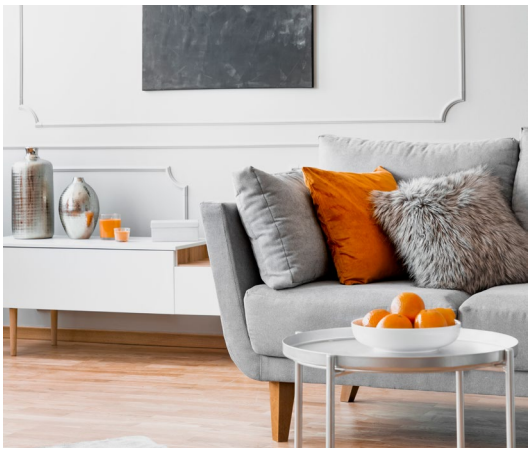
WHITE PAPER

20 Years of Lessons in Rental Housing Pricing & Revenue Management

Real Estate Business Analytics

Business Insights at the Speed of Curiosity



Multifamily is Ready For Better Revenue Management

LESSONS FROM MORE THAN 20 YEARS IN RENTAL HOUSING PRM

February 2023 marked the 22nd anniversary of the first multifamily housing property going live on an automated pricing and revenue management (PRM) system. Little known fact: That property was Hunters Run in Austin, Texas on the very first version of the Lease Rent Options (LRO)®[1] system.

WELL-KNOWN FACT: Despite various marketing claims to the contrary, the reality is that today's legacy revenue management systems are virtually unchanged from those first versions back in the mid-00s. With more than twenty years of operational experience, multifamily housing is ready for a meaningful improvement in how PRM systems work. This paper, written by the most seasoned PRM professionals in the industry, is broken into three sections:

01. The Challenges With Legacy PRM
02. What a Better Solution Looks Like
03. 20 Questions You Should Ask When Considering PRM Software

This provides a roadmap for industry PRM professionals and a operational executives to assess their current system and purposefully evaluate new options.

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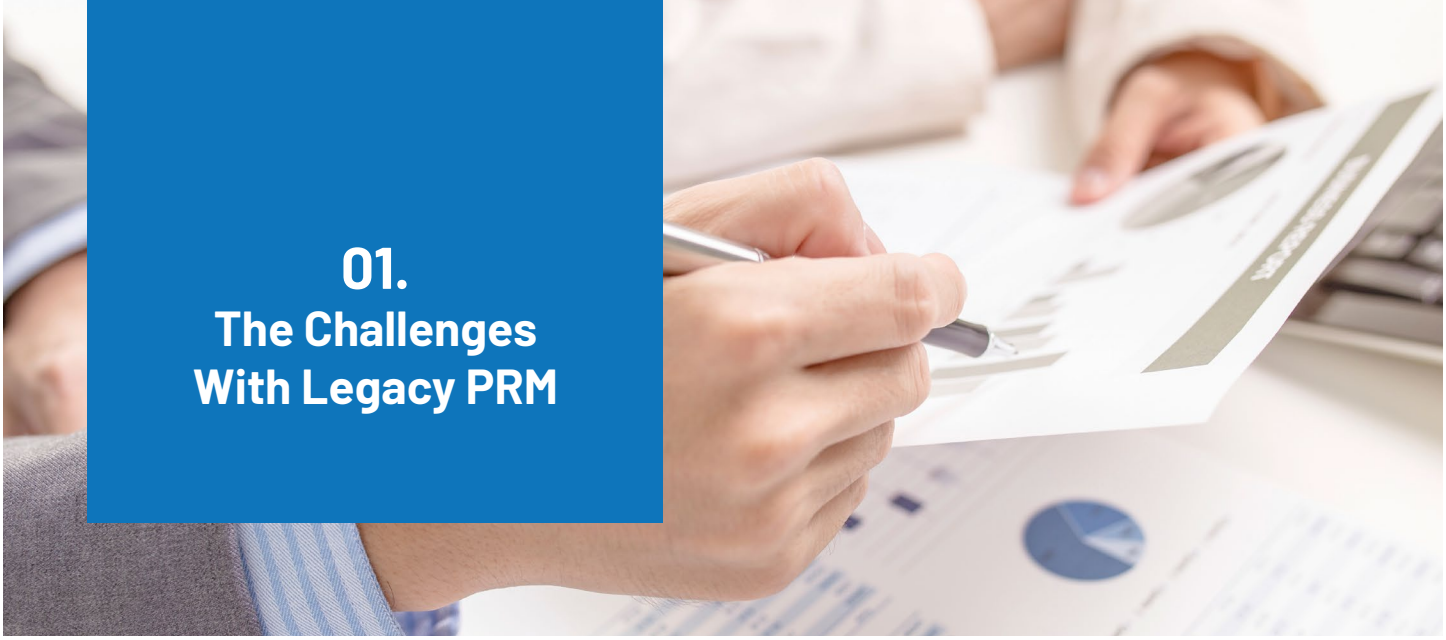

