

Local developers and lending institutions (i.e. banks) will have access to the latest information on construction loan interest rates.

Loan to Cost Ratio

Loan to cost ratio is the percent of total development costs that the developer pays for by taking out a loan. The rest of the money used is equity (ether the developer's own capital or equity from an investor). Some analysts also refer to this as the Loan to Value (LTV) ratio.

A developer would like to get this number as close to 100% as possible. A ratio of 100% would mean that they were able to borrow all of the cost of developing the project and didn't have to invest any of their own money (or any equity from investors). Higher ratios (closer to 100%) will result in higher rates of return because the more a developer can borrow the less equity they need to invest. Lenders, on the other hand, prefer to keep the loan to cost ratio well below 100% to provide a safety cushion in case things go wrong.

Typical loan to cost ratios range from 60% to 80%. The ratio can vary due to market conditions, lender underwriting standards, and developer creditworthiness.

Local developers and lending institutions will have access to the latest information on loan to cost ratios for construction loans.

Period of Initial Loan

The period of initial loan is the number of months over which the developer must pay interest on the loan. Generally, the period is the same as the time that it takes to build the project. The longer a project takes to build, the more interest a developer must plan to pay on their construction loan. The calculator uses the Average Outstanding Balance to account for the fact that the construction loan is drawn down over a period of time.

Anywhere from a year to three years for most developments would be typical. More complicated projects could have longer loan periods.

Local developers, lenders, and sometimes planning department staff are the best sources of guidance for this assumption.

Initial Construction Loan Fee

The initial construction loan fee, or Points, is a one-time fee that the developer must sometimes pay at the start of the loan. This input is measured as a percentage of the total loan amount.

Points of anywhere from 0% to 2.5% of the total loan are typical. In some markets, fees may be higher along with interest rates. Points will also depend on the creditworthiness of each developer. Creditworthiness is an analysis by a lender of the likelihood a developer will not be able to pay back a loan. A lower creditworthiness would mean a higher Points.

Local developers and lending institutions will have access to the latest information on fees/points.

Average Outstanding Balance

Developers typically draw down on construction loans gradually over the period of construction so they don't have to pay interest on the full amount at the start. They only pay interest on what they have drawn down at any point. In the first months of construction they owe very little and in the last months they owe nearly the whole loan amount. In order to calculate the total amount of interest paid by the project, we need to know roughly how much of the loan is owned on average each month.

Another way to think of this is, at the middle point in the construction period, how much of the construction loan will have been drawn down. The higher the Average Outstanding Balance, the more the total cost of construction loan interest.

50% to 60% is typical in most cases. Smaller projects with a shorter time frame might have much higher average outstanding balances. This higher balance is because there is less time to draw down the loan.

As with the other assumptions in this category, developers and lending institutions will be the best source of information.

Permanent Loan Interest Rate

For rental properties, enter the interest rate for the financing on the property after the completion of construction. Often this is lower than the construction interest rate because it is a less risky loan. This input is used in the calculation of the Internal Rate of Return (IRR).

Permanent Loan Term

Enter the number of years for repayment of the permanent loan. Generally this is 20, 25 or 30 years. Longer loan terms result in lower monthly payments. This input is used in the calculation of the Internal Rate of Return (IRR).

Profitability

Measure of Profitability

The calculator includes several alternative calculations that each measure the extent to which the project is profitable. There is no one single measure that truly captures everything that a developer cares about. However, in order to make comparisons possible, the Calculator asks users to choose a single measure to consider. Each measure is described below.

Profit as a Percent of Development Cost

Profit as a percent of development cost, or "return on cost" is a simple measure of the rough profitability of development. It compares the value of the project after completion to the cost of development.

In for sale projects the value is simply the sum of the unit sales prices minus any cost of sales. In rental projects the value is calculated by dividing the Net Operating Income (NOI) by the Cap Rate. This provides a rough estimate of what a property might be sold for at the time of 'stabilized occupancy' (ie. once the building has been fully leased).

