



MEMORANDUM

DATE: May 14, 2009

TO: Colin Cooper, Hillsboro Current Planning Supervisor

FROM: Bill Reid, Principal
JOHNSON REID, LLC

SUBJECT: DRAFT Viability Comparison of Mid-Rise & High-Rise Residential Development

An emerging concern during the AmberGlen Community Plan process has been the ultimate viability of high-rise residential development as originally planned and the need for greater emphasis on mid-rise residential development in the plan. While the intention of either is certainly a planning policy decision, the economics of high-density residential development and its potential difficulties in a suburban environment - rather than an urban, city center environment - will certainly factor into the actual realization of intended forms.

Accordingly, the City of Hillsboro has retained JOHNSON REID to provide an analysis of the economic viability of high-density residential (re)development in the AmberGlen Community Plan. Findings from economic analysis are intended to inform planning policy decisions for the community moving forward, as well as to understand what public involvement may be required in the future to help overcome economic obstacles to higher-density redevelopment feasibility if they should be expected.

To address the question of economic viability of high-rise and mid-rise residential forms in the AmberGlen Community Plan, JOHNSON REID specifically provides analysis to answer four key questions:

1. How do the economics of mid-rise residential and high-rise residential generally compare?
2. How does the viability of mid-rise and high-rise residential compare in Hillsboro?
3. What difference does central park and commercial amenity make?
4. How does redevelopment of existing improvements differ from vacant parcel development?

HOW DO THE ECONOMICS OF MID-RISE RESIDENTIAL & HIGH-RISE RESIDENTIAL GENERALLY COMPARE?

To answer the key questions in this analysis, we model condominium units assuming two alternative development forms: mid-rise lightweight steel construction and high-rise concrete and steel construction. Cost estimates for mid-rise and high-rise construction are based on data from R.S. Means. Cost data for low-rise condominium construction have been included for comparison purposes, but are likely high as the construction type is concrete-based rather than wood-frame, the preferable construction type from a cost perspective. We would anticipate that wood-frame construction is achievable at \$80 per square foot, or roughly 33% below costs expressed in Figure 1.

FIGURE 1: LOW-, MID- AND HIGH-RISE CONDOMINIUM DEVELOPMENT CONSTRUCTION COSTS (2009 UNION WAGES)

Condominium	Units	Average		Total	Project Cost	Cost/Unit	Cost/Sq. Ft.
		Sq. Ft./Unit	Space	Space			
Low-Rise	100	1,000	100,000	100,000	\$11,987,000	\$119,870	\$120
Mid-Rise	100	935	110,000	110,000	\$18,355,000	\$183,550	\$167
High-Rise	250	850	250,000	250,000	\$53,111,000	\$212,444	\$212

SOURCE: R.S. Means and Johnson Reid, LLC



The following definitions are used to clearly delineate the three classes of residential construction:

- Low-Rise: Up to four stories of wood-frame, attached residential product overwhelmingly utilizing surface parking. Hillsboro code does allow four stories over concrete podium with tuck-under parking, however.
- Mid-Rise: 4 to 6 stories of concrete and steel construction, attached residential product usually depending upon structured parking.
- High-Rise: 7 or more stories of concrete and high-load steel construction overwhelmingly dependent upon structured parking, though usually occurring in highly dense areas where parking ratios are reduced.

While more than double the number of units is achieved (250 versus 100) in a high-rise development versus a mid-rise development, the cost of construction is substantially higher requiring a much higher level of pricing in order to be viable. Significant per-unit and per-square foot cost transition occurs between each general structure class as largely wood-frame in low-rise gives way to increasingly costly steel-based engineering. High-rise construction (seven or more stories) is seen primarily in the Pearl and South Waterfront Districts, which have the highest supportable price levels and land values.

As a means of comparison, it is helpful to consider how the cost for condominium development compares to pricing currently available in the market:

- Recent estimates of closed sales of new construction in Hillsboro since the beginning of the year indicate attached units sell on average at \$140 per square foot (higher than the cost of low-rise construction but lower than the cost of mid-rise construction).
- The average sale price for the same period in Washington County is approximately \$159 per square foot.
- Attached units in the Inner Westside (Central City Portland) have recently sold for \$335 per square foot during the same period.