01. The Challenges With Legacy PRM

Let's start by saying that legacy systems work. Ever since PRM systems became "standard" among the NMHC Top 50 (and beyond), the industry has seen higher occupancies and more stable and predictable rental growth than at any time in the history of rental housing. Despite this success, there have always been concerns with these systems.

THE CHALLENGE WITH "BLACK BOX" ALGORITHMS

The leading systems have very sophisticated mathematical algorithms—so sophisticated, that virtually no one in the industry actually knows the details of how they work. The results, pricing recommendations, look to most users as though they came from a black box. Intellectually, we "get" that sophistication is good, but emotionally it's hard to fully trust answers from almost impenetrable algorithms. Layer on bonuses dependent on revenue and/or NOI performance, and most operators are nervous about completely trusting something they can't fully understand.

VERY FEW CORE ENHANCEMENTS

Perhaps the most damning challenge with legacy systems is how little they have changed in more than two decades. Names can change and claims can be made, but the hard truth is that the core algorithms haven't changed since the first versions of each of them.

FEW IMPROVEMENTS IN WORKFLOW

Perhaps even more challenging, the basic workflows are essentially unchanged as well. Back when these systems were built, there were many things that the designers of those systems didn't know[2]. In blazing new trails, they did a remarkably good job—for v1 software.

However, twenty-plus years of experience and learning should have driven many more changes, particularly in workflow and process. Here are just a few of the things that legacy systems struggle with:

CHALLENGE 01: BUILT TO MANAGE MICRO MARKETS

Built for managing "micro market" segments, legacy PRM systems take a decidedly floorplan or unit-type point of view with little to offer to view performance at the community, sub-market, market and/or portfolio level. This is fine for creating the overnight pricing recommendations, but it makes it very hard for revenue managers and operators to analyze and understand higher-level context.

CHALLENGE 02: FOCUS ON GRANULAR DATA

Built with an eye towards managing granular data and without a deep understanding of how revenue managers will really use the system (how could they know since no one had ever built one back then), these systems require

[2] The lead author is one of those people and frequently comments how much he wishes the 2023 version of himself could teach the 1999 version who led the design and build of the original PRM system for multifamily housing.

too many clicks to get things done. Whether it's clicking multiple times to get to the action level we need, clicking multiple times to move from results (e.g. new lease pricing reports, new and renewal pricing recommendations, etc.) to analytics dashboards, or simply wanting to accomplish tasks such as overriding recommendations or processing renewals, the user experience is not optimal. All this clicking around is at best annoying to the user and at worst robs them of time thus reducing productivity and increasing the total cost of ownership (TCO) by reducing the number of homes a revenue manager can handle.

CHALLENGE 03: RENT CONTROL

Rent control was not a significant challenge when the legacy systems were built; and when there was an issue (e.g. California bond units), there was a simple workaround since those rents were fixed. Over the ensuing 20+ years, we've seen the introduction of numerous rent control and rent constraint initiatives. These are not simply setting of price like the bond units. They involve caps on increases and variations on whether these constraints apply to renewal pricing only or to both new and renewal rents; and in a major change from the past, they impose process issues. Examples of process issues include limits on the number of increases per year as well as requirements for increased advanced notice times for residents getting more than a threshold increase or residents who have tenure beyond a specified length. The result is at best clunky "add-ons" to the legacy Revenue Management System and at worst scenarios where the legacy RMS cannot accomplish this functionality requiring manual, time-consuming workarounds.