If a project is "worth" $10 million but it only cost $9 million to develop there is a profit of $1 million. The profit of $1 million is 11% of the $9 million cost which means that the developer earned 11% "return on cost."

One advantage of the return on cost measure is that is can be used to compare the relative profitability of rental and ownership projects.

Yield on Cost

Yield on cost is a profitability metric used to compare the profitability of rental properties. It measures the annual Net Operating Income (NOI) relative to the cost to develop a project. The formula is simply NOI divided by total development cost.

For example if a project cost $9 million to develop and has an annual Net Operating Income (NOI) of $450,000 then the yield on cost is 5% (450,000/9,000,000).

This is also a very rough measure, but for rental property owners who intend to hold a property, yield on cost provides a better measure of profitability than return on cost.

Required Profit

This is the 'hurdle rate' for the return on cost calculation.

Required profit is the profit needed as a percentage of total costs to undertake a project. Below that required profit percentage, developers are unlikely to move forward with a project.

The typical range for required minimal profit is 10%-20%. In riskier markets, developers and their investors may expect higher profit margins. In stronger markets, lower profit goals are acceptable because higher demand for housing means investors face less risk. The less risk, the lower return an investor will demand.

The best sources for local profit data are real estate experts, lending institutions, market analysts, and municipal planning staff. They often have an idea of what profit expectations are in the local marketplace.

Individual developers also are a good source of information. But they are sometimes not motivated to share this information.

Required Yield on Cost

This is the 'hurdle rate' for the yield on cost calculation.

Required yield is the yield needed to undertake a project. Below that required percentage, developers are unlikely to move forward with a project.

The typical range for required yield is 4% to 9%. In riskier markets, developers and their investors may expect higher yields. In stronger markets, lower yield goals are acceptable because higher demand for housing means investors face less risk. The less risk, the lower yield an investor will demand.

The best sources for local yield data are real estate experts, market analysts, and local planning and community development staff. They often have an idea of what yield expectations are in the local marketplace.

Individual developers also are a good source of information. But they are sometimes not motivated to share this information.

Cap Rate

The capitalization rate, or "cap rate", is the ratio between the net operating income (total income minus operating expenses) and the project's value. Cap rates are used to calculate the value of a rental property and are reflected as a single percentage figure. Lower cap rates result in higher values.

Cap rates differ among project types, markets, and level of risk, and generally vary from 4% to 8%. Stronger markets have lower cap rates; weaker markets have higher cap rates. When in doubt, start with the value provided in the Calculator templates and then make adjustments as needed.

Cap rate data can sometimes be hard to find, and there is often as much art as science involved in setting appropriate cap rates. Integra Realty Resources is a good place to start.

You may wish to consult local reports from real estate brokers and market analysts to seek out this data. Different brokerage firms will provide alternative estimates of prevailing cap rates. This variation is due to their sources of transaction data and understanding of the market.

3. Additional Technical Questions

Development Cost

1. I don't have data to fill in a certain field; what do I do?
2. How do I calculate cost per parking space if my pro forma does not itemize parking costs?

Operating Cost

3. Is there a commercial vacancy rate? Why do I only see a residential vacancy rate?
4. How do I calculate a combined vacancy rate if my commercial rate differs from my residential rate?
5. Can I input information from my Cash Flow Statement?
6. Why do total monthly operating costs go down as I add affordable units? Can I fix that?

Project

7. Why does adjusting the unit sizes not change the proportion or ratio of unit types within the building?
8. What if my parking ratio or requirement differs based on the unit type or level of affordability?

Affordability

9. If a developer is dedicating land, where do I incorporate that into the Calculator?
10. What if we want the unit type mix to vary between the market-rate units and the affordable units?
11. How do I reflect an affordability requirement based on square footage instead of units (e.g. 20% of sq feet instead of 20% of units)?
12. What if there are specific requirements for providing units off site?
13. What if we want to ensure that funds obtained from developers through affordable housing fees are utilized for unit production at a certain affordability or in a certain location?

