



4-Hour REIT Valuation Modeling Test (AvalonBay): NAV Model, Part 1: Market Value of Assets

Welcome to our next video in this REIT valuation case study. We are going to start looking at the net asset value model for AvalonBay in this lesson. We will divide this into three parts. And in part one, I'll explain our approach and how it differs from what you might see in other sources, and equity research reports, and other sources online. Then, in part two, we'll go through AvalonBay's operating real estate assets and learn how to value those assets using a combination of cap rates and other factors. And then, in part three, we'll look at some of the REITs other assets like construction progress, and land, and a few others, and learn how those factor into the net asset value model.

That will take us to the end of the asset side of this model, and we'll build up to the total market value of the assets. Then, in the next lesson, we'll go to the liabilities and equity side and fill out everything there, calculate the net asset value per share, and set up some sensitivity tables at the end.

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Now, to start with, I would note that this is really just an extension of what you already learned in the simplified model on Park Hotels and Resorts. We're still going through the same basic process here, where we take the forward NOI from the REIT, we apply an assumed cap rate to it to get to the market value of the gross real estate operating assets, and then, we value some of the other assets, like the construction progress, the cash, and the accounts receivable. If we have goodwill and intangibles, we take those to zero. And then, we add up everything on the assets side, we move to the liabilities side, and do something similar there, and then, we subtract the market value of the liabilities from the market value of the assets to get to the net asset value.

However, there are a few differences here. One is that we're going to look at this region-by-region and business-segment-by-business-segment, we're also going to have to pay a lot more attention to the equity investments, the unconsolidated real estate, which is something that Park Hotels didn't have. We will also look at the fair market value of the debt and some of the subsidies on the debt in more detail here.

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And we'll have to make more of a realistic calculation for the net asset value per share, factoring in the diluted shares outstanding and some of the circular references that could come up. If you look around online, you will see many different approaches to the net asset value



model. One popular one is the Green Street methodology, and Green Street Advisors is a firm that's famous for its research on the real estate investment trust sector. I want to go through this upfront because a lot of people point to this, and then they wonder why our approach here is a little bit different from what they see in this report or other sources from this company.

So, if you look at some of the reports, they lay out the same basic methodology that we're using, take the market value the assets, subtract the market value of the liabilities. However, they do a few things a little bit differently here. In their approach, they tend to take the three most recent months of net operating income for the REIT, and then they apply a straight-line adjustment, and then they adjust for acquisitions and dispositions during the most recent quarter.

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And that gets them the quarterly adjusted NOI. They annualize that number, they estimate a growth rate over the next 12 months, and then, they apply a cap rate to that entire number today to get to the value of the operating real estate. We are not really following this approach for a number of reasons.

First off, we don't need to make a straight-line adjustment because this is a multifamily REIT with one-year leases. If we were valuing an office or retail REIT with 5-year leases, or 10-year leases, or something like that, the straight-lining adjustment would be a lot more important and applicable there. We don't need to annualize the most recent three months and adjust for acquisitions and divestitures because we already have full five-year projections. If you did not have them and you were just going off of a REITs most recent financial statements, then yes, this would be a useful and valuable approach. But if you already have detailed projections, you don't need to do this. And then, finally, we're not following their approach where they just take the total NOI for the REIT and then apply a single cap rate to it.

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We think it's extremely difficult to actually pick an appropriate cap rate if you do that because different regions are priced differently. There's more risk with development assets and the NOI from development and redevelopment than there is with the NOI from established communities or same-store properties. It also tends to be a lot easier to find the data for these cap rates if we break up the REIT's operations by region.

Now, aside from those points, we do agree with most of the rest of their approach, and we are using it here. But we're just tweaking it a little bit to make it make more sense in the context of



a full three-statement model. In particular, one thing that they do that we definitely agree with is the approach for the equity investments here. If you just go to AvalonBay's balance sheet and you say, "Okay, equity investments of \$163 million as of the most recent fiscal year, therefore, we should take that. And then, we should just apply a market value to it over here..."

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...It's extremely difficult to do that because, if you recall from our segment-by-segment build-up, there are a number of different components on the equity investments' balance sheet. We're going to entirely revalue the real estate assets, and we'll slightly revalue the debt. But then, the other assets and other liabilities we'll leave about the same. So, it's quite difficult to look at this and just make a single adjustment to the assets shown on their balance sheet, we really have to revalue everything, and then, subtract the market value of the equity investment liabilities from the market value of the equity investment assets, and then multiply by the 25.1%, the ownership percentage that AvalonBay actually has.

So, that's a quick introduction to our basic approach here. Let's now go into part two and look at the operating real estate assets. We're going to start this by bringing over the scenario that we're in. We need this later on for sensitivity tables because there's no way to set up a sensitivity where the assumption you're sensitizing is on a different spreadsheet. So, we need to include everything on the same spreadsheet here. Then, we'll bring in the forward NOI or fees from each segment.