> **"We now have an opportunity to take these two decades of operational experience to reimagine PRM..."**

CHALLENGE 04: CONCESSIONS

The builders of these legacy systems focused exclusively on net rent, and early adopter users had a vision of eliminating concessions which combined to create the situation we have today. Legacy RMSs are not very strong with concession management. While a noble aspiration, 20+ years of experience has proven that concessions are not going to go away. They may be reduced in frequency, but they won't disappear—particularly in times of economic stress.

CHALLENGE 05: COMPETITOR DATA

Legacy systems are very dependent on competitor rent data. This made sense at the time they were designed as rental housing is a fairly fungible product (one home can easily substitute for another). Competitor data can therefore be an important metric for setting rents. Unfortunately, 1) it turned out to be virtually impossible to collect accurate competitor rents and 2) homes are not as fungible as originally contemplated (location, size and unit amenity data creates a larger range of rent comparisons than we expected when we initially designed and built those systems).

In short, these systems were built by hospitality and travel people for rental housing. They did an amazing job for what they and their early adopters knew at the time. However, disappointingly, none of the legacy developers have materially enhanced their systems in response to all the real-world experience that has accumulated over this time.

The result is that we now have an opportunity to take these two decades of operational experience to reimagine PRM...for multifamily by multifamily!

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Legacy PRM Challenges

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02.
What Does a Good Solution Look Like?

With more PRM experience than anyone else in the industry, we at REBA have defined what a great contemporary PRM solution would look like:

MASSIVELY IMPROVED WORKFLOWS REDUCE TCO

A good PRM system should make it easy for revenue managers to manage their portfolio, saving time and allowing them to handle more communities. This, of course, then reduces the total cost of operating the PRM.

- Imagine waking up in the morning, firing up your computer, grabbing your cup of coffee, and then seeing exactly where you need to pay attention. By eliminating all the wasted time searching for issues and often not finding them, this kind of alert-driven workflow reverses the legacy systems' paradigm and dramatically increases revenue manager productivity. Instead of searching through the application for places that need human intervention, this better solution sets thresholds around key metrics that alert revenue managers to places where their attention is valuable.
- Think of a world with fewer clicks to get what revenue managers (and operators) need. Leveraging two decades of actual experience with what data is most important and how revenue managers actually use their software should be able to lead to a much more wisely built user interface reducing the effort needed to interact with the system.
- Avoid those hidden time sinks with easier navigation for analysis. One of the things we've observed is how often revenue managers move back and forth from recommendations to analysis. A better solution would be things like the option for a twin-screen UI that allows users to see their recommendations and relevant analysis and single clicks that will update both. Similarly, quick links from alerts to analysis reduce the time of just physically moving back and forth between screens.

COMPREHENSIVE REPORTING

Comprehensive reporting makes it easier for operators and PRM to manage the system. There are two major areas for better reporting.

- As discussed earlier, legacy systems tend to focus mostly on reporting at the granular pricing level. This leaves many opportunities for improving community, sub-market, market, and portfolio-level reporting including new pricing reporting across properties that supports leasing centralization activities.
- Reporting that walks operators through exactly how pricing is calculated explains "the why" thus increasing confidence and reducing the number of hours revenue managers spend answering questions.

INTELLIGENT PRICING INPUTS ENSURE WE'RE REACTING TO THE RIGHT THINGS

After two decades of legacy system use, the industry has learned many lessons about what should and should not be part of any contemporary PRM system. For example:

- Users should have the option of whether, and how much, comp data is included in their pricing algorithm. Where they can collect accurate data and, as a matter of corporate strategy, want to include that data, then they should be able to do so. Where users don't trust the data, or as a matter of strategy, do not want to include comp data, then the algorithm should work equally well without comp data.
- Systems should target availability rather than occupancy. Availability is a much better metric for pricing systems to rely upon than occupancy for two big reasons:
    1. Availability is forward-looking while occupancy is backward-looking. Just as we drive a car looking out the front window and not the rearview mirror, so too should we price based on what's happening ahead of us rather than what's happening behind us.
    2. There are many confounding variables in occupancy that have little or nothing to do with pricing. Make-ready times, hold times and customer move-in and move-out behaviors can all affect occupancy and create lags that make occupancy look worse or better than is appropriate for a pricing decision. Availability is directly affected by pricing decisions and thus provides a much more meaningful link between pricing decisions, customer reactions and thus optimal revenue performance.
- Good pricing systems understand and incorporate the importance of leasing velocity, specifically the pace of leasing (as opposed to "closing" or lease-to-guest card ratios). While availability is perhaps the most useful metric to rely upon for pricing decisions if we only had access to a single, it leads to some misleading rules of thumb. For example, an 8% availability where we have recently been leasing 1% of our physical inventory each week is a much better situation than a 6% availability where we have been leasing only 0.5% of our physical inventory. Yet operators focusing on availability alone will be very nervous, and maybe even lower prices, in the former situation; and they may raise prices in the latter situation when the pace of leasing doesn't actually justify such a move.