Incentives

14. If I want to use a specific local, state, or federal subsidy, how do I incorporate that into the Calculator?
15. How do I incorporate a loan with a subsidized interest rate?
16. How do I convert a density bonus expressed in # of units, floor area, or stories into a percentage density bonus (e.g. incorporate Floor Area Ratio, setbacks, or floor/height restrictions)?

Development Cost

1. I don't have data to fill in a certain field; what do I do?

If you are working from a real project proforma and trying to set up a similar project in the Calculator, it is often difficult to find all of the relevant data. Every proforma includes different details. You don't need every line item to match exactly in order for the Calculator to accurately model the impact of policy changes as long as the total revenue and expenses are the same as in the pro forma being referenced.

The most important numbers in the Calculator are the Total Development Cost (TDC) and Net Operating Income (NOI). The ultimate measure of whether the Calculator is reflecting your pro forma or development model is whether the TDC and NOI that you see after adjusting the Calculator match what you have in the proforma you are working from.

If there is a field in the Calculator that you do not have in your pro forma, enter your best estimate (refer to the Inputs Guide for suggested values or resources for further research). But when you do this you have to be careful not to double count the same expense.
For example, imagine you are looking at a proforma with $16 million in soft costs and a Total Development Cost of $45 million but no listing for construction interest. One option would be to enter 0% as the interest rate in the Calculator so that the Calculator showed $0 for 'interest on construction loan.'   A more accurate option would be to enter a reasonable estimate for the construction interest rate and let the Calculator estimate that the total construction interest would be about $3 million. Your actual project may have paid slightly more or less than this estimate but it likely paid something – you just don't know how much it was. With the addition of the construction loan interest your project should now show $48 million dollars for TDC compared to the referenced pro forma which shows $45 million. In order to make the TDC in the Calculator reflect that of your referenced proforma we must subtract that additional $3 million dollars in costs from somewhere. The easiest place to make that adjustment is by reducing the Soft Costs. This is a quick but accurate fix for double counting the construction loan interest. Reducing the percentage for Soft Costs until the report shows a $3 million reduction will rebalance your project and bring the TDC back to $45 million.

2. How do I calculate cost per parking space if my pro forma does not itemize parking costs?

If the information available does not itemize parking costs use the resources provided in the Inputs Guide to find comparable parking costs in your region but be sure to also subtract parking costs from the total construction costs. The Calculator breaks out the cost of parking from other construction costs so that it is possible to explore the impact of changing parking requirements.

Some proformas will instead have parking included in a single line for total construction costs. If you use either the default values in one of the Calculator's templates or some other estimate you can calculate the estimated total parking cost and subtract that from the combined construction cost in your proforma.

For example, let's say your proforma shows total hard costs of $25 million but has no information for parking costs. Maybe you know that similar projects with underground parking have parking costs between $20,000 and $40,000 per parking space. You might enter $30,000 as an estimate for parking costs and then subtract the total parking cost ($30,000 times the number of parking spaces) from the construction cost listed on your proforma. Then you can check that you did it right by looking at the Calculator's report and ensuring that the parking cost plus the hard cost lines equal the $25 million single construction cost line from your proforma. The Total

Development Cost should match also. If you are using the Calculator to understand the impact of changing parking requirements then it is important to get the parking cost estimate right but if you are not, you just need to make sure you have the right Total Development Cost.

Operating Cost

3. Is there a commercial vacancy rate? Why do I only see a residential vacancy rate?

The Calculator assumes the same vacancy rate for commercial and residential uses.