It is important to note that mid-rise residential, much less high-rise residential, is significantly lacking in both the Hillsboro market as well as the greater Washington County/Westside area. The lack of mid- and high-rise developments complicates analysis of sales prices necessary for higher-density development because no true case study examples exist. Alternatively, lack of existence of such examples is also an indicator of the likely difficult economics of mid-rise and high-rise residential.

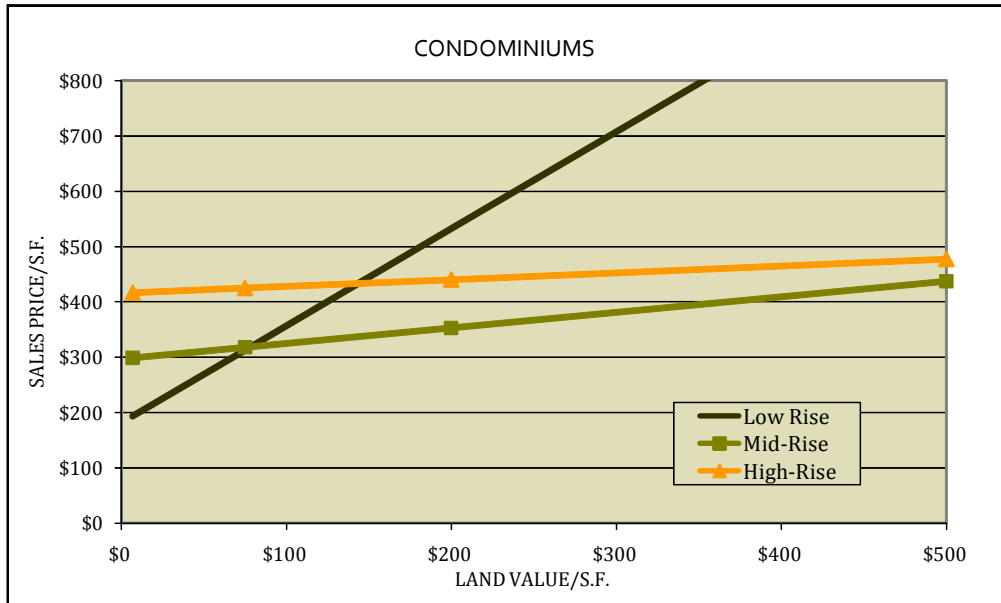
Figure 2 illustrates the relationship between condominium sale price (per square foot), land prices (per square foot), and highest and best use. As land value increases, moving right along the horizontal axis, highest and best use is denoted by the lowest line on the chart, which represents lowest price a home buyer would have to pay.

Currently, at an average sales price of \$140 per square foot, Hillsboro is well below the pricing necessary to motivate private development of mid-rise construction.

Under the assumptions used, wood-frame condominium units are able to pay the highest land values when the achievable sales prices are \$300 per square foot or below. When pricing rises above this level, mid-rise housing delivers the highest residual land values up to about \$400 per square foot, when high-rise development becomes the highest and best use assuming a developer would require no less than 15% return on cost for the risk of development.



FIGURE 2: PRICING MINIMUMS (\$/SQ. FT.) BY LAND VALUE AND BUILDING TYPE



Source: Johnson Reid, LLC

In Figure 2, as land values rise, the construction cost advantage of lower density construction is offset by the higher land costs associated with lower intensity of use. Construction costs per square foot tend to increase as densities increase, with higher costs associated with shifts to concrete and steel construction. In general, the increase in either sales price or achievable lease rates associated with alternative construction type is insufficient to offset the higher costs. The key benefit from a financial perspective of changing densities through construction type is a higher yield, in terms of leasable square footage or units, associated with a particular land parcel. As a result, higher underlying land values can change the financial equation to favor higher density development forms.

HOW DOES THE VIABILITY OF MID-RISE & HIGH-RISE COMPARE IN HILLSBORO?

The key challenge illustrated by previous analysis is that the development of mid-rise residential and even higher-density projects in most suburban areas usually requires pricing not currently attainable in those markets. While a regulatory action setting minimum densities that precluded low-rise condominiums would make mid-rise construction the highest and best use of the property, no development activity would be expected to occur without substantive subsidy. Rising achievable sales prices, or rents in the case of apartments, would cause mid-rise development to make financial sense. But precluding development until achievable rent levels rise would not support the development necessary to provide the amenity level required for higher rents.

