

Appendix H. Residential Development Feasibility Analysis

Purpose

This document includes an overview of the development feasibility impact analysis, which examines how process delays and related costs affect the financial viability of residential development across three prototypical housing types that reflect common development patterns in Oregon. Using illustrative assumptions about project scale, costs, and market conditions, the analysis shows how increases in development review time and cost can affect financial returns.

Methodology Overview

ECONorthwest used three illustrative development scenarios—subdivision development, multi-unit infill development, quadplex middle housing land division—to evaluate the impact of process delays and related costs on the financial viability of residential development. Each scenario reflects a prototypical housing type, or prototype, with assumptions about project scale and form, developer business model, and applicable review processes (for more details, see Prototype Selection section below). ECONorthwest used a pro forma to model a developer's decision-making process and cash flow during the development process for these illustrative scenarios.

Pro forma basics

A pro forma is a standard real estate feasibility tool used to compare expected development costs, revenues, financing terms, and investor return expectations. In simple terms, it helps evaluate whether a project is likely to generate enough return to justify the cost and risk of development.

The analysis uses Internal Rate of Return (IRR), which measures the annualized return a project or investment is expected to generate. IRR is highly sensitive to the time between investment and return, making it useful for understanding the effects of delay. A higher IRR indicates a more attractive investment, though higher-risk projects typically need higher returns to compensate for that risk. IRR is useful for this analysis because it reflects both the amount and timing of project cash flows. When a review process delays construction, sale, or lease-up, revenue arrives later and carrying costs increase, which can reduce financial returns.

Prototype Assumptions

As previously mentioned, this analysis used prototypes based on the three illustrative development scenarios. ECONorthwest made assumptions about the building program, development business model, financing assumptions, land use review, public improvements, and building codes that reflect common details for these development scenarios. There are many ways developers can approach development of these and other housing types beyond those reflected in this analysis. For instance, with the subdivision prototype, we assumed an integrated land developer and homebuilder, but some firms do horizontal land development separately



from homebuilding. We selected this model because it allows us to more clearly capture process impacts throughout all development phases. Assumptions for each scenario and prototype are summarized below. All prototypes assume market-rate development.

Exhibit 1. Prototype Summary

	Subdivision Development with Detached Single-Unit Dwellings	Multi-Unit Infill Development	Quadplex Middle Housing Land Division (MHL D)
Building Program	30 units 150,000 sf parcel 8.7 DUA	40 units 1 acre parcel 40 DUA	4 units 7,000 sf parcel 24.9 DUA
Development Business Model	Land development, homebuilding, sell (integrated land developer & homebuilder)	Rental units; Build -> Stabilize -> Sell	Build and sell
Land Use	Subdivision (Preliminary & Final Plat)	Site plan review, no land division	MHL D
Public Improvements	New local streets, sewer, water, stormwater	Frontage and/or offsite intersection improvements	Frontage improvements
Building Code	ORSC for individual units	OSSC	ORSC for individual units (assuming fire separation enabling permitting under the ORSC Townhouse definition)
Financing Assumptions ("Cash" indicates developer or investor equity)	Land: Cash Pre-dev: Cash Construction: Construction Loan	Land: Cash Pre-dev: Cash Construction: Construction Loan	Land: Cash Pre-dev: Cash Construction: Construction Loan
Developer Exit	Units sold to individual buyers	Lease up until project reaches stabilized occupancy, then sell to investor(s)	Units sold to individual buyers

Source: EConorthwest



Assumptions

The assumptions used in this analysis were developed specifically for this study and are intended to be representative of typical development conditions based on collected market data, interview data, and typical industry standards. They include development costs, revenue estimates, operating costs where applicable, financing assumptions, and process timeline assumptions.

The analysis considers three major categories of assumptions:

- **Development costs**, including land, hard costs, soft costs, permit and review costs, contingency, and developer fees.
- **Market demand and revenues**, including home sales prices, rental rates, vacancy, operating costs, and lease-up or sale timing.
- **Cost of capital**, including interest rates, financing terms, and return expectations.

It is important to note that we calibrated our cost and revenue assumptions so that the baseline development is modestly-feasible. This helps us answer the question of how the delays and added costs can affect feasibility for the same development type that would otherwise be feasible with a relatively smooth process.