4. How do I calculate a combined vacancy rate if my commercial rate differs from my residential rate?

You could combine the rental vacancy rates by simply taking the average of the two rates or by combining the two rates proportionally in relation to the relative revenue of each use. In the example below, using the latter method produces a rate of 8.75%. While simple averaging would have produced 8%.
Residential Vacancy: 11%
Commercial Vacancy: 5%
Residential Revenue: $250,000
Commercial Revenue: $150,000
[(11%*250k)+(5%*150k)]/ 400k = 8.75%

5. Can I input information from my Cash Flow Statement?

Unfortunately, you cannot. In order to keep the calculations simple enough to be practical for most users, the Calculator relies on a 'static proforma' which does not take into account the timing of cash flows. This approach has advantages and disadvantages. It does overlook some important impacts related to the timing of income and expenses. However, a 'static proforma' does allow for a quick analysis of the potential value of a development without knowing the numerous inputs required to analyze cash flow.

6. Why do total monthly operating costs go down as I add affordable units? Can I fix that?

Monthly operating costs decrease because they are calculated as a percentage of gross revenue. Affordable housing units pay lower rents. As you increase the proportion of affordable units in the total revenue mix, the operating costs will still be the same percentage of revenue but that will be a lower total amount of money annually. This may not be realistic. If you wish to adjust for this, you can increase the percentage for operating costs as you add affordable units so that the actual dollar amount for operating costs is the same as it was without affordable units.

Project

7. Why does adjusting the unit sizes not change the proportion or ratio of unit types within the building?

In real life the changes in unit sizes will affect how many units can go on the site because there is a limit to the size of a building that can be built on any given site. That is not the case with the Calculator. The Calculator looks at the number of units and the size of those units to determine the size of the building. If you add units or make the units bigger the building will just get bigger. Unit sizes are not capped based on the size of the site. Therefore, changing the unit size

for a 3-bedroom will not change the number of 1-bedroom units, the size of those units or the number of other unit types within the building.

8. What if my parking ratio or requirement differs based on the unit type or level of affordability?

There is not an option in the Calculator to reduce parking for a specific subset of the units. To reduce the affordability requirement for only the affordable units you should calculate the total number of parking spaces manually, and use that to determine the per unit parking ratio.

Parking Ratio 1 (market-rate units)
Parking Ratio 2 (affordable units)

(Total units – Affordable units)*PR1 + Affordable units*PR2 Total Units

Affordability

9. If a developer is dedicating land, where do I incorporate that into the Calculator?

For the purposes of the Calculator it is most useful to think of a land dedication as another form of Affordable Housing Fee. The dedication of land is essentially the same as an affordable unit requirement or fee in that it is an additional cost to the developer.

In order to enter this into the Calculator, you need to find or estimate the current market value of the land and enter it into the 'Affordable Housing Fee' field. Because the Calculator asks for this fee on a per unit basis, you need to divide the total value of the land that is donated by the total number of housing units in the market rate project to get the value of the contribution per unit.

For example, suppose a developer of a 180 unit project were to donate a piece of land worth $1 million. The land dedication would be equivalent to an Affordable Housing Fee of approximately $5,555 per unit ($1 million/180). If you enter $5,555 into 'Affordable Housing Fee' you can see how much this contribution would impact the profitability of the project.

10. What if we want the unit type mix to vary between the market-rate units and the affordable units?

The Calculator does not currently allow for the unit mix of the affordable units to be different than that of the mix for the market rate units. Affordable units are calculated as a percentage of the base units and the base units are inclusive of affordable units if a requirement is added.

Some policies that require that the affordable units be very different than the market rate units may not be able to be modeled closely in the Calculator. For example, the Calculator does not currently accommodate programs that require family-sized affordable units.

But it may be possible to approximate the impact of some differences. For example, programs that allow slightly smaller affordable units can be entered into the Calculator by slightly reducing the overall unit size to reflect the lower average unit size in a building that included some larger market rate units and some smaller affordable units.

11.　How do I reflect an affordability requirement based on square footage instead of units (e.g. 20% of sq feet instead of 20% of units)?

If you were to assume the same unit distribution for affordable units as for market rate units then the percentage of units would also be 20%.

Remember the Calculator assumes the same unit mix for affordable units as market rate units. But what if you want to assume the affordable units are a different size? Let's assume a building has 150 total dwelling units that average 1,000 square feet each. If 20% of the square footage must be dedicated to affordable units and the average size of an affordable unit is 850 square feet then there would be 35 affordable units. In the calculator that 20% square footage requirement would be equivalent to 23% requirement in terms of units.

