DUCKER CARLISLE

US Construction Industry Analysis

Contracting Demand, Economic Headwinds

Updated Analysis & Outlook for 2023-2026

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Founded in 1961, Ducker Carlisle is a global market research, strategy consulting and M&A Advisory firm that delivers custom, industry-centric solutions which improve client performance and enable business growth across complex markets.

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- Inclusivity
- Collaboration
- Commitment

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Building & Construction Team

As leaders in strategy and insights across industries, we transform data into action and turn ideas into innovation.

Our accomplished building and construction team has the trust and confidence of business executives and deal-makers around the world.

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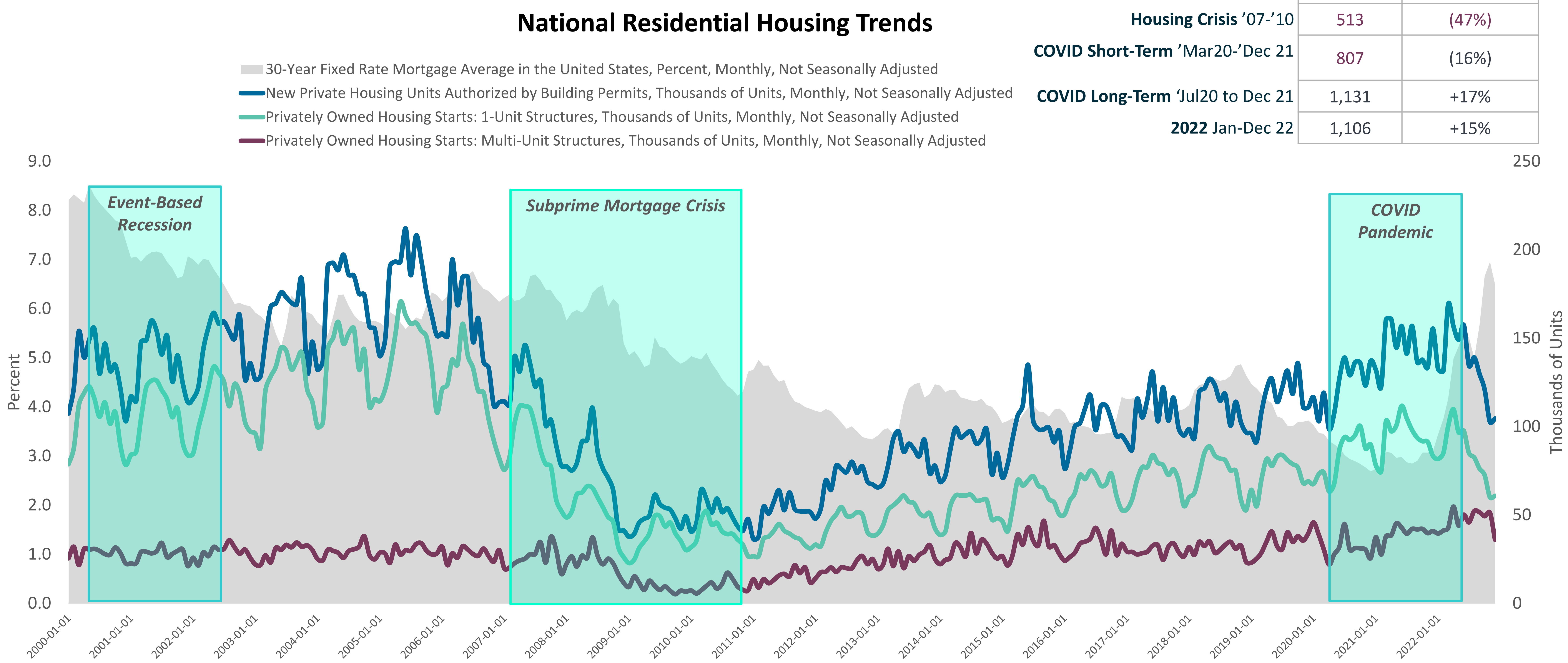
Senior Engagement Manager

Prior high level of new housing backlog has protected builders and levels of completions through 2022 but sharp fall in starts and reduced backlog is feeding through the construction cycle.

	Av SF starts '000	Vs. average since 2010
Average '10-22	965	-
Housing Crisis '07-'10	513	(47%)
COVID Short-Term 'Mar20-'Dec 21	807	(16%)
COVID Long-Term 'Jul20 to Dec 21	1,131	+17%
2022 Jan-Dec 22	1,106	+15%



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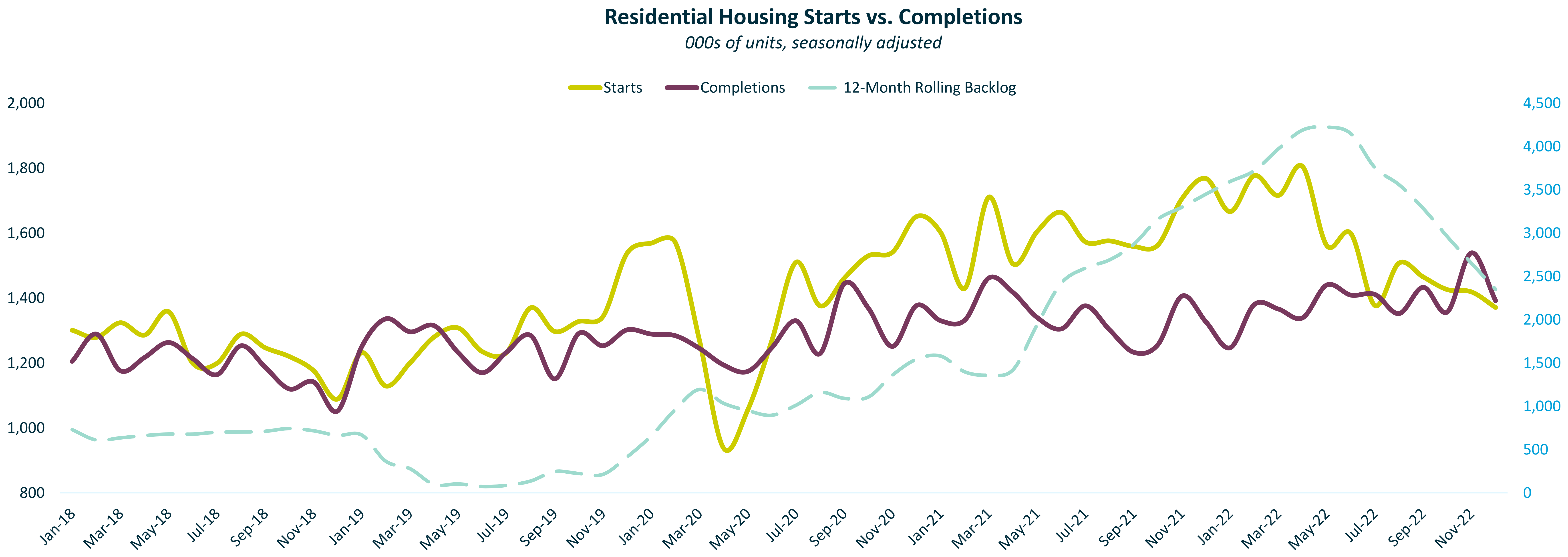
The gap between housing starts and completions narrowed by the end of 2022; the existing backlog, which was halved from its peak in the middle of the year, is still at a historically high level though continuing to decline.

In 2022, over 2 million new households were formed in the US which outpaced housing starts and widened the existing supply gap by an additional 500,000 units.