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We'll look at the replacement reserves here and something called economic NOI. Then, we'll link in the appropriate cap rates for each segment, we'll look at the equity investments, and the management fees after that.

Let's go to the segments tab first and take our selected scenario right here. Just cut this with CTRL+X and bring it over to the NAV model, paste it in with CTRL+V. And let's start by going to the establish properties by region. So, we'll go to our segments tab here, and then, we'll go down to where we have the NOI for New England, all the way down to Southern California.

And then, for these other business segments, let's go to our Segments tab over here. And for other stabilized, we'll take our revenue minus our expenses. There are other ways we could do this. For example, we could just link to the NOI for other stabilized communities right here, but I'm just doing it this way to keep it consistent with the other calculations.



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Then, for development, let's link to our revenue from development properties and subtract our expenses. Redevelopment properties will be pretty much the same thing and it's right below it. For acquisition properties, we'll take our revenue from acquired properties, and then, subtract our expenses. And then, for disposed properties, we will take our lost revenue from disposed properties and factor in the expenses there, so this gives us the lost NOI from these disposed properties.

For the equity investments, let's go over and down to the very bottom here, and let's get our NOI from the equity investments or the unconsolidated real estate. And then, for the management, development, and other fees, we'll go to our operating model and go up to the income statement where we have these fees listed. We have all those in place. And at this point, you might think, "Okay, so we're good to go, let's just go to the case study document and use the cap rates that they supply in this document." But you would be slightly incorrect there.

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One issue is that we might need to further adjust this NOI. Now, you saw some adjustments in the Green Street report that I just showed you, the straight-lining of rent, for example, for office and retail REITs. With multifamily REITs, one adjustment that comes up is the deduction for the replacement reserves. And this is something that actually goes back to our individual property case studies, which is why we covered individual properties first.

If you recall from our multifamily case study, for example, and pretty much all the others in the individual property section, we tend to assume that the replacement reserves are above the NOI line so that you deduct these replacement reserves to calculate NOI. By doing this, you are factoring in the property's capital costs and capital requirements in the future. And you're saying that if we have to replace something in the future or pay for tenant improvements, leasing commissions, or CapEx, we do factor in at least some of those future expenses into the NOI, so that the NOI reflects, at least, in part, the capital requirements of the property.

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However, not everyone agrees with this approach. In real life, you will see a wide variety of different approaches. And some people believe that the replacement reserves, along with all the other capital costs, should be below the NOI line item, and they should affect, therefore, the adjusted NOI, but not just the NOI from the property itself. Lenders, of course, like to be more conservative, so they will almost always include this in the NOI calculation. But a lot of



equity investors and sponsors will not do this because they want their property to look more profitable and to have higher margins on paper.

We don't know the exact treatment here because AvalonBay does not disclose it in its filings. However, often for multifamily REITs, you will see some small adjustments here because the assumption is that they try to make their properties look as favorable as possible. And so, in many cases, they have not included these reserves. The case document tells us to assume a 5% deduction for these, which is pretty typical.

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You'll often see adjustments in the 1%, 2%, to 10% range here, and sometimes more if the properties are lower class – if they're Class B and Class C mostly, instead of Class A.

Avalon Bay does have mostly Class A and some Class B properties, so we're not going to make too big of a deduction here. I say 5%. And then, let's take each one of these I'm multiplied by the 5% right here.

We can use that to calculate something called the economic NOI, which includes this replacement reserved deduction. So, we take the nominal NOI, and then we factor this in, and then we copy this down. And we can do pretty much the same thing for everything else here in the other business segments and do the same thing for the equity investments here as well, so we have that.

For the management, development, and other fees, of course, this will not apply at all. The economic NOI is the same as the nominal NOI because this income doesn't relate to actually earning rent from real estate assets.

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Now, to apply the economic cap rates, the case study document gives us the cap rates to apply, so we could just go through these. Five percent for New England, 4% for New York, New Jersey, 5.3% for the Mid-Atlantic, 4.3% for the Pacific Northwest, 4.5% for Northern California, and 4.2% for Southern California. However, what I want to point out is that these cap rates are coming from somewhere. Specifically, I looked up data from Jones Lang LaSalle, the famous real estate company that provides a lot of research and industry reports. And I actually found the cap rates as of the time of this case study.



So, for Seattle, for example, they have a range of 4.0% to 4.6%, which explains how, here, for the Pacific Northwest, we get to 4.3%. And then, if you keep going in this document for the cap rates, for San Francisco, they say 4.0% to 4.5%, and so, we use 4.5% right here, and you can keep going.

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And there are cap rates for LA and Orange County, and Washington DC, which is roughly the Mid-Atlantic, we could say, New Jersey, New York City, Boston. Our cap rates are slightly higher than theirs for a couple of reasons.