To specifically illustrate financial viability regarding higher-density development slated for the AmberGlen Community Plan, a series of prototypical pro formas were generated to contrast the financial viability of mid-rise condominium development and high-rise condominium development. Figure 3 on the following page provide a summary of results. Before exploring results and their implications, the following assumptions must be understood:

- *Mid-Rise Condominiums Prototype:* 100 residential units on a one-half acre parcel.
- *High-Rise Condominiums Prototype:* 250 residential units on a one-half acre parcel.



- *Land and Price Characteristic:* In both cases, a one-half acre vacant parcel at a cost of \$10 per square foot consistent with vacant parcel market price in the AmberGlen Community study area according to the Washington County Assessor's Office.
- *Mid-Rise Development Cost:* \$167 per square foot consistent with Figure 1 and reflective of concrete and steel frame construction.
- *High-Rise Development Cost:* \$212 per square foot consistent with Figure 1 and reflective of higher-load concrete and steel frame construction.
- *Residential Price Assumption:* JOHNSON REID assumed all residential units achieve a base price of \$215 per square, which is rather optimistic for the Hillsboro and Washington County market currently demonstrating \$140 per sq. ft. to \$160 per sq. ft. We view it in the realm of possibility, however, or at least reflective of a potential unit sale price over a five-year time period.

To answer the viability comparison question, please refer to the "Baseline" scenario for mid-rise and high-rise development in Figure 3. The "Baseline" scenario analyzes project financials without consideration for either park space or commercial amenity premiums as previously discussed in JOHNSON REID analysis. Implications of park space and urban commercial amenity are explored in the next section.

Key figures for consideration in Figure 3 are numbered in the far left hand column and discussed below:

- ① The overall project cost, including land acquisition and construction costs, for a high-rise unit is approximately 26% higher than that for a mid-rise unit.
- ⑤ Net pre-tax profit for both mid-rise and high-rise construction under the "Baseline" scenario is negative, indicating optimistic sales prices and sales revenue (④) assumed in this analysis is not enough to justify development costs (①).
- ⑥ Return on cost, or net pre-tax profit (⑤) divided by overall project cost (①), is negative for both mid-rise (-17.5%) and high-rise (-40.7%), but certainly lower for the former. In other words, neither form is feasible all else equal.
- ⑦ Indicated Viability Gap indicates the extent to which pre-tax profit falls short in ensuring at least a 15% return for the developer's risk in the project. The viability gap for both mid-rise and high-rise is significant, all else equal, but mid-rise certainly comes closer than high-rise to meeting the 15% return on cost threshold.



FIGURE 3: STATIC PRO FORMA EVALUATION OF MID-RISE AND HIGH-RISE CONDOMINIUM DEVELOPMENT IN HILLSBORO

	Mid-Rise Condominium		High-Rise Condominium	
	Baseline	W/Premiums	Baseline	W/Premiums
PROJECT DETAILS				
Number of Units:	100	100	250	250
LAND ACQUISITION				
Assumed Density (Units/Acre):	200	200	500	500
Land Price/SF:	\$10	\$10	\$10	\$10
Land Acquisition:	\$217,800	\$217,800	\$217,800	\$217,800
Construction Cost/Unit:	\$229,438	\$229,438	\$292,111	\$292,111
Construction Cost/Total:	\$22,943,750	\$22,943,750	\$73,027,625	\$73,027,625
① Overall Project Cost:	\$23,161,550	\$23,161,550	\$73,245,425	\$73,245,425
Overall Cost Per Unit:	\$231,616	\$231,616	\$292,982	\$292,982
INCOME				
Number of Units:	100	100	250	250
Average Sales Price	\$201,025	\$266,358	\$182,750	\$242,144
Average Unit Size/S.F.:	935	935	850	850
Average Base Price/S.F.:	\$215	\$215	\$215	\$215
② Specialty Grocer Premium @ 17.5%	<i>\$0</i>	<i>\$38</i>	<i>\$0</i>	<i>\$38</i>
③ Adjacent Park @ 15.0%	<i>\$0</i>	<i>\$32</i>	<i>\$0</i>	<i>\$32</i>
Gross Sales Income:	\$20,102,500	\$26,635,813	\$45,687,500	\$60,535,938
④ Total Income	\$20,102,500	\$26,635,813	\$45,687,500	\$60,535,938
EXPENSES				
Sales Costs @ 5%	\$1,005,125	\$1,331,791	\$2,284,375	\$3,026,797
Total Expenses	\$1,005,125	\$1,331,791	\$2,284,375	\$3,026,797
⑤ NET PRE-TAX PROFIT	-\$4,064,175	\$2,142,472	-\$29,842,300	-\$15,736,284
VIABILITY GAP ANALYSIS				
⑥ Return on Cost	-17.5%	9.3%	-40.7%	-21.5%
Threshold Return	15.00%	15.00%	15.00%	15.00%
⑦ Indicated Gap	(\$7,538,408)	(\$1,331,761)	(\$40,829,114)	(\$26,723,098)