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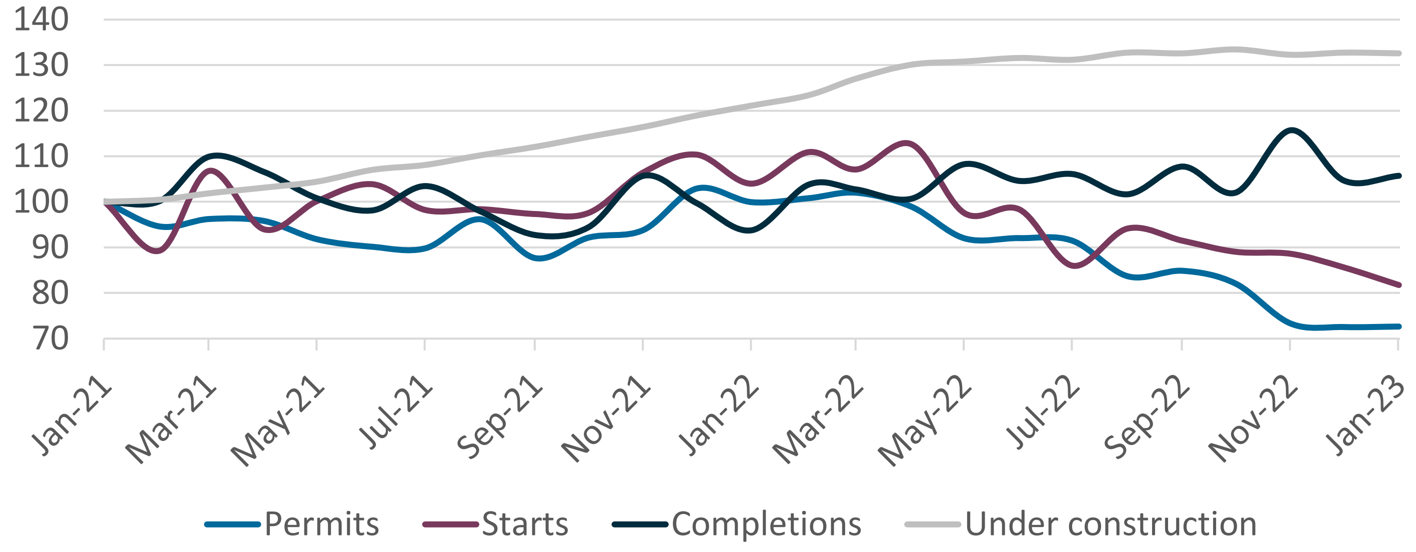
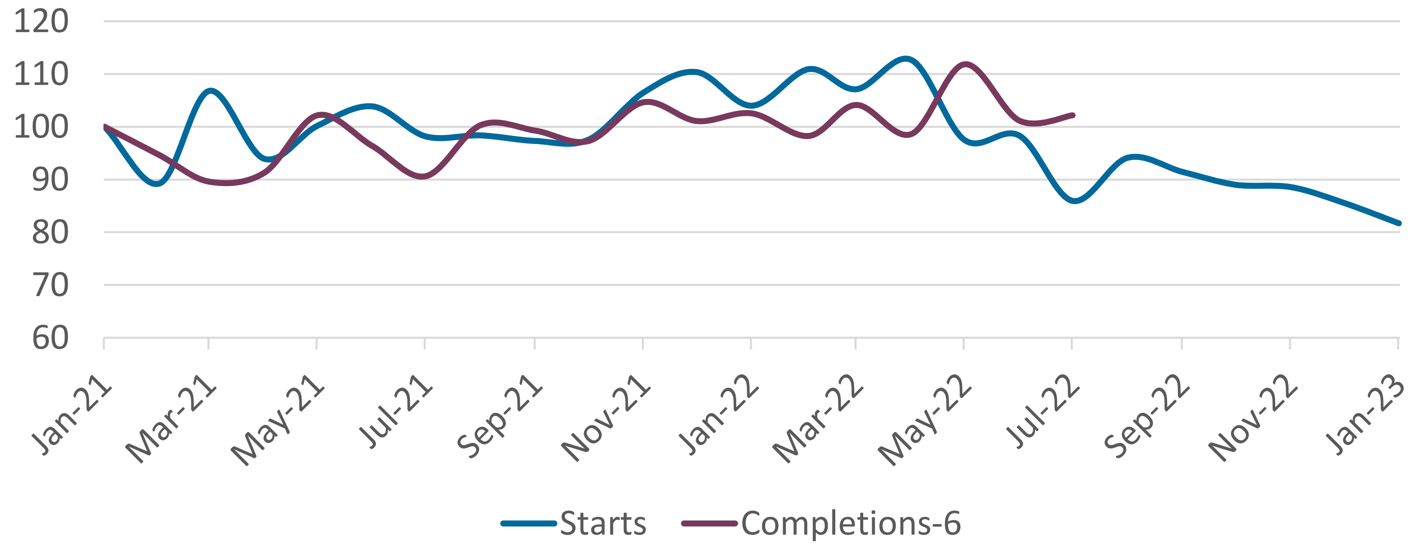
2023 housing starts forecasted to experience sharp decline, with variability in order of magnitude; single family to rebound in 2024 while further decline forecasted for multifamily.

Average six-month cycle from starts to completions – longer for multifamily- provided demand buffer for suppliers through 2022

Monthly New Housing Activity - Indexed to Jan 21

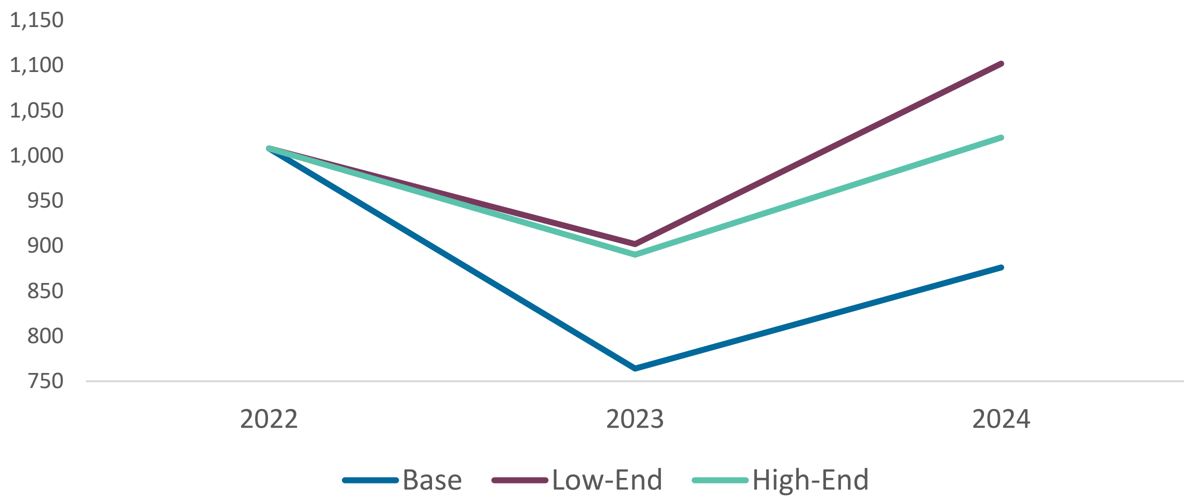


Starts to Completions w/6m lag



Single Family Housing Starts Scenarios

(in thousands)



Single Family Housing Starts ('000)	2022	2023F	2024F	2022F to 2023F	2023F to 2024F
Fannie Mae	1,008	764	876	-24%	+15%
MBA	1,008	902	1,102	-11%	+22%
NAR	1,008	890	1,020	-12%	+15%

Multifamily Housing Starts ('000)	2022	2023F	2024F	2022F to 2023F	2023F to 2024F
Fannie Mae	545	416	344	-24%	-17%
MBA	545	495	432	-9%	-13%
NAR	545	520	510	-5%	-2%

Sources: Ducker Analysis, Fannie Mae, NAHB, MBA, NAR, WSJ Economic Forecasting Survey, Market Feedback