First off, if you look at the fine print in their cap rate estimates, they say that these are for Class A CBD assets. However, AvalonBay does not own 100% Class A assets; they also have some Class B assets. And also, not everything they own is in the central business district of each region or city here. Some of the assets are in the suburbs, some are in smaller cities in the area, so we've generally assumed cap rates that are a little bit higher than we saw in that survey but these are still grounded in some type of reality.

Now, for the rest, for other stabilized properties and acquired and disposed properties, these are both easy because we already have direct estimates of these in our segment-by-segment model. For other stabilized properties, we know the yield is 6.1%, so I'm just going to say that that's the cap rate here for these as well.

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And this is actually a little bit conservative because in future years, these will begin to stabilize. And, really, the cap rates for stabilized assets that were previously developed should be in line with the established property cap rates, but we'll be a little bit more conservative here and use a higher cap rate.

For acquisitions, we already have this directly because we projected the cap rate for this before. We know it's about a 5% acquisition cap rate, and then, for dispositions we also have this, we have the 5.3% number that we found in the company's quarterly reports.

For the others, the case document tells us to use 7% for development, 5% for redevelopment, 5% for the NOI from equity investments, and 12% for the management fees. So, I'll say 7% for development, 5% for redevelopment, 5% for equity investments, and 12% for the management fees. With development properties, there's always more risk. These assets have not fully



stabilized yet, they're brand new, and so, we're using a cap rate that's quite a bit higher than all the others here.

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With redevelopment properties, the risk is far lower because these assets are already operating, they're generating income early, they're already partially occupied. But we still want to use a cap rate that's a little bit higher than what we have above for the established properties because there is still some risk in terms of the timing and expense with these properties.

For equity investments, similarly, there's more risk because AvalonBay is not operating them entirely by itself, these are joint ventures with other companies, developers, sponsors, and so on. So, we are using a rate that's slightly higher than the weighted average of the established properties here.

And then, for management, development, and other fees, you will typically see cap rates that are far higher for these because these fees typically operate based on contracts that are cancelable on 30 days' notice, or 60 days of notice, or something else very short-term. So, this income stream is far less reliable than the income stream for a year-long lease, or a five-year long lease, or something else like that.

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So, you will often see percentages here in the 10%, 15%, 20% range; we've chosen to use 12% here, but this segment is so small that it almost doesn't even matter for AvalonBay. Now, we're almost done here but the last thing we want to do is build in this ability to sensitize these cap rates. We're not going to factor in base, upside, and downside scenarios here because these cap rates are based on today's market. The scenarios, by contrast, are based on what could happen in the future.

For the rental growth over the next five years, it made a lot of sense to consider upside, base, and downside cases, but these cap rates are always based on what the assets are priced at today in today's market. However, it is true that our estimates here could be off. So, maybe looking at this data from Jones Lang LaSalle, we might be off because maybe more of the company's properties in Seattle are not in the central business district; maybe they're more in the outlying areas of the city, or even further away than the city center itself.

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<http://breakingintowallstreet.com>



So, we do want to account for that somewhere. And to do that, I will build in this cap rate sensitivity. And to calculate the sensitized cap rate, I'll take the economic cap rate, and then, factor in the sensitivity, copy this down, and then do the same thing for everything else here.

And then, we can finally calculate the implied values. So, we'll take the economic forward NOI, we'll divide by the sensitized cap rate, and we'll copy this down. And then, we'll do the same thing for the other business segments right here and factor in the lost value from those disposed properties, and I will do the same thing for the equity investments.

For the pro-rata allocation percentage here, we need to go to our segments tab where we have the equity investment projections and take that 25.1%, and then, we'll just multiply it to get the market value right here.

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And then, for the other JV assets, for this one, we're not going to bother trying to revalue it to fair market value because it's so small anyway. Let's get that same pro-rata allocation percentage, and then we have that.

And then, for the management, development, and other fees, we'll take our number and divide by our cap rate right there. We have that, which takes us to the end of part two, the operating real estate assets here. As always, I have some notes over here on the side in case you want to refresh yourself on any of these points.

Let's now go into part three and look at the other assets here. This part is pretty simple because we're not going to modify the value of most of these items. To get the construction progress and land held for development, we don't have these on our existing balance sheet for AvalonBay because we find it more useful to just group all the real estate assets together so we don't have to worry about linking items into different types of real estate assets there. However, if you go to the company's 10-K, page 69 has their balance sheet, and we can just enter the numbers directly from here.

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For the construction in progress, it's \$1,306,300,000, so let's just go in and enter that number. And then, for the land held for development, it's the \$68,364,000 right there. Now, we need to make a market value adjustment for both of these. In real life, you would probably have to do something more detailed, and you'd have to look at either comparable land sales, or comparable REITs and see what types of adjustments are made for those or look at the actual



construction and try to estimate the percent by which its fair market value, when finished, exceeds its book value. But in this case, the case document just tells us to use simple percentages, 10% and 5%. So, I'll say 110% and 105%.