Source: Johnson Reid, LLC

Given these findings, it is worth noting that the urban renewal model in other jurisdictions has been to invest public resources to mitigate the indicated viability gap, in this case significant for both residential development forms. A second model is emerging, however, that targets public resources for successful recruitment of urban commercial amenities that not only enhance an individual project's feasibility, but also enhances the viability and desirability of an entire district or community. The implications of this approach are modeled in the following section.



WHAT DIFFERENCE DOES PARK & COMMERCIAL AMENITY MAKE?

In the 2007 report “Urban Living Infrastructure: Marginal Impact of Selected Urban Amenities on Residential Pricing” for the Metro Transit-Oriented Development Program, JOHNSON REID conducted a detailed, hedonic model analysis, case study and developer interview process to identify what commercial retail and service offerings actually affect buyer behavior to enhance higher-density residential viability. Specifically, a range of common urban commercial amenities were econometrically tested to measure actual impact to home sale price in a manner that would help overcome the condominium price problem identified in the previous section.

In reality, some commercial amenities are so valuable to households that having them within walking distance allows them to pay more for a condominium instead of spending the money on annual transportation expense getting to and from individual and groups of commercial needs. A detailed treatment of the commercial amenities and their measurement are beyond the scope of this analysis and the reader is invited to reference that document. However, to demonstrate how successful attraction of a “measurable” amenity can impact development viability, JOHNSON REID conducted a second set of prototypical pro formas assuming the AmberGlen Community featured the following key, marketable amenity examples:

- Specialty Grocer (17.5% Premium) – The combination of specialty foods, specialty deli, flowers, gifts and café under one roof and within two blocks has been measured to achieve a nearly 18% premium for a residence, all things equal.
- Centerpiece Park (15% Premium) – Based on previous analysis for the City of Hillsboro, a centerpiece park adjacent to a high-density residential project can achieve a measurable premium.

Results of the second financial analysis are expressed in Figure 3 on the previous page as the “W/Premiums” scenario for both mid-rise and high-rise condominiums. The second analysis differs from the first only due to the addition of both the specialty grocer and park amenity premium addition. Key figures for consideration in Figure 3 are numbered in the far left hand column and discussed below:

- ② The specialty grocer amenity is found to add a \$38 per square foot premium to the base condominium price.
- ③ The centerpiece park is found to add a \$32 per square foot premium to the base condominium price.
- ⑤ Adding the two amenities actually creates a positive, net pre-tax profit for mid-rise construction under the “W/Premiums” scenario due to the boost in achievable price. The amenities are, however, not enough to create a positive profit for the higher construction-cost high-rise orientation.
- ⑥ Return on cost, or net pre-tax profit (⑤) divided by overall project cost (①), is 9.3% for the mid-rise type but still negative for high-rise (-21.5%), though the amenities appear to have reduced the negative rate of return on high-rise by half.
- ⑦ Despite the boost in achievable price and resulting positive profit and return on investment, the Indicated Viability Gap for mid-rise is still negative. The 9.3% return on cost is still below the minimum threshold 15%, indicating that although the project is profitable, the amount of profit is not worth the considerable risk of development. To the developer, other projects with higher opportunity cost are worth exploring rather than this scenario. Indicated viability gap is negative for mid-rise and high-rise, though considerably lower than without the marketable premium examples.



HOW DOES REDEVELOPMENT OF EXISTING IMPROVEMENTS DIFFER FROM VACANT PARCEL DEVELOPMENT?

The economics of mid-rise and high-rise condominium development stand to differ significantly over time in the AmberGlen Community planning area given a mix of both vacant parcels and parcels with improvements frequently comprising business park space. To illustrate the implications of redevelopment of existing improvements in contrast to vacant land, the mid-rise and high-rise formats were modeled assuming a different land cost that reflects existing improvement value. Results are expressed in Figure 4.