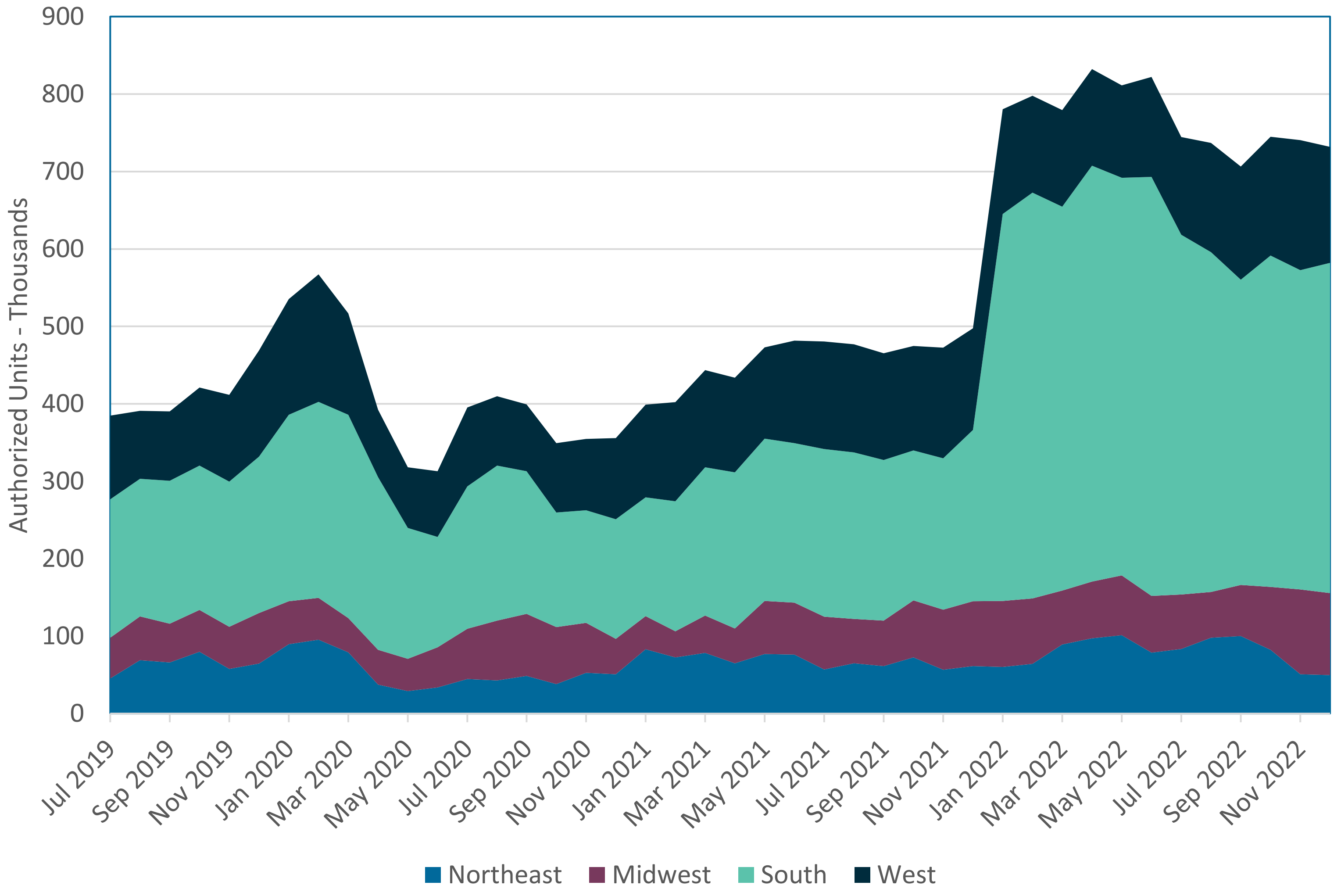
Double-digit growth of 15 percent in multi-family construction largely offset an 11 percent decline in single family starts, with longer cycle creating some continuity.

The relative growth of multifamily, outperforming single family, has been a long-term structural trend driven by affordability and lack of entry-level single-family homes. The multifamily sector is sensitive to economic recession and monetary environment, but low rental vacancy rates and rising rents gave developers confidence to continue building.

SF, MF Starts Indexed, 000s

Multifamily Starts

Three Month Moving Average



Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

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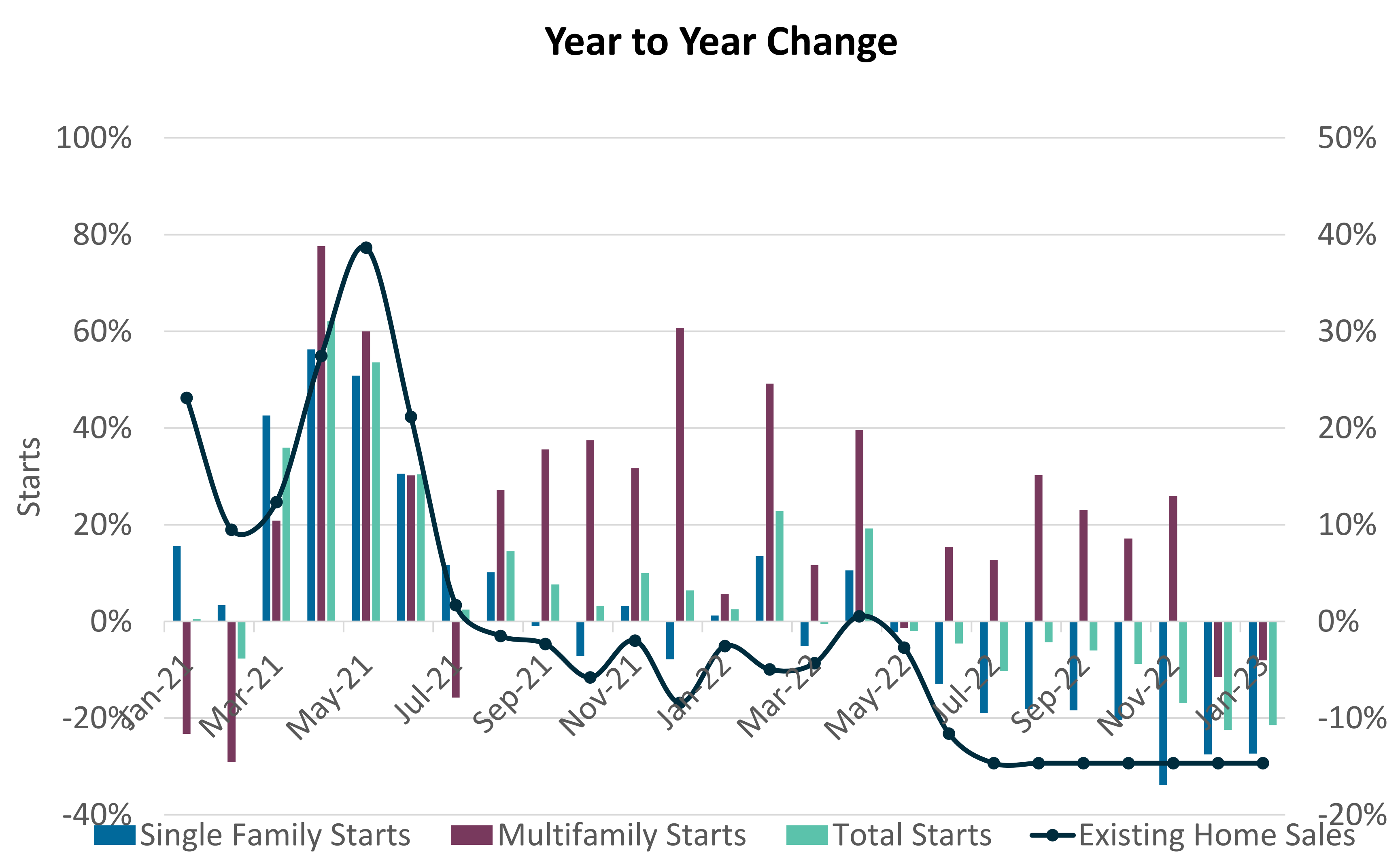
Surge in multi-family construction since the start of Covid has offset recent softening of single-family activity, but late year declines expected to continue into 2023.

Multi-family starts continued to outperform single family for most of 2022 but weakened at the end of the year