Now, we're not quite done yet because we do have to do something else here. With this construction in progress, if you recall from above, we have factored in the NOI from development properties and the NOI from redevelopment properties.

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Specifically, we factored in the NOI from development and redevelopment properties that will be done and delivered in the next 12 months. This construction and progress number includes the assets from those projects that will be completed within the next 12 months as well.

We don't know exactly how it's listed because the company doesn't give details, but we can make a rough estimate. So, we should really take this number and go over to the Segments tab, and then, go up to the development properties and subtract out the cost of completed deliveries for the next 12 months, and then also subtract out the cost of completed redevelopments over the next 12 months. And this ensures that we do not double-count anything.

Now, the remaining construction progress corresponds to deliveries that will be finished in year two, or year three, or year four, or year five; something after this point. But the most important thing is that since the NAV model is based on the NOI over the next 12 months, we don't want to double-count by including anything that's going to be delivered in those next 12 months.

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And then, we can just multiply to calculate the market value of these assets. And then, for everything else down here, for cash and cash equivalents, resident security deposits, and other assets. If you go to page 105 of the 10-K, they tell us directly that cash and cash equivalents are carried at their face amounts, which reasonably approximate their fair values. Rent, and receivables, and prepaid accounts, and current construction payable, and accrued expenses, and other liabilities are carried at their face amounts, which reasonably approximate their fair values. Based on that language, therefore, we are just going to link these indirectly, and we're not going to attempt to modify these or anything like that. I'll link in other assets as well, which is our simplified consolidated line item for everything else in this section of the balance sheet. And then, finally, we can add up everything here.



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So, let's start by taking our implied value for all the real estate operating assets up here; then we'll take the market value of the pro-rata portion of the unconsolidated real estate, as well as the other JV assets, the management, development, and other fees, the construction in progress, the land held for development, and then, these three line items down here.

We get to \$33 billion. And just doing a quick comparison with the balance sheet, you can see why it's so important to do this type of exercise. We get total assets that are about twice what's listed on the balance sheet here, \$18 billion versus \$33 or \$34 billion. Now, if you were looking at an IFRS-based REIT, of course, this exercise would be far less useful because these should already be marking their real estate assets to market value in the balance sheet. So, you could still build a NAV model for a REIT in Canada, or Europe, or Australia, or Asia, or other places, but the results would be much closer to what's already shown on the balance sheet.

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I have some notes over here. One other thing that I didn't mention is that if AvalonBay had goodwill or their intangibles, we'd set them to zero because they have no fair market value. You saw that one, actually, in the simplified case study for Park Hotels; we just set their goodwill and other intangibles to zero. Also, if AvalonBay had other types of investments, like stock or bond market investments, we might have to do some additional work to get the fair market value of those. But as it stands, this company is relatively simple, so their NAV model is also relatively straightforward.

We're at the end, so let's do a quick recap and summary now. We started out this lesson by explaining our approach and how it's very similar to what you saw in the simplified case study. But it is a little bit more complex because we have different business segments to factor in, we have equity investments now which we did not have before, and our estimates for fair market value, in a few cases, are a little more sophisticated. We also have these management, development, and other fees that you haven't seen before.

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Sources like Green Street will tell you to take the three most recent months of net operating income, make straight-line adjustments, factor in acquisitions and dispositions, annualize the number, apply an estimated growth rate, and then apply a single cap rate. We didn't do that here because we already have more detailed projections. We don't have the straight-lining of rent adjustment because we're dealing with a multifamily REIT. And we don't think it's that



useful to apply a single cap rate to the REIT's entire NOI; we think it's much more useful to break it into these segments by geography, business line, etc., and then you can come up with cap rates that are grounded a little bit more in reality and actual real estate data.

And then, in part two, we went through this and brought in the nominal NOIs. We made a deduction for the replacement reserves to get the economic NOIs, we applied the appropriate cap rate. We built in this ability to sensitize it, which you can see if you change around the cap rate adjustment for sensitivities up here, and then, we calculated the implied value of each segment based on that.

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We did the same thing for the equity investments and other JV assets, and then, we multiplied by the 25% that AvalonBay owns. We got to the capitalized value of the management, development, and other fees, and then, we calculated the fair market value of the construction in progress and the land held for development. We made sure not to double-count anything with the construction in progress, and then factored in the other assets to get to the total market value of assets.

That's it for this lesson. Coming up next, we'll look at the liabilities and equity side, and then, we'll calculate the net asset value per share, the nominal and economic cap rates implied by the company's current share price, and set up some sensitivities at the bottom.