Because this analysis is intended to compare relative impacts across prototypes and process scenarios, the assumptions should not be interpreted as a forecast for a specific site or jurisdiction. More detailed assumptions are provided in the Detailed Methodology and Assumptions section.

Approach Limitations

This analysis is intended to be illustrative of the potential development feasibility impacts due to process delays and related costs. As such, this analysis simplifies complex and highly variable development processes into representative prototypes and development conditions. Key limitations include:

- The analysis uses representative assumptions and does not estimate feasibility for any specific parcel or jurisdiction.
- Actual development projects vary substantially by site, jurisdiction, market, financing structure, and developer business model.
- The assumptions about timelines and costs for review are generalized. The permit data analysis shows substantial variance in review timelines, between and within jurisdictions. The analysis uses representative assumptions informed by the observed permit data but does not perfectly align with timelines or costs in any one jurisdiction.
- In addition to generalized timelines and costs, we assumed the process-related costs included most fees (excluding SDCs, which we estimated separately) as the larger share of the process-related costs are typically design-related (costs of paying designers to submit additional materials and often redesign project components) and fees to the specific jurisdictions are relatively low in comparison.
- The analysis does not isolate every cause of delay, including whether delays are related to public review, applicant revisions, infrastructure constraints, financing conditions, or



market conditions. We picked consistent values for delays (as described in the section below) to compare apples to apples.

- The results are most useful for understanding the relative scale and direction of impacts across housing types.

Sensitivity Analysis - Different Development Conditions

To limit the potential for false precision, we simplified the wide range of possible review experiences into a limited set of different development conditions for sensitivity testing. More specifically, we tested different conditions related to process and market prices.

Process

The analysis compares shorter and longer process scenarios for each prototype. We condensed our process assumptions down to three scenarios:

- **Baseline Process:** consistent with applicable statutory timelines, informed by permit data, reflecting a reasonable shorter timeline for reviews
- **Slower Reviews:** review times are double the baseline review times, informed by permit data, reflecting a reasonable slower timeline for reviews
- **Iterative Reviews:** review times are double the baseline review times (like slower reviews) plus design and permitting costs are doubled to account for additional applicant effort to respond to comments or more complex standards

In general, the baseline process assumed public review processes took approximately 75% of time allowed under statutory requirements (where applicable) to allow for buffer review time (e.g., a 120-day statutory requirement meant we assumed “baseline” was 90 days). In contrast, the slower and iterative review assumption was based on a general observation from the permit data analysis, which indicated a median permit review time could easily be double (two times) our baseline process assumption.

The process components we analyzed included steps both on the applicant’s side (e.g., site control, construction, lease-up, and sale) and public review processes (e.g., land use review, public improvement review, and building permit review). The tables in the following section show the steps, timelines, and costs assumed for each prototype. Differences between the Baseline and Slower / Iterative Reviews assumptions are highlighted in **bold and red**. Given the focus of the study on local review and permitting processes, the analysis intentionally maintains consistent assumptions, across Baseline and Slower / Iterative Review conditions, for costs and timelines for steps where timing is largely or fully controlled by the applicant (shown in grey rows of the tables below).

Market Conditions

To evaluate how process-related costs might impact development feasibility differently throughout the state, ECONorthwest conducted a light market analysis on the potential variance in prices and costs in different markets. This added another layer of sensitivity testing and analysis to help inform our key findings. We analyzed three general market conditions: low price/cost, average price/cost, and high price/cost. For more details on these assumptions, see the Detailed Methodology and Assumptions section.



Exhibit 2. Process Timing Assumptions: Subdivision Development with Detached Single-Unit Dwellings

	Baseline	Slower/Iterative Reviews
Site Control	1 month	1 month
Initial Land Use Review (Preliminary Plat)		
Design & application	2 months	2 months
Submittal to complete	1 month	2 months
Complete to decision	3 months	6 months
Public Improvements		
Design & application	3 months	3 months
Submittal to issuance	3 months	6 months
Construction	4 months	4 months
Substantial completion to facility acceptance	1 month	2 months
Final Plat		
Application	1 month	1 month
Submittal to complete	1 month	2 months
Complete to decision	3 months	6 months
Building		
Design & application	6 months	6 months
Submittal to issuance	4 months	8 months
Construction	8 months	8 months
Submittal completion to CO	1 month	2 months
Sales	2 months	2 months
Total	44 months	61 months