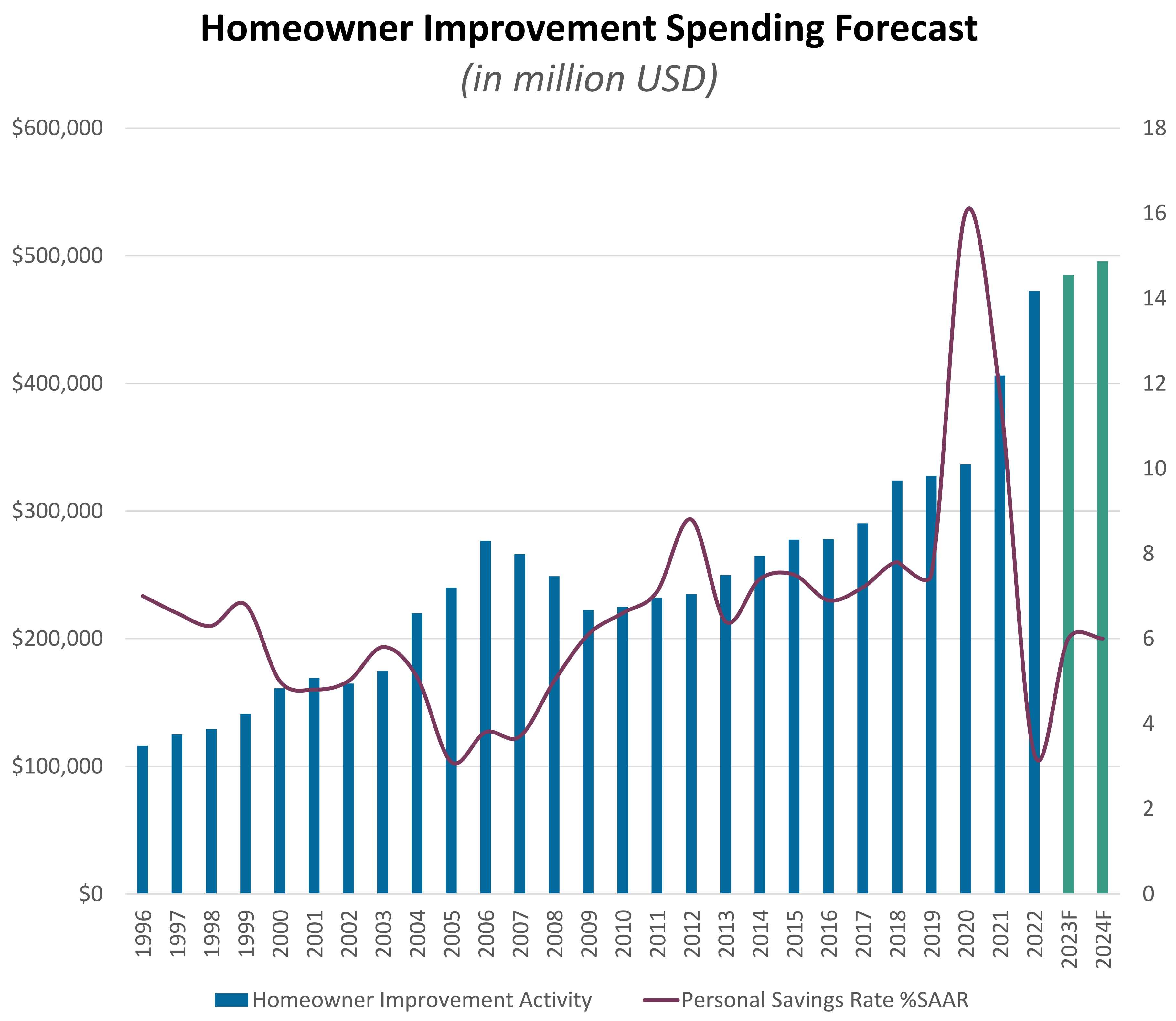


Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

Housing Starts ('000)	2021	2022	change	2023F	change	2024F	change
Single Family	1,127	1,005	-11%	876	-17%	962	+5%
Multi-Family	474	550	+15%	454	-13%	452	-5%
Total Starts	1,601	1,555	-3%	1,330	-16%	1,414	+2%

- Single family starts finished 2022 with 9 straight months of year-on-year decline, and a 11 percent decline over prior year
- Double digit declines in both single family and multifamily starts forecast for 2023, by 17 percent and 13 percent respectively
- Single family starts to recover by 5 percent in 2024 while multifamily to decline by a further 5 percent
- Overall decline of 14 percent in existing home sales in 2022, with further 8 percent decline forecasted for 2023
- Affordability issues due to higher mortgage rates and continued high prices; 55 percent more homes available in December 2022 compared to December 2021, but still below pre-COVID period

2022 saw a surge in remodeling expenditures with growth of 16 percent driven by pricing, representing ~14 percent of the gain; activity is expected to stabilize in 2023 as inflationary price pressure eases.

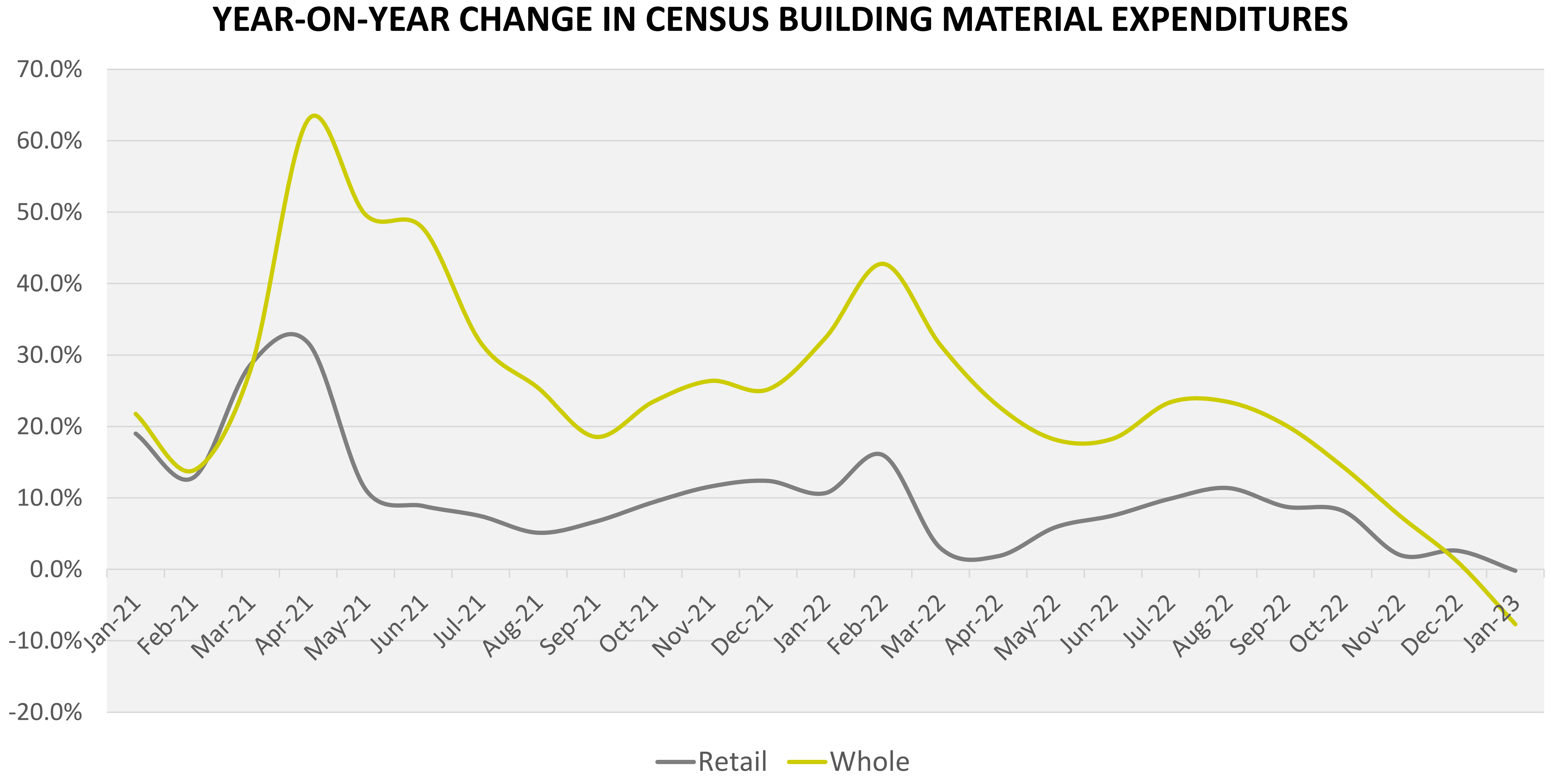


- Personal savings rate dropped significantly to 3 percent in 2022, down from 2020 and 2021 double digit levels
- Expected to return to historical average of 6 percent over next 2 years
- Home price appreciation has driven up home equity to record $31 Trillion, up 5 percent over 2022
- Home improvement spending lags post home purchase (primary and secondary homes – 6M in 2021)
- Interest rate hikes leading to postponement of purchases, switch to existing home improvement

- Inflationary pressures and higher interest rates impacting loans for large projects
- Consumers shifting spending back to pre-COVID norms, re-prioritizing experiences, entertainment, travel
- Interest rate increases, recession concerns reducing consumer confidence

Pricing impacts through both retail and wholesale channels declined through 2022, with some residual but limited impact expected in 2023.

- Wholesale Building Material Expenditures have driven the growth in construction activity in 2021 and 2022 but fell back in 2H, 2022
- Both Wholesale and Retail Material Expenditures reported year-on-year declines in January 2023, with an 8 percent decline in Wholesale