"Just as we drive a car looking out the front window and not the rearview mirror, so too should we price based on what's happening ahead of us rather than what's happening behind us.

FUTURE PROOF FOR CHANGES IN MARKET AND REGULATORY CONDITIONS

Twenty-plus years ago, there were not nearly as many rent control policies and proposals in place as there are today. The result is that legacy systems can handle simple situations (e.g. California bond units where a portion of homes have a set rent) but generally struggle with the wider versions of constraints that are already out there—and the unknown ones yet to come. Systems of the future will need to:

- Provide start and end dates for constraints.
- Allow for caps that are rules-based and can be applied at the lease type (new vs renewal), lease length and at the unit level.
- Consider process rules as well as rent-setting rules. There are already jurisdictions out there that require longer notice periods for residents with a certain tenure and other jurisdictions that require longer notice periods for residents receiving increases larger than a certain threshold.

CONTROLS TO IMPLEMENT YOUR STRATEGY NOT THE DESIGNERS'

The best PRM solutions allow their teams to configure the software to fit their company's strategies (in many cases, to allow different strategies for different markets/communities/unit types), not to force the company to fit the software's strategy. This objective is typically met with a set of user-defined parameters that influence and configure how the system's pricing model will react to different situations. They're generally controlled by a very small number of pricing managers, not by community-level users; and they allow those pricing managers to change strategy when different communities have different strategies (e.g. when different owners may have different strategies within a fee manager's portfolio or when a community is in lease-up vs stabilized operations vs disposition mode, etc.), when cyclical market conditions drive changes in strategy, when seasonality drives changes in strategy and a host of other possible reasons.

OPTIMIZE UNIT AMENITY PRICING

Since legacy systems manage only "base rents," they leave amenity pricing completely outside the system and thus manually priced. Given that typically 5-25% of the rental rate is comprised of unit amenities and/or square footage adjustments, PRM systems should offer amenity pricing recommendations on these as well as on base rents. They should also offer an easy means to be sure that amenities are configured correctly as we have seen that the vast majority of the thousands of communities we've analyzed over the prior 20+ years have material errors in their amenity configuration.

> **"PRM systems should offer amenity pricing recommendations on these as well as on base rents.**

HANDLE SMALL UNIT COUNT UNIT TYPES AND SMALL COUNT BUILDINGS

The emergence of "scattered home" single-family rentals (SFRs) represents the extreme example, essentially "buildings of one unit." However, traditional multifamily also has many examples of small buildings (often in urban centers) and small count unit types/floorplans (e.g. many three-bedroom apartments).