Source: ECOnorthwest



Exhibit 3. Costs Assumptions: Subdivision Development (by market area)

Subdivision Costs - Low	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$1,350,000	\$1,350,000	\$1,350,000
Construction Costs	\$10,020,000	\$10,020,000	\$10,020,000
Process Costs (design & fees, incl. SDCs)	\$1,656,000	\$1,656,000	\$2,166,000
Interest Costs	\$594,000	\$764,000	\$764,000
Total Development Costs	\$13,620,000	\$13,790,000	\$14,300,000
Subdivision Costs - Average	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$2,250,000	\$2,250,000	\$2,250,000
Construction Costs	\$10,950,000	\$10,950,000	\$10,950,000
Process Costs (design & fees, incl. SDCs)	\$1,770,000	\$1,770,000	\$2,280,000
Interest Costs	\$720,000	\$940,000	\$940,000
Total Development Costs	\$15,690,000	\$15,910,000	\$16,420,000
Subdivision Costs - High	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$2,737,500	\$2,737,500	\$2,737,500
Construction Costs	\$12,510,000	\$12,510,000	\$12,510,000
Process Costs (design & fees, incl. SDCs)	\$1,944,000	\$1,944,000	\$2,454,000
Interest Costs	\$838,500	\$1,098,500	\$1,098,500
Total Development Costs	\$18,030,000	\$18,290,000	\$18,800,000

Source: EConorthwest



Exhibit 4. Process Timing Assumptions: Multi-Unit Infill Development

	Baseline	Slower/Iterative Reviews
Site Control	1 month	1 month
Initial Land Use Review		
Design & application	4 months	4 months
Submittal to complete	1 month	2 months
Complete to decision	3 months	6 months
Public Improvements		
Design & application	6 months	6 months
Submittal to issuance	3 months	6 months
Construction	N/A - included in building construction	N/A - included in building construction
Substantial completion to facility acceptance	1 month	2 months
Building		
Design & application	8 months	8 months
Submittal to issuance	6 months	12 months
Construction	16 months	16 months
Submittal completion to CO	1 month	2 months
Lease up / Sale	13 months	13 months
Total	63 months	78 months

Source: ECOnorthwest



Exhibit 5. Costs Assumptions: Multi-Unit Infill Development (by market area)

Multi-Unit Costs - Low		Baseline Process	Slower Reviews	Iterative Reviews
	Land	\$653,400	\$653,400	\$653,400
	Construction Costs	\$11,163,430	\$11,163,430	\$11,163,430
	Process Costs (design & fees, incl. SDCs)	\$3,192,500	\$3,192,500	\$4,317,500
	Interest Costs	\$790,670	\$900,670	\$900,670
	Total Development Costs	\$15,800,000	\$15,910,000	\$17,035,000
Multi-Unit Costs - Average		Baseline Process	Slower Reviews	Iterative Reviews
	Land	\$2,178,000	\$2,178,000	\$2,178,000
	Construction Costs	\$12,274,350	\$12,274,350	\$12,274,350
	Process Costs (design & fees, incl. SDCs)	\$3,475,000	\$3,475,000	\$4,600,000
	Interest Costs	\$1,042,650	\$1,212,650	\$1,212,650
	Total Development Costs	\$18,970,000	\$19,140,000	\$20,265,000
Multi-Unit Costs - High		Baseline Process	Slower Reviews	Iterative Reviews
	Land	\$3,049,200	\$3,049,200	\$3,049,200
	Construction Costs	\$13,855,270	\$13,855,270	\$13,855,270
	Process Costs (design & fees, incl. SDCs)	\$3,837,500	\$3,837,500	\$4,962,500
	Interest Costs	\$1,248,030	\$1,458,030	\$1,458,030
	Total Development Costs	\$21,990,000	\$22,200,000	\$23,325,000

Source: ECOnorthwest



Exhibit 6. Process Assumptions: Quadplex Middle Housing Land Division (MHL D)