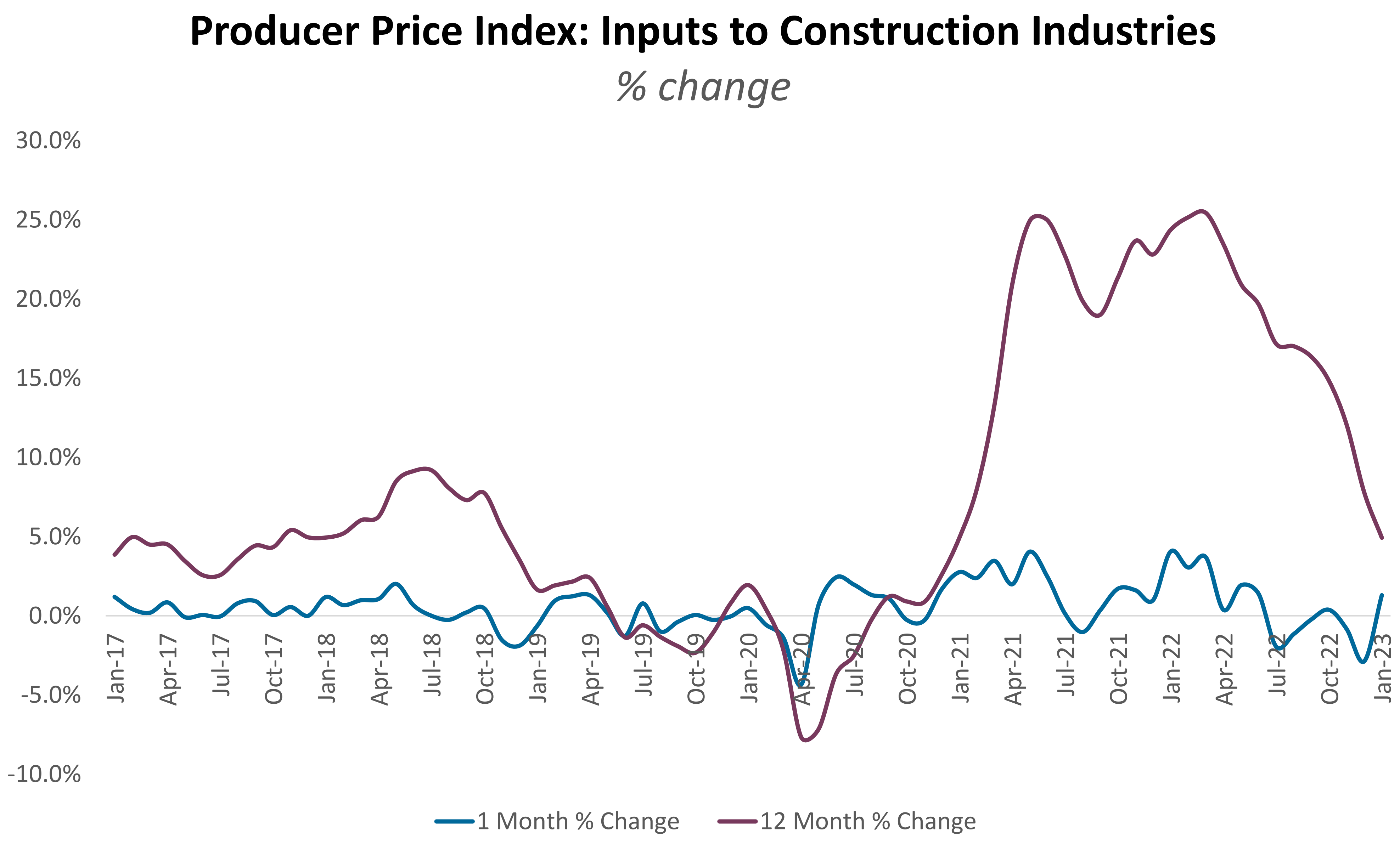


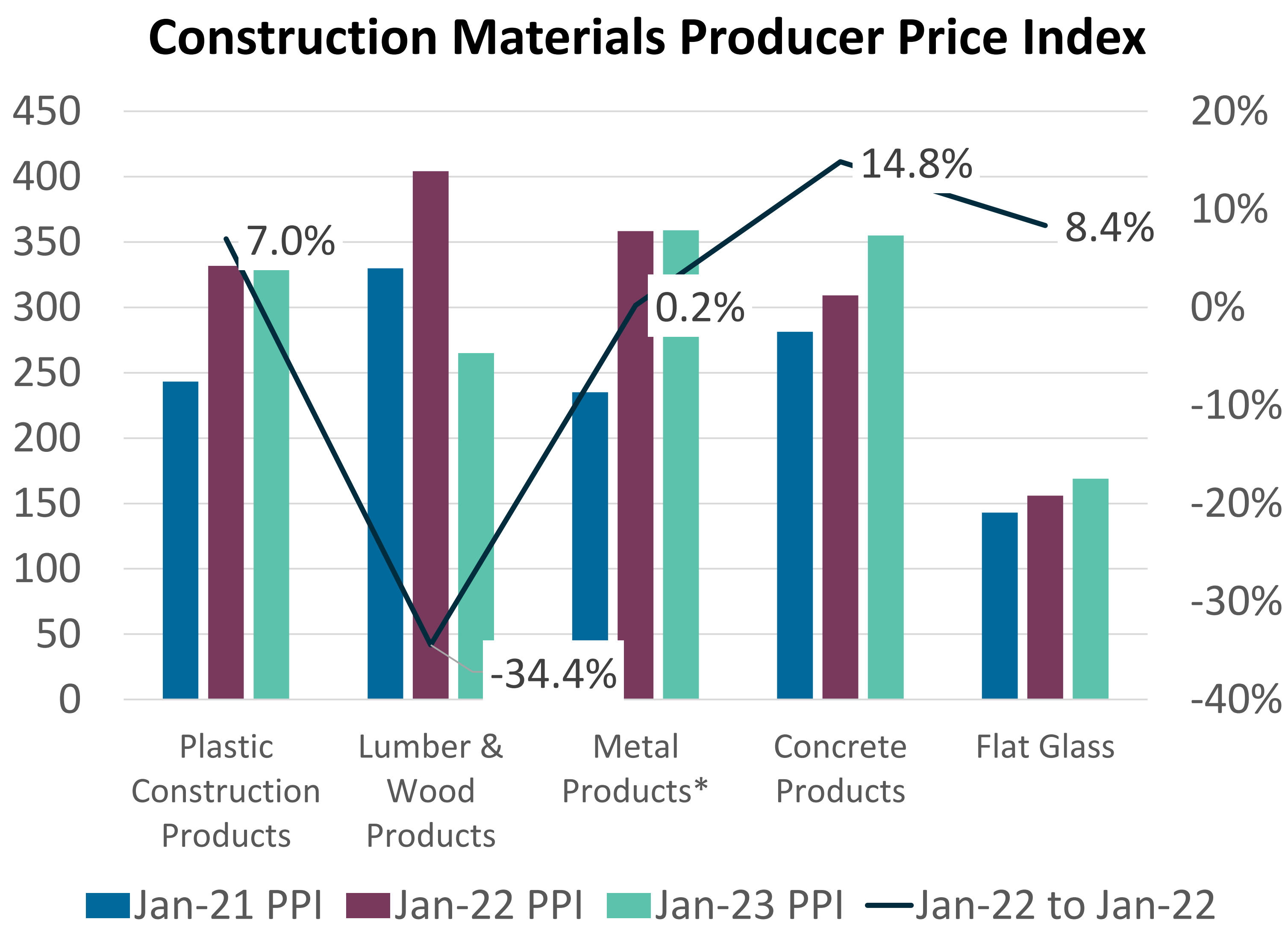
$ Billion	2021	2022	change
Retail Building Material Expenditures	$415	$445	+7%
Wholesale Building Material Expenditures	$221	$267	+21%

- Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

Producer Price Index

- Producer Price Index for inputs to residential construction Jan-22 – Jan-23: **+5%**
- Producer Price Index for inputs to new nonresidential construction Jan-22 – Jan-23 : **+17%**





*Structural, Architectural, Pre-Engineered Metal Products

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Double digit growth in $ expenditures in 2022, moderating to 8 percent growth in 2023

- 2022 growth driven by construction inflation
    - Inflationary impact ~12 percent
- Volume activity flat overall in 2022, with gains in Manufacturing, Commercial
- Manufacturing and Lodging leading growth segments in 2023

Construction PIP $	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast
Lodging	2.1%	11.5%	4.7%	5.8%	10.2%
Office	1.2%	0.1%	-2.8%	-0.2%	3.1%
Commercial	22.0%	5.8%	-3.3%	-3.8%	3.1%
Health care	8.7%	5.3%	3.4%	3.9%	3.9%
Educational	0.8%	2.2%	5.2%	4.4%	3.0%
Religious	-1.2%	-1.7%	2.8%	4.1%	3.0%
Public safety	-7.7%	5.3%	6.0%	4.3%	1.2%
Amusement and recreation	7.1%	6.4%	1.9%	-2.0%	1.7%
Manufacturing	37.1%	20.9%	4.7%	0.5%	-1.3%
NONRESIDENTIAL BUILDING	12.3%	7.4%	1.6%	0.8%	2.3%