12.　What if there are specific requirements for providing units off site?

Sometimes inclusionary housing policies allow for affordable units to be provided in a separate off-site development. There is not a straightforward and accurate way to model this in the Calculator currently.

13.　What if we want to ensure that funds obtained from developers through affordable housing fees are utilized for unit production at a certain affordability or in a certain location?

Ensuring that funds obtained from developers through affordable housing fees are spent within a specific community or benefit certain socioeconomic households is an important component of any housing policy. However, how that fund is spent is beyond the function of the Calculator. The Calculator simply calculates the impact of the funds required from the developer if their project is subject to such a housing policy.

Incentives

14.　If I want to use a specific local, state, or federal subsidy, how do I incorporate that into the Calculator?

Subsidies are incorporated into the Calculator in several different ways. There are generally two different types of subsidies:

1.　Upfront Capital Grant – If a developer receives additional capital in the form of a one-time grant to offset the costs of development, it is considered an incentive and can be inserted on a per unit or affordable unit basis, or as a gross amount.

2.　Annual Operating Grant – If you would like to account for an annual grant, such as Tax Increment Financing (TIF). When you enter an operating grant, you also have to enter a 'term' to tell the Calculator how many years the grant will be available. A grant that is offered for 20 years is worth much more than a grant for 10 years.

15.　How do I incorporate a loan with a subsidized interest rate?

There isn't currently a way to account for a low-interest loan in the Calculator as it is a static pro forma. If you would like to see a feature like this added feel free to let us know.

16. How do I convert a density bonus expressed in # of units, floor area, or stories into a percentage density bonus (e.g. incorporate Floor Area Ratio, setbacks, or floor/height restrictions)?

In the Calculator a density bonus is expressed as a percentage that refers to the 'base' units in the development. Let's use the following project as an example for this calculation.

Project Size	acres	sq. feet	Parking	%	#
Unloaded Area		56,060			
Common Area		7,645			
Commercial Space		0			
Total Built Area		63,705	**Parking**	%	#
Site Area	1	43,560	Parking Ratio (spaces per unit)	125%	75
Floor Area Ratio		1.46	Parking Reduction Incentive	0%	0
Dwelling Units/Acre		60.00	Net Parking Ratio	125%	75

If there are 60 base units in the development and a 20% density bonus is selected the Calculator will add 12 additional market rate units. But what does this look like expressed as additional square feet, or Floor Area Ratio (FAR) or stories?

Let's say your city wants to consider a 0.5 FAR density bonus for the inclusion of affordable housing. How would you input that into the Calculator?

For simplicity let's work with the Strong Market Mid-Rise Rental template with a 10% affordable housing set-aside. To convert 0.5 FAR to a % for this building start by dividing the total built area by the site area to get the building's FAR. The FAR is listed on the 'report' page.

The building's FAR is 1.46. A 0.5 FAR increase would allow the building to increase to 1.96 FAR. This is the equivalent to a 34.24% increase in total floor area (0.5/1.46=34.24%). You would then enter that percentage as the density bonus and check the report to ensure that the resulting project had an FAR that was close to 1.96.

What if your city wants to provide a 1 story/floor density bonus? Well that is a little bit harder to produce with the Calculator because you need to know the area of the building's floor-plate, which is not something used or produced by the Calculator. For simplicity we will continue with the above example and assume that the building has a base floor plate (or area of one floor of the building) of 30,000 square feet in comparison to a site area of 43,560 square feet. Once you've either assumed a base floor plate or calculated it based on bulk and zoning regulations for a building determining the percentage is easy. In the example we are using (see above) the total square footage is 63,705 sf (60 units * 934sf avg. unit size + 7,645sf of common area). An additional story/floor of 30,000 square feet is equivalent to a bonus of 47.09% on the base total square footage of 63,705 square feet. (30,000/63,705=47.09%)