	Baseline	Slower/Iterative Reviews
Site Control	1 month	1 month
Initial Land Use Review		
Design & application	4 months	4 months
Submittal to complete	1 month	2 months
Complete to decision	3 months	6 months
Public Improvements		
Design & application	2 months	2 months
Submittal to issuance	3 months	6 months
Construction	2 months	2 months
Substantial completion to facility acceptance	1 month	2 months
Final Plat		
Application	1 month	1 month
Submittal to complete	1 month	2 months
Complete to decision	3 months	6 months
Building		
Design & application	8 months	8 months
Submittal to issuance	5 months	10 months
Construction	10 months	10 months
Submittal completion to CO	1 month	2 months
Sales	2 months	2 months
Total (costs include interest carry)	48 months	66 months

Source: EConorthwest



Exhibit 7. Cost Assumptions: Quadplex Middle Housing Land Division (MHL D) (by market area)

MHL D Costs - Low	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$45,500	\$45,500	\$45,500
Construction Costs	\$1,170,000	\$1,170,000	\$1,170,000
Process Costs (design & fees, incl. SDCs)	\$296,500	\$302,500	\$404,500
Interest Costs	\$69,000	\$85,000	\$85,000
Total Development Costs	\$1,581,000	\$1,603,000	\$1,705,000
MHL D Costs - Average	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$140,000	\$140,000	\$140,000
Construction Costs	\$1,270,000	\$1,270,000	\$1,270,000
Process Costs (design & fees, incl. SDCs)	\$318,000	\$324,000	\$426,000
Interest Costs	\$84,000	\$105,000	\$105,000
Total Development Costs	\$1,812,000	\$1,839,000	\$1,941,000
MHL D Costs - High	Baseline Process	Slower Reviews	Iterative Reviews
Land	\$189,000	\$189,000	\$189,000
Construction Costs	\$1,460,000	\$1,460,000	\$1,460,000
Process Costs (design & fees, incl. SDCs)	\$347,500	\$353,500	\$455,500
Interest Costs	\$99,500	\$125,500	\$125,500
Total Development Costs	\$2,096,000	\$2,128,000	\$2,230,000

Source: ECOnorthwest



Analysis Results

The analysis shows that longer development review processes can materially affect residential development feasibility. While the direct dollar cost of additional review time may appear modest relative to total development cost, the delay in revenue can substantially reduce financial returns.

The feasibility impact varies by prototype. Smaller projects, especially middle housing, are more sensitive to process-related costs and delays because added costs are spread across typically substantially fewer units. Larger projects, such as multi-unit housing, have more units over which to absorb added costs, but longer timelines can still meaningfully reduce returns.

Subdivision Development with Detached Single-Unit Dwellings

For the subdivision prototype, the longer process assumptions added approximately 17 months (almost a 40% increase in time) and increased total development costs by about \$24,000 per unit in the Average market conditions (almost a 5% increase in costs). Cost increases were greater in High market conditions due to higher land costs and higher costs for professional services.

Exhibit 8. Added Process Costs: Subdivision Development with Detached Single-Unit Dwellings

Market Conditions	Slower Reviews	Iterative Reviews
Low	\$5,670	\$22,670
Average	\$7,330	\$24,330
High	\$8,670	\$25,670

Source: EConorthwest

The estimated IRR declined from 14.9% under the shorter process scenario to -1.3% under the longer process conditions in the Average market conditions, with bigger decreases in Low market conditions. **This could make an otherwise feasible development infeasible.**

Exhibit 9. IRR: Subdivision Development with Detached Single-Unit Dwellings

Market Conditions	Baseline Process	Slower Reviews	Iterative Reviews
Low	14.9%	8.9%	-5.4%
Average	14.8%	8.9%	-1.3%
High	14.8%	8.8%	0.2%

Source: EConorthwest

A subdivision development includes a relatively high share of the overall development timeline in local review processes. Constructing single-unit dwellings is relatively quick, as compared to multi-unit (even considering additional horizontal construction timing requirements). Therefore, based on our analysis, process delays can have a larger total impact on the timeline for subdivisions compared to other forms of housing development.



Multi-Unit Infill Development

For the multi-unit prototype, the longer process assumptions added approximately 15 months (almost a 25% increase in time) and increased total development costs by about \$32,000 per unit in the Average market conditions (a 7% increase in costs). Cost increases were greater in High market conditions due to higher land costs and higher costs for professional services.