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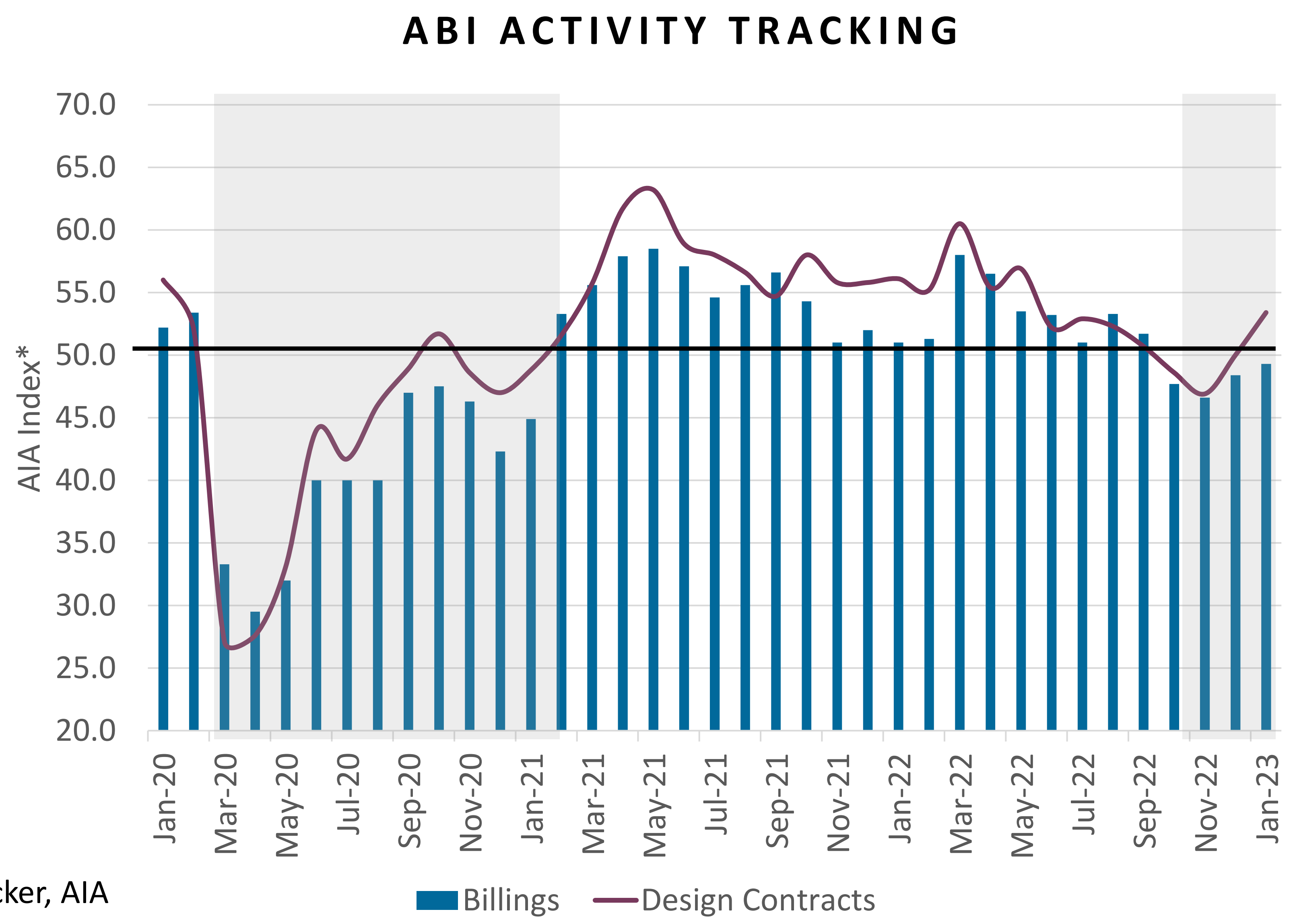
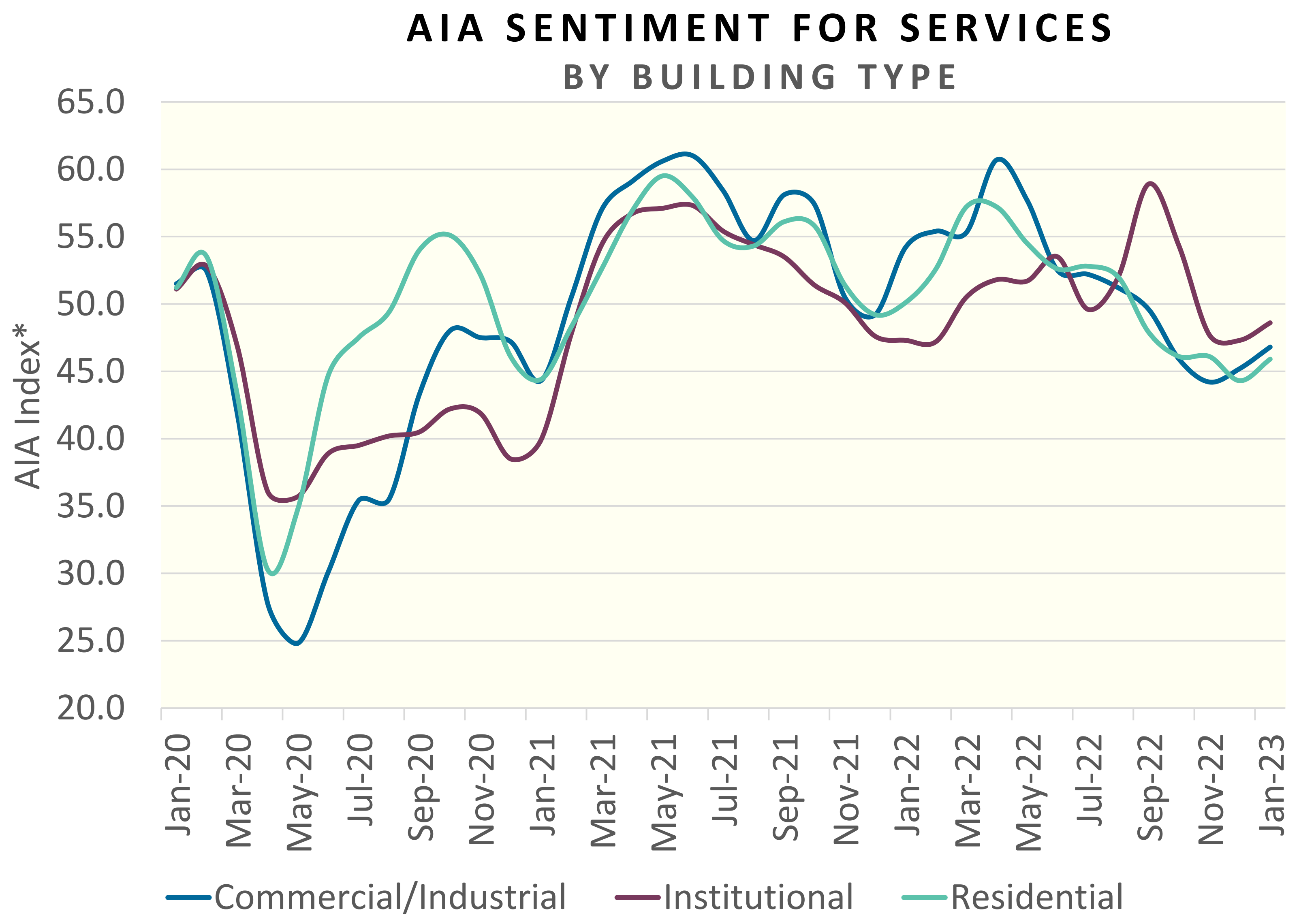
AIA Indicators have softened and fell below 50 Index for the last 4 months of 2022, pointing to expected declines in nonresidential construction in Q4 2023.



Sources: Ducker, AIA



- Softening of Billings and Design Contracts consistent across broad building categories
- Uptick in Design Contracts and Inquiries in latest January release
- Uncertainly across markets has led to delays and “wait and see” approach on a number of projects

*A score above50 indicates an increase in billings from the previous month, and a score below 50 indicates a decline