FIGURE 4: STATIC PRO FORMA EVALUATION OF HILLSBORO MID-RISE AND HIGH-RISE CONDOMINIUM REDEVELOPMENT

	Mid-Rise Condominium		High-Rise Condominium	
	Baseline	W/Premiums	Baseline	W/Premiums
PROJECT DETAILS				
Number of Units:	100	100	250	250
LAND ACQUISITION				
Assumed Density (Units/Acre):	200	200	500	500
Land Price/SF:	\$32	\$32	\$32	\$32
Land Acquisition:	\$686,070	\$686,070	\$686,070	\$686,070
Construction Cost/Unit:	\$229,438	\$229,438	\$292,111	\$292,111
Construction Cost/Total:	\$22,943,750	\$22,943,750	\$73,027,625	\$73,027,625
① Overall Project Cost:	\$23,629,820	\$23,629,820	\$73,713,695	\$73,713,695
Overall Cost Per Unit:	\$236,298	\$236,298	\$294,855	\$294,855
INCOME				
Number of Units:	100	100	250	250
Average Sales Price	\$201,025	\$266,358	\$182,750	\$242,144
Average Unit Size/S.F.:	935	935	850	850
Average Base Price/S.F.:	\$215	\$215	\$215	\$215
② Specialty Grocer Premium @ 17.5%	\$0	\$38	\$0	\$38
③ Adjacent Park @ 15.0%	\$0	\$32	\$0	\$32
Gross Sales Income:	\$20,102,500	\$26,635,813	\$45,687,500	\$60,535,938
④ Total Income	\$20,102,500	\$26,635,813	\$45,687,500	\$60,535,938
EXPENSES				
Sales Costs @ 5%	\$1,005,125	\$1,331,791	\$2,284,375	\$3,026,797
Total Expenses	\$1,005,125	\$1,331,791	\$2,284,375	\$3,026,797
⑤ NET PRE-TAX PROFIT	-\$4,532,445	\$1,674,202	-\$30,310,570	-\$16,204,554
VIABILITY GAP ANALYSIS				
⑥ Return on Cost	-19.2%	7.1%	-41.1%	-22.0%
Threshold Return	15.00%	15.00%	15.00%	15.00%
⑦ Indicated Gap	(\$8,076,918)	(\$1,870,271)	(\$41,367,624)	(\$27,261,609)

Source: Johnson Reid, LLC

In Figure 4, mid-rise and high-rise developments assumed to be developed on redeveloped parcels are considered under the same two scenarios utilized in Figure 3. The only difference the analysis featured in Figure 3 and Figure 4 is the price of land. In Figure 3, the price of land is assumed to be \$10 per square foot while in Figure 4 it is assumed to be \$32 per square foot, capitalizing the cost of demolition into land acquisition. As is demonstrated, net pre-tax profit decreases across the board, while return on cost and



indicated viability gap increase due to the sizeable increase in effective land cost. Amenity premiums certainly continue to render mid-rise development closest to viability, but return still falls short of threshold rate of return for the risk involved.

The primary impact of a relatively high perceived level of risk is the resulting impact on acceptable rate of return. Increasing the return threshold can dramatically impact development activity. Risk is also a particular concern when dealing with redevelopment, where construction cost estimates and timing are less predictable. In addition, the scale of most infill and redevelopment opportunities is limited, while the complexity is substantially higher. This increases soft costs relative to the overall level of investment, decreasing yield.

IMPLICATIONS AND CAVEATS

As demonstrated in the pro formas, the highest and best use determination resembles a step function in terms of the development form that supports the highest underlying land values. If achievable sales prices are below \$200 per square foot, the development form capable of bidding the greatest value for the property is wood frame construction with surface parking. As pricing increases to \$300 per square foot, mid-rise construction over a concrete podium become the land use that supports the highest values. High-rise construction becomes the highest and best use only when pricing rises above \$450 per square foot under these assumptions.

It should be noted that these types of prototypical pro formas imply a level of precision that is not completely indicative of all developer behavior. Developers use a range of return parameters and yield requirements in making decisions, costs can vary substantively, and assumptions with respect to the market area can also vary. As a result, a series of developers looking at the same project may have sharply divergent views as to what development form represents the highest and best use for that site and the associated supportable land value.

Nonetheless, the general relationship between costs and achievable price remains a constant. The physical form of residential development is determined primarily by achievable pricing. It should also be noted that expectations of pricing and perceived market risk also have a significant impact on the determination of highest and best use. To the extent that a project can “prove” or demonstrate that a market exists for an untested product and that certain pricing levels are achievable, the project can increase expectations and/or reduce perceived risk. This shifts the market further along the path towards more intensive development forms.