Exhibit 10. Added Process Costs: Multi-Unit Infill Development

Market Conditions	Slower Reviews	Iterative Reviews
Low	\$2,750	\$30,750
Average	\$4,250	\$32,500
High	\$5,250	\$33,500

Source: EConorthwest

The estimated IRR declined from 15.0% to 5.2% in the Average market conditions, with bigger decreases in Low market conditions. Although this prototype was more resilient than the smaller prototypes, the reduction in return could still affect whether a project meets investor expectations. **This could make an otherwise feasible development less likely to proceed.**

Exhibit 11. IRR: Multi-Unit Infill Development

Market Conditions	Baseline Process	Slower Reviews	Iterative Reviews
Low	15.1%	11.3%	2.8%
Average	15.0%	11.3%	5.2%
High	14.9%	11.2%	6.2%

Source: EConorthwest

In addition to the multi-unit prototype having more units to amortize costs, the process delays are less of an impact on the overall development timeline. Multi-unit developments typically take longer to build, and our prototype also assumes a full year (including a lease-up period) before sale. Therefore, process delays result in a smaller percentage increase to the overall development timeline. Though there is still a noticeable effect on feasibility (a project at 5.2% IRR is unlikely to be viable), this development timeline difference explains the relatively smaller impact compared to other housing types.



Quadplex Middle Housing Land Division (MHL D)

For the middle housing prototype, the longer process assumptions added approximately 18 months (a 38% increase in time) and increased total development costs by about \$32,500 in the Average market conditions per unit (a 7% increase in costs). Cost increases were greater in High market conditions due to higher land costs and higher costs for professional services.

Exhibit 12. Added Process Costs: Quadplex Middle Housing Land Division (MHL D)

Market Conditions	Slower Reviews	Iterative Reviews
Low	\$5,500	\$31,000
Average	\$6,750	\$32,250
High	\$8,000	\$33,500

Source: EConorthwest

The estimated IRR declined from 15.8% to -6.7% in the Average market conditions, with bigger decreases in Low market conditions, making middle housing the most affected prototype in terms of return. **This could make an otherwise feasible development infeasible.**

Exhibit 13. IRR: Quadplex Middle Housing Land Division (MHL D)

Market Conditions	Baseline Process	Slower Reviews	Iterative Reviews
Low	14.5%	8.1%	-14.7%
Average	15.8%	9.5%	-6.7%
High	14.8%	8.8%	-5.1%

Source: EConorthwest

The middle housing prototype has both the fewest units (meaning fewer units to absorb additional costs) and may require more nuanced and site-specific design work to respond to infill site conditions, as compared to the subdivision development, which means higher design costs overall (including during potential rounds of redesign). Similar to the single-unit prototype, middle housing developments are also likely to be relatively quick to construct (as compared to multi-unit) which means the process will be a larger share of the overall timeline.



Detailed Methodology and Assumptions

This section contains additional details on the pro forma methods and the assumptions used in the analysis.

Methodology

ECONorthwest developed cash flow pro formas for each prototype to model development costs, revenues, financing terms, and return expectations. The models estimate how process timelines and costs affect total development costs and financial returns.

- **Development costs**, including land, hard costs, soft costs, permit and review costs, contingency, and developer fees.
- **Market demand and revenues**, including home sales prices, rental rates, vacancy, operating costs, and lease-up and/or sale timing.
- **Cost of capital**, including interest rates, financing terms, and return expectations.

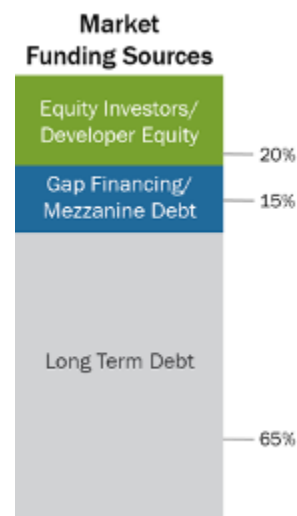
It is important to note that we calibrated our cost and revenue assumptions so that the baseline development is modestly-feasible. This helps us answer the question of how the delays and added costs can affect feasibility for the same development type that would otherwise be feasible with a relatively smooth process. This calibration meant assumptions like rent, hard costs, and soft costs were all carefully calibrated to serve this goal and might not perfectly-reflect site-specific development conditions. Rather, they better reflect relative order-of-magnitude assumptions and general relationships between these respective inputs. For instance, we estimated design costs based on a potential burn rate for designing the building, that included the timing for design, and compared the resulting overall soft costs (which included all engineering, design, application prep, fees, and carrying costs) to those that are typical industry standard for the majority of markets and housing types (15% to 30% of total costs).