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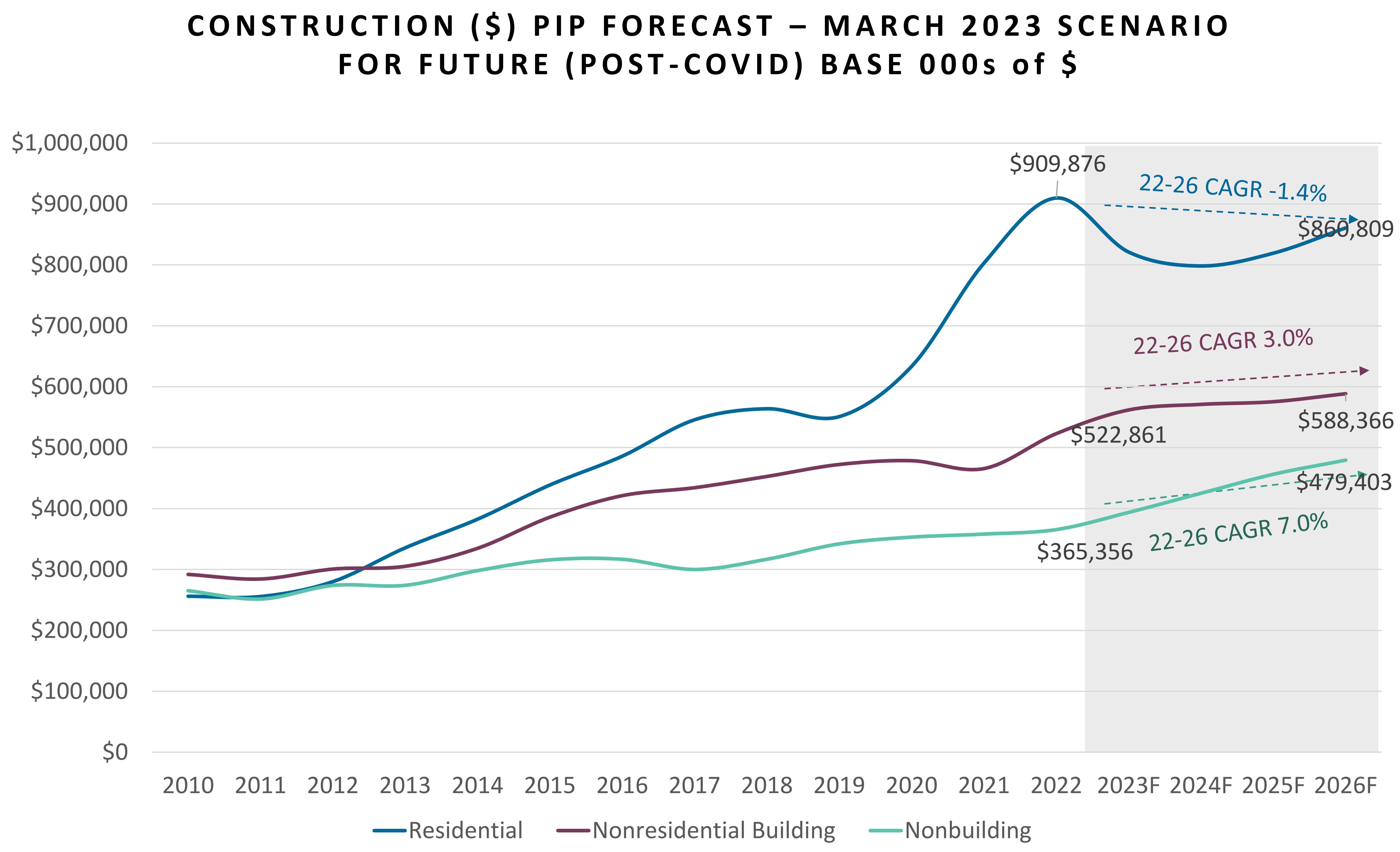
Industry Insights Post COVID



Residential – growth in 2022 $ expenditures driven by construction inflation, flat in constant dollar terms; construction activity at start of 2023 back to same level as Q1 2020 after accounting for inflation. A decline of 10 percent base case for 2023, and further 3 percent decline in 2024 at end of down cycle.

Nonresidential – strong growth in non-residential building starts in 2022 will lead to continued increase in activity with base forecast of +7 percent in 2023. Manufacturing will continue to drive growth, followed by commercial, while the base case for office is flat for the next 3 years.

Infrastructure - starting to benefit from Federal stimulus, significant energy sector investments. Expenditures for highways and bridges up 9 percent in 2022. The Infrastructure Investment and Jobs Act (IJA) allocates nearly $78 billion into construction over the next 5 years

- Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

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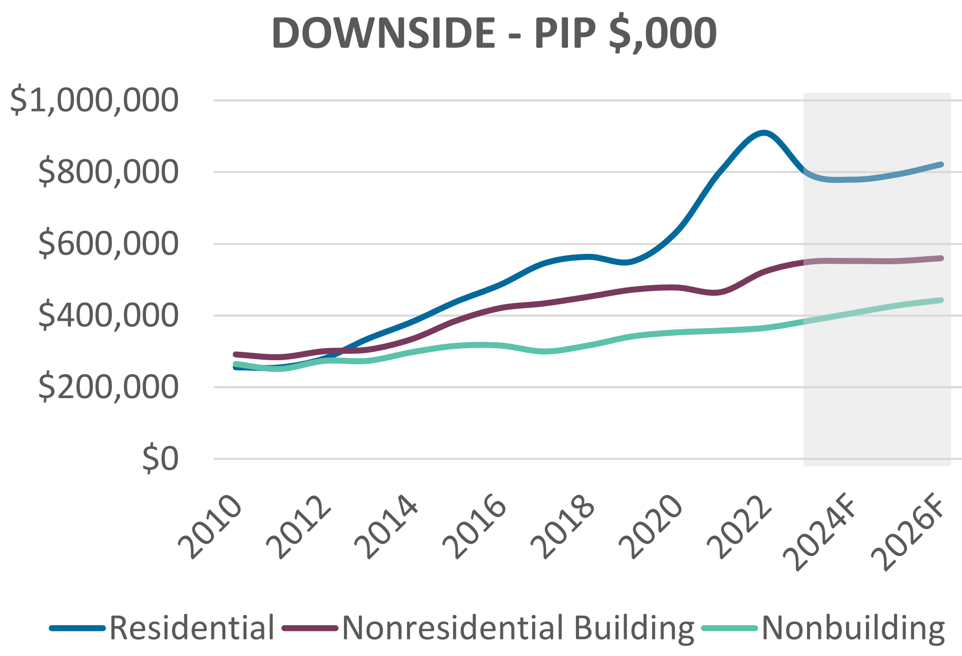
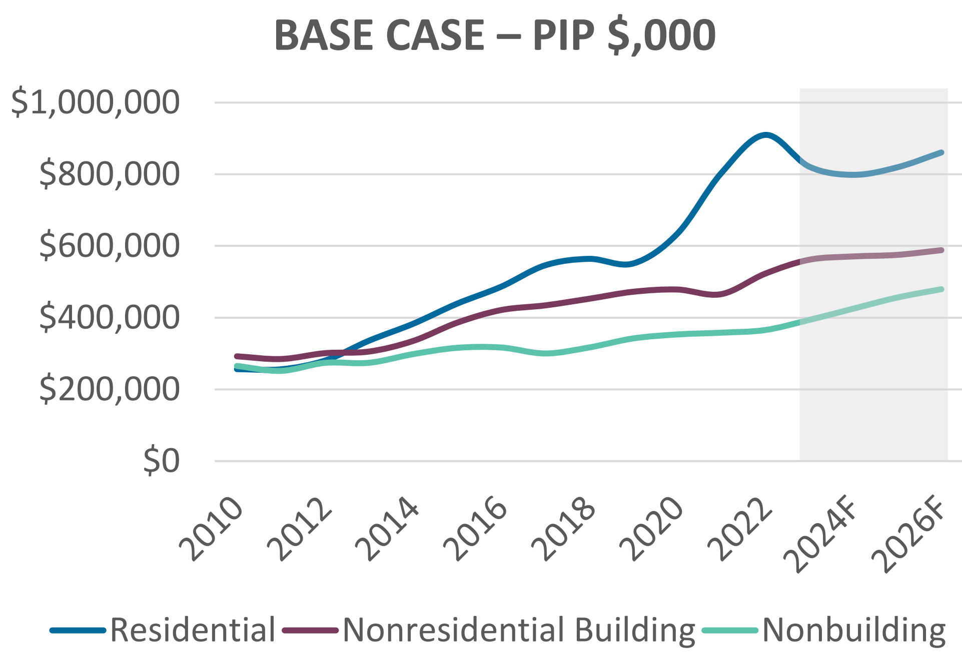
Industry Insights – Forecast Scenarios