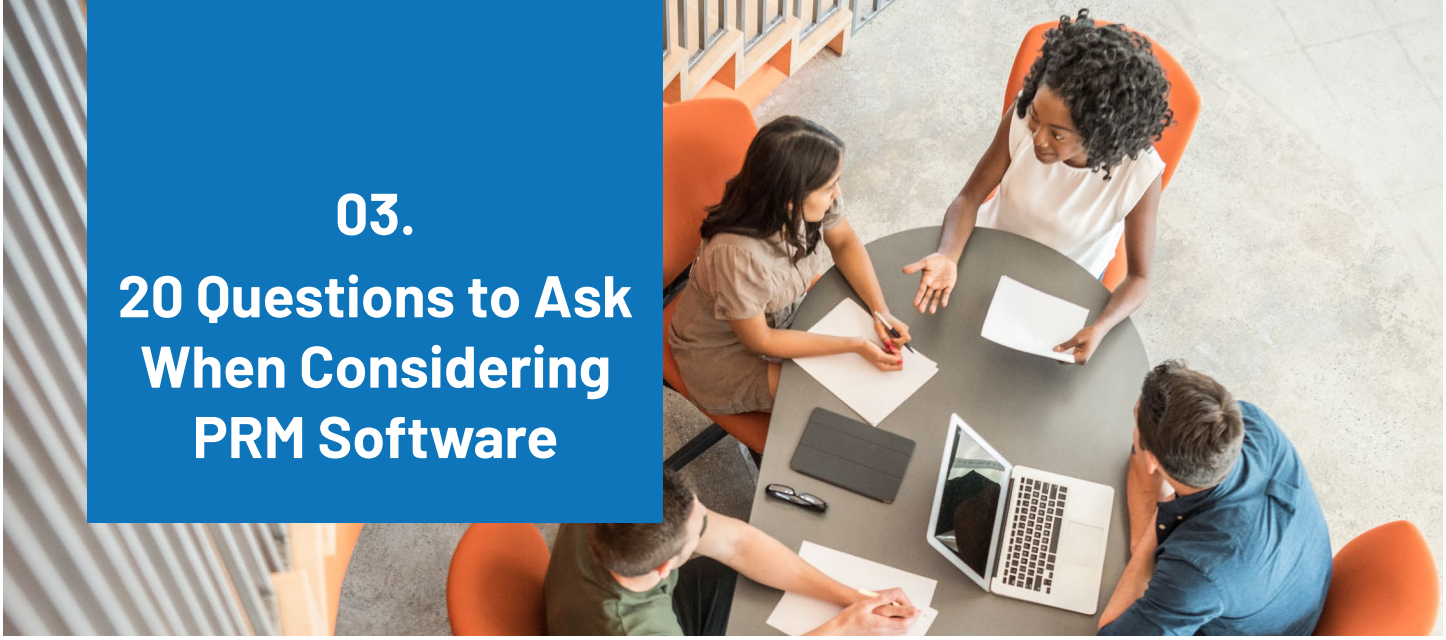
EASY INTEGRATION

Finally, PRM systems should have easy integration with analytics platforms. While strong reporting within a PRM system is helpful for both analyzing recommendations and understanding pricing performance, nothing matches the ability to export all key data from this pricing "system of record" into a full business intelligence and analytics platform.

The combination of all of these improvements leads not only to a more efficient and more effective PRM system, but also one that more naturally and intuitively builds trust with operators and asset managers.

- Alerting not only improves efficiency but also assures that users are not missing anything.
- Reports/dashboards that explain "the why" increases confidence in the recommendations.
- The ability to view all information (operational and comp data) at various levels of portfolio aggregation makes it easier for operators to see performance and thus trust the system.

03.
20 Questions to Ask When Considering PRM Software



Question to Ask	What You Should Look For
01. Does the system allow you to configure it to your business or do you have to modify your business to fit the model?	A system with a sufficient range of parameters to allow you to configure the model to your business strategy – at the unit, unit type/floorplan, community, sub-market, market and portfolio levels
02. How easy is it for operators to understand why the price recommendations are what they are?	An easy-to-understand dashboard that walks users through how the system arrived at its price recommendations
03. How many units/homes can the Pricing & Revenue manager handle using the system?	The more the better – if the user is only able to manage less than 20,000 units/homes due to PRM system inefficiencies, it means a higher cost of maintaining the system than the user should accept
04. What does the system do to make it easier for users to manage pricing?	User experience design that minimizes the number of clicks to get to important functions, the ability to propagate settings from higher levels (e.g. market) to lower levels (e.g. unit type), robust reporting, easy exportability
05. How quickly can a PRM answer questions?	Purpose-built metrics that make it easy to assess the operational situation, see key metrics and relate those to how and why the system is making its recommendations
06. Are key metrics for the pricing algorithm forward-looking or backward-looking?	Systems that focus on availability and lease forecasts driven by current leads pipelines rather than focused on occupancy
07. At what level of granularity does the system forecast renewals? And how does it use that forecast?	Lease-level likelihood to renew forecast used solely for forecasting supply (i.e. NOT used to differentiate individual renewal prices)