There are many different financial metrics that can be calculated to evaluate the financial feasibility of a potential real estate development project. The reason for these various metrics is often due to the interests of the various funding sources. For instance, debt partners will consider one metric to assess risk and potential feasibility, whereas equity partners will consider another.

Although debt partners tend to provide the largest share of funding in a project, they also are the partner that is guaranteed their money first if a project doesn't perform as well as expected, whereas equity partners receive their money last, so their risk and relevant return expectations are higher.

The pro forma models used in this analysis were cash flow models that considered both the debt interests and the equity partner interests - we modeled the needed interest rates on the debt and solved for the return (IRR) to the equity partners.

By assessing a project's projected cash flows, these models account for the time value of money, which is the concept that money available now is worth more than the identical sum in the



future, due to its potential earning capacity. Evaluating the cash flows in our pro forma modeling is fitting for our analysis because process-related delays impact how long a project will be accruing interest on debt as well as when a property will begin earning revenue. The longer it takes to begin earning revenue on a project, the lower the IRR. We therefore considered both the IRR along with the overall impacts to projects costs due to additional delays and fees.

Assumptions

The assumptions were selected to be representative of common development conditions rather than precise estimates for a particular project. The purpose of the analysis is to compare how different types of housing development respond to the same general pattern of longer review timelines and added process costs.

Using representative assumptions allows the analysis to focus on relative sensitivity across housing types. The results show which prototypes are more cost-sensitive, which are more resilient, and how process delays can affect feasibility even when total added costs appear manageable.

As mentioned above, we had three general market conditions - low, average, and high - where market research showed pricing being approximately 15% higher in higher-priced markets, and 15% lower in lower-price markets. We used this approximate relationship to arrive at generalized assumptions for the variation in market conditions. Other assumptions were based on industry standards.

Exhibit 14. Financial Assumptions (Market Conditions): Subdivision Development with Detached Single-Unit Dwellings

	Low	Average	High
Land cost per sf	\$9	\$15	\$19
Vertical hard cost per unit	\$320,000	\$350,000	\$400,000
Gross average sales price per unit	\$570,000	\$670,000	\$770,000

Source: EConorthwest

Exhibit 15. Other Financial Assumptions: Subdivision Development with Detached Single-Unit Dwellings

Assumption	Value
Sales commission (developer's share)	2%
Construction loan draw frequency (every X months)	1



Assumption	Value
# of construction draws	8
Land acquisition interest rate	5%
Horizontal construction loan interest rate	10%
Vertical construction loan interest rate	8%

Source: EConorthwest

Exhibit 16. Financial Assumptions (Market Conditions): Multi-Unit Infill Development

	Low	Average	High
Land cost per sf	\$15	\$50	\$70
Vertical hard cost per unit	\$250,000	\$275,000	\$310,000
Gross average rent per unit	\$2,510	\$2,950	\$3,390

Source: EConorthwest

Exhibit 17. Other Financial Assumptions: Multi-Unit Infill Development

Assumption	Value
Stabilized vacancy	7%
Operating expenses	23%
Lease-up period / sale timing	6 months / 12 months
Construction loan draw frequency (every X months)	1
# of construction draws	16
Land acquisition interest rate	5%
Horizontal construction loan interest rate	8%
Vertical construction loan interest rate	8%

Source: EConorthwest



Exhibit 18. Process Assumptions (Market Conditions): Quadplex Middle Housing Land Division (MHL D)

	Low	Average	High
Land cost per sf	\$7	\$20	\$27
Vertical hard cost per unit	\$280,000	\$305,000	\$350,000
Gross average sales price per unit	\$510,000	\$600,000	\$690,000

Source: EConorthwest

Exhibit 19. Other Financial Assumptions: Quadplex Middle Housing Land Division (MHL D)

Assumption	Value
Sales commission (developer's share)	2%
Construction loan draw frequency (every X months)	1
# of construction draws	10
Land acquisition interest rate	5%
Horizontal construction loan interest rate	10%
Vertical construction loan interest rate	8%

Source: EConorthwest