CONSTRUCTION ($) PIP FORECAST – MARCH 2023 FUTURE SCENARIOS

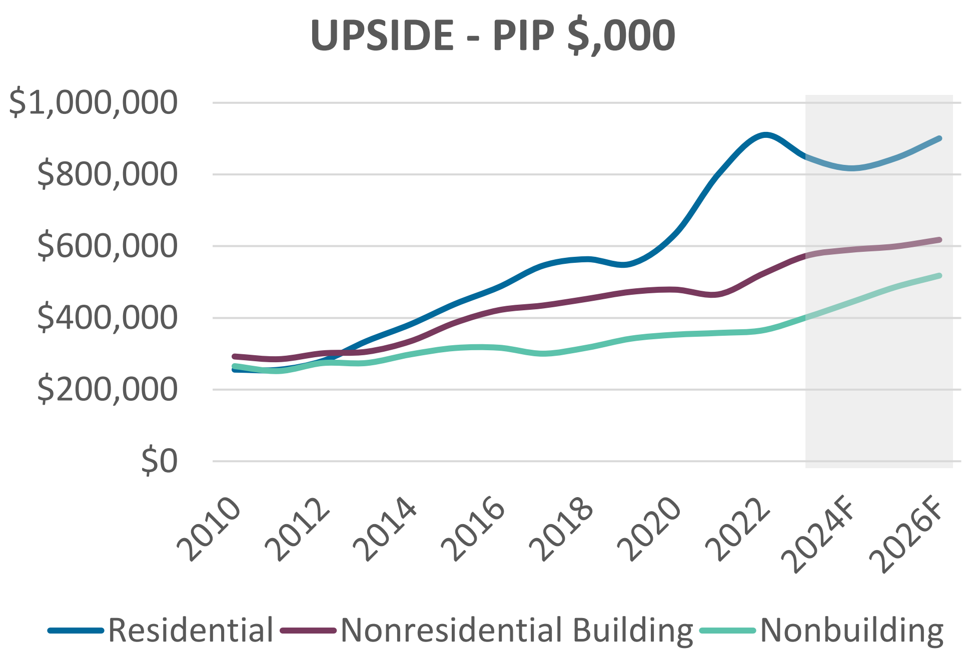
All scenarios show an overall increase in $ expenditures over the next 4 years, with nonbuilding construction leading the way and continued recovery in nonresidential building offsetting a decline in residential activity; a reversal of the last 3 years since COVID. All scenarios show 2024 as low point for residential activity as nonresidential building activity flattens, while nonbuilding activity averages between 5 percent and 9 percent average annual growth.



2022-2026 CAGR	
Residential Building	-2.5%
Nonresidential Building	1.7%
Nonbuilding Construction	4.9%
Total PIP Construction	0.4%



2022-2026 CAGR	
Residential Building	-1.4%
Nonresidential Building	3.0%
Nonbuilding Construction	7.0%
Total PIP Construction	1.8%



2022-2026 CAGR	
Residential Building	-0.3%
Nonresidential Building	4.2%
Nonbuilding Construction	9.1%
Total PIP Construction	3.2%

Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

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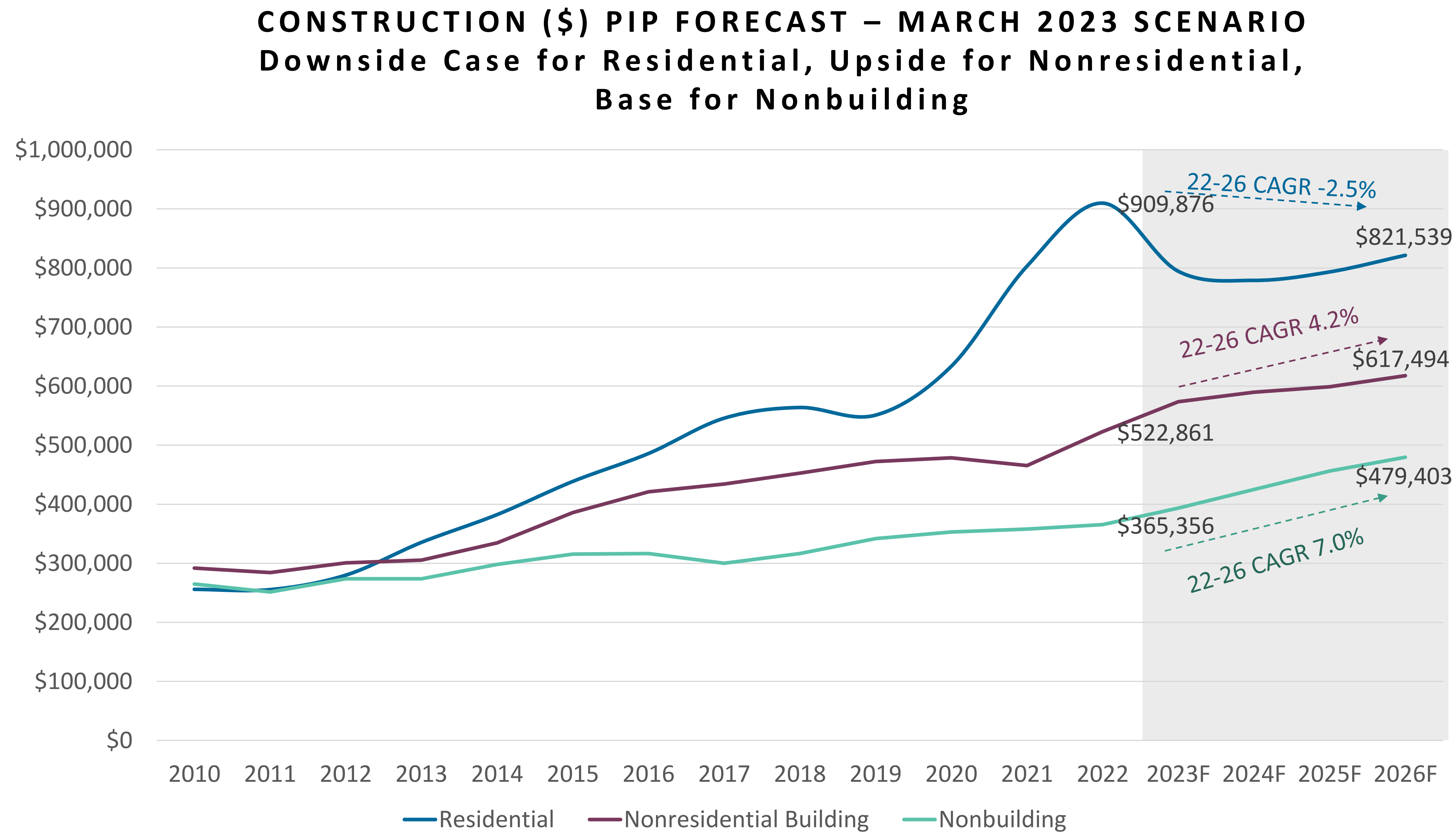
Most Likely Alternative Scenario



Residential – DOWNSIDE – Further interest and mortgage rates increases as inflation continues to exceed targets and Fed unable to achieve soft landing for economy. Recessionary conditions leading to weaker consumer spending including home improvement.

Nonresidential – UPSIDE - Non-residential construction exceeding forecasts to start 2023 – January up 23 percent over prior year - and 2023 expenditures hit double digit growth.

Nonbuilding – BASE – Government funding in position to sustain strong growth forecast; infrastructure spend tends to be more insulated from overall economic shifts relative to other construction segments.

Sources: Census, NAHB, AIA, FRED, CBRE, HUD, NAR, Ducker Interviews and Expertise

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Industry Trends to Look For in 2023

ACCELERATING PACE OF GREEN BUILDING

- The Inflation Reduction Act appropriates $1 billion to the DOE to accelerate energy-code adoption
- New and expanded tax incentives for increased energy efficiency in commercial building and energy saving products
- Customers and investors driving corporate ESG initiatives to address carbon emissions, recycled material, renewable designs

SUPPLIERS ADJUSTING TO LOWER RESIDENTIAL CONSTRUCTION LEVELS

- Distributors and manufacturers optimizing supply, inventory and procurement targets to manage excess inventory supply
- Production levels and purchase levels resetting to better align with lower demand levels
- Shifting supplier focus to renovation market
- Continued advances in digital tools and platforms to simplify design and purchasing experience

INNOVATION FOCUS ON HEALTH AND SAFETY

- Product innovation to improve health and fitness, safety and security, accessibility, functionality and comfort
- Examples include air quality and water quality solutions, tunable lighting, and acoustic comfort
- Continued drive to smarter, connected homes, and increased use of technology, such as smart electric panels and EV chargers

CONTINUED INDUSTRY CONSOLIDATION

- Building material supply and distribution continues to consolidate for scale and diversification
- Corporate M&A activity strengthened by high levels of profitability
- Contractor services, specialty dealers and distributors gaining attention

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The Ducker Carlisle Advantage

A robust continuum of Global services and capabilities backed by decades of experience and proprietary data which optimize client growth and performance

Decades of Experience	We have seen and experienced the cycles and challenges our clients face and provided real solutions for over 60 years
Best in Class Insights	From proprietary data sets and company owned conferences to full scale research and advance analytics capabilities, we have the best data for improving your business
Global, Industrial Expertise	Company owned offices and tenured teams located in the major geographies serving 6 leading industry segments
Full Continuum of Services	Integrated services and a client centric approach to inform, optimize, plan, execute and acquire
Track Record of Performance	Successful M&A support outcomes to operational improvements that save millions of dollars, our teams deliver meaningful results

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