CONCLUSIONS

JOHNSON REID was retained by the City of Hillsboro to provide financial analysis of mid-rise and high-rise residential development to help inform the AmberGlen Community planning process. In doing so, four key questions were addressed and answered as follows:

1. How do the economics of mid-rise residential and high-rise residential generally compare?

Mid-rise and high-rise residential development are frequently challenging in a suburban location because the significant increase in construction costs per unit with steel and concrete materials are rarely justified by attached residential price levels in the suburbs. Hillsboro/Washington County specifically is currently achieving roughly \$140 per square foot to \$160 per square foot in unit sales prices, while construction costs are easily \$167 per square foot for mid-rise and \$212 per square foot high-rise.



2. How does the viability of mid-rise and high-rise residential compare in Hillsboro?

A series of prototypical mid-rise and high-rise development financial pro formas were conducted to compare viability of both in Hillsboro, all else equal. On a vacant parcel, and assuming a somewhat optimistic sales price per square foot in Hillsboro, we found (Figure 3):

- Mid-rise residential construction fails the viability test in terms of negative pre-tax profit, negative return on cost and resulting significant viability gap given the failure to achieve an assumed minimum return on cost of 15% for risk of the venture to be worthwhile.
- High-rise residential construction also fails the viability on all counts, but significantly worse than mid-rise due to the significant cost-per-unit increase from a higher-load concrete and steel construction type necessary for 7 stories or more.

3. What difference does central park and commercial amenity make?

A second set of financial pro formas were conducted for both mid-rise and high-rise on a vacant parcel assuming two key urban living amenities were well-executed and highly proximate to the residential development. Again, assuming an optimistic sales price in Hillsboro, we found (Figure 3):

- Mid-rise residential construction posted positive pre-tax profit and a positive return on cost of over 9%, but barely failed the viability test because the project falls short of the minimum 15% return on cost threshold. In other words, although the project is profitable, to a developer it is not quite profitable *enough* to warrant the risk of the project.
- High-rise residential construction still fails the viability test on all counts, but the addition of the focused amenities significantly reduced the viability gap.

4. How does redevelopment of existing improvements differ from vacant parcel development?

A third set of financial pro formas were conducted for mid-rise and high-rise, with and without focused urban amenities, but this time assuming a \$32 per square foot land cost including existing business park improvements instead of a \$10 per square foot vacant parcel cost. Both figures are for actual parcels in the AmberGlen Community Plan study area nearby the existing, central landscaped space according to the Washington County Assessor's Office.

- Mid-rise residential construction still posted positive pre-tax profit and a positive return on cost of over 7%, but as a result failed the viability test by falling short of the 15% minimum return on cost threshold.
- High-rise residential construction still fails the viability test on all counts.

NEXT STEPS

Analysis in this memorandum has found that in Hillsboro's suburban location, residential pricing is not yet at a level that will enable the economics of mid-rise residential to "pencil out," much less high-rise residential development. However, we would conclude that the results are encouraging for planning greater emphasis on mid-rise residential development forms at least in earlier phases of the plan.

- Mid-rise barely failed the viability test when it was assumed specialty grocery centerpiece park amenities were well-executed and highly proximate to a project.
- Financial modeling utilized near-term, though optimistic, sales price assumptions for AmberGlen, though the plan is longer-term and will likely materialize over several real estate cycles with increasing prices relative to cost and land value over time.



- Financial assumptions were very specific, particularly the minimum return on cost threshold of 15%. Some developers may perceive the AmberGlen Community concept as lower-risk and develop with different acceptable return expectations and higher viability probability.

Accordingly, we would encourage the City of Hillsboro to do the following based upon findings:

- Pursue mid-rise residential forms as an earlier and more prevalent component of the AmberGlen Community Plan.
- Delay or rethink placement of high-rise residential forms in the plan, potentially to sites with existing improvements that in time will depreciate in economic value relative to land price escalation.
- Pursue public resources paired with economic development strategy that encourages and rewards specific types of commercial and services development in the AmberGlen Community that will have measurable impact upon the economics of mid-rise and high-rise development. This may be via urban renewal, targeted SDC credits, or some other incentive(s). Unlike a subsidy to a specific condominium project, a successful urban amenity will increase the viability in more than one project via a “halo effect.”