08. How often does the system make big (e.g. 3% or 5%) changes overnight?	Less than once a week, preferably less than once every two weeks
09. How flexible is the system at handling various concession strategies?	Flexibility to price with or without concessions and to apply concessions at any level from unit to portfolio
10. How does the system handle rent control and rent-constrained homes?	Configurable approach to handle all types of rent constraints including price limits, increase limits, increase frequency limits and process constraints (e.g. increased notice time based on resident tenure or amount of increase)
11. How well can the system handle small unit count floorplans, unit types and buildings?	Ability to change pricing at the unit level and to pool up small count unit types/floorplans into sub-market and market levels (the ultimate capability is handling "scattered home" single-family rentals)
12. How does the system handle other "special circumstances" (e.g. lease-up, renovations, dispositions)?	Specific modules or functionality for each of these "special circumstances"
13. What reporting does the system provide?	Multiple dashboards that make it easy both to identify pricing issues and to report to various levels of management, exportability into Excel and BI platforms
14. How does your system handle comp data? Does the system limit the data it uses to first-party and publicly-available third-party data?	Allows for manual or automated input, allows users to determine if comp data is part of any pricing algorithm or used strictly for support
15. How does the system help price unit amenities?	Provides pricing recommendations for unit amenities AFTER enabling a proper amenity audit to ensure amenities are tagged correctly in all units
16. How does the system support cross-selling and/or centralization?	Makes it easy for individual leasing agents on site or at a central location to see unit availability and pricing across multiple communities[3]
17. How does your pricing system help diagnose operational issues vs pricing issues?	Makes it easy to see key drivers of leads, shows, leases, etc. Also to separate local operational issues from pricing ones (e.g. vacant unready vs vacant ready)
18. Does the system integrate with your PMS?	Yes
19. What is the history and reputation of the company and the people behind the system?	Long-term history with a team steeped in the history, science and process of revenue management with specific rental housing expertise
20. How much will the system cost? What level of training and support is provided? Do they charge extra?	Not too much but also not too little (with things as sophisticated as pricing, "you get what you pay for"!) Robust initial and ongoing training, i.e. no nickel and diming

[3] Note: even if centralization is not a corporate objective, cross-selling to other communities is useful unless there are no sister communities in the same market.

Conclusion

In conclusion, legacy PRM systems changed the industry. Now, with almost 25 years of learning, it's time for more contemporary approaches that reduce TCO, improve acceptance and are more flexible in adapting to recent and future changes in the multifamily pricing arena.

ABOUT THE AUTHORS

Donald Davidoff is the Chief Executive Officer & Co-Founder of Real Estate Business Analytics, Inc. He is recognized throughout the rental housing industry as a thought leader in pricing, business intelligence, marketing, and leasing. Donald is best known for leading the development and implementation of the Lease Rent Options™ (LRO), the industry's first automated demand forecasting and price optimization system. A former Senior Vice President at Archstone and Executive Vice President at Holiday Retirement, Donald works with C-Suite clients to assess their operational and technology platforms and implement impactful projects.

Chris Brust is REBA's Chief Product Officer and has been creating pioneering business analytics solutions for more than 23 years. Chris is a leading expert on data modeling, data visualization and predictive analytics. He enjoyed a 15-year career at Archstone holding various roles in operations, pricing & revenue management and business intelligence before co-founding ReLuminous LLC in 2013 to provide BI consulting and professional services to the multifamily industry for companies such as AvalonBay, Irvine Apartments, Invitation Homes and Progress Residential. Prior to joining Archstone, Chris served as an Army officer in the Corps of Engineers. Chris earned an MBA from the University of Colorado and a BS in Civil Engineering from the University of Michigan.

Brad Schell is Product Manager for Real Estate Business Analytics (REBA), Inc. Brad oversees the development and implementation of REBA Rent, REBA's new modern pricing and revenue management system. He is passionate about building applications that help revolutionize how the industry uses and understands its data, leading them to save time and money. Prior to joining REBA, Brad worked for The Irvine Company as a Director of Revenue Management and Asset Management and helped design and improve the organization's internal pricing, renewal, and BI tools.

ABOUT REBA

Real Estate Business Analytics is a data analytics company on a mission to change how the multifamily industry uses data. REBA helps leaders ask insightful questions about their business by giving them access to all their data in one central location. We do this by offering a suite of business intelligence, budgeting and pricing & revenue management solutions that gather data & deliver insights so you can make better decisions, faster. With REBA, you can eliminate Excel hell, bad data, excess cost, and analysis paralysis with tools built by multifamily for multifamily.