



America's Cement Manufacturers™

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## Spring Forecast 2023

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# MARKET INTELLIGENCE

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## Spring Forecast 2023

### Introduction

PCA expects cement consumption will decline modestly in 2023. The expected decline, however, is from rather robust total cement consumption levels. If it materializes, it will be the first decline in 14 years. According to our view, the private sector is expected to cool under the weight of higher interest rates. The anticipated gains in public construction activity accrued to the infrastructure program (IIJA) are expected to be late in coming and modest. While these gains in the public sector are welcome, they will not be enough to offset expected weakness in the private sector.

This weakness is not expected to immediately translate into softer cement consumption. Most cement producers face strong backlogs. These backlogs must be burned off before cement consumption growth recedes. This suggests a cushion exists between weakening demand in construction activity and cement consumption.

The timing of the dissipation of these backlogs represents considerable risk to our near term forecast projections. Last year for example, the economic and construction fundamentals deteriorated. Real construction spending declined nearly 5.5%. Typically, that would result in a similar decline in cement consumption. The presence of tight market conditions and strong backlogs cushioned cement consumption from a decline. Cement consumption grew by 2.5%<sup>1</sup> - reflecting a 8% disconnect from historical relationships between construction spending and cement consumption.

Current order books seem to suggest strength for the next six months. PCA does not expect a sustained weakening in cement consumption will materialize until the second half of 2023. Increasingly, it is likely that some of the expected weakness in cement consumption will leak into 2024. The presence of tight market conditions and strong backlogs and the rate at which they are burned off are hard to estimate and suggests the potential for upside risk to our 2023 forecast projections.

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<sup>1</sup> **UPDATE:** Forecasts are based on the latest available data. USGS is the final source United States' cement consumption. USGS reporting, based on industry surveys, often lags three months. At the time the Spring forecast was presented in Las Vegas, December data was not available. In addition, the USGS revised October and November shipments downward by more than 1,000,000 metric tons. This resulted in a 2022 growth revision to 2.5% compared to the 3.4% reported at the forecast presentation. These adjustments are historical. PCA maintains the same volume for 2023 as presented at the Spring Meeting. Since the base (2022) has changed due to reporting, the percent decline expected is less than previously reported (3.5% decline versus a 4.3% decline presented). All tables attached reflect current data.

## The United States' Economic Outlook

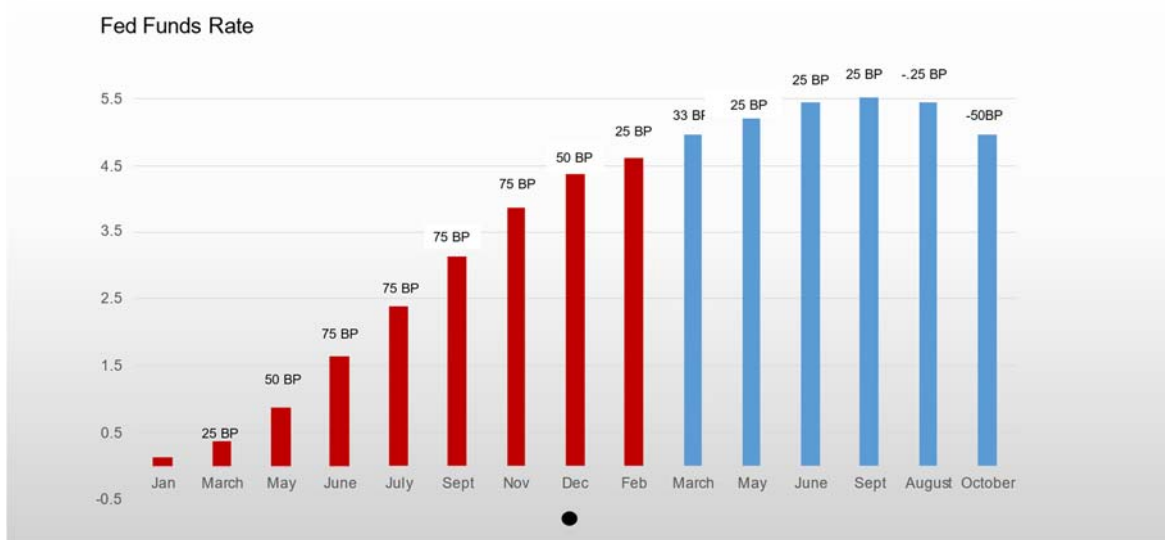
The economic outlook for 2023 will be largely determined by the path of inflation and the Federal Reserve's actions to reduce it. The Covid pandemic disrupted supply chains and gave rise to supply-side inflation pressures. In response to the dramatic disruption in the economy (20 million briefly unemployed), the Federal Reserve engaged in an aggressive push to expand the money supply. This stimulus was compounded by rather broad covid relief spending programs by the federal government. The combination of stimulatory monetary and fiscal policies generated strong demand-side inflationary pressures.

Inflation, measured by the Consumer Price Index, topped 9% in mid-2022. In response, the Federal Reserve tightened monetary policy. Beginning in March 2022, the Federal Reserve increased the Federal Funds rate. It followed that rate hike with seven more – boosting it from nearly zero to 4.75%. These policy actions, coupled with some easing in supply constraints, resulted in eight successive monthly declines in the inflation rate. Inflation has declined from its summer peak of 9.1%, to a rate of 6.0% in February.

Progress on taming inflation has been slow and remains well above the 2% target of the Federal Reserve. The path toward the 2% rate is generally expected to include a slowdown in overall economic growth and characterized by greater weakness in the labor market. The economy, however, has proven resilient to monetary policy tightening.

The economy's growth over the last two quarters has averaged 3% growth. During the past three months more than one million net new jobs have added to America's payrolls. The unemployment rate has declined. Labor scarcity remains an issue and worker wages have risen moderately.

## Federal Funds Outlook



Many factors may account for this resiliency. Consider the following:

- Labor markets are structurally tight. Structurally tight labor markets have been around for at least a decade. Retirements, slower growth in the labor force, tighter immigration laws, and the lack of emphasis on trades all contribute to the tightness. These factors offer resistance to inflation reductions and do not quickly disappear in the context of monetary policy tightness.
- Covid relief fiscal policies strengthened consumer balance sheets. This enabled a draw down of debt and added a huge cushion for savings. This large savings cushion, while gradually eroding, still exists and enables consumers to better resist the effects of high inflation and rising interest rates. By our calculations, this savings cushion will remain in play until the second half of this year.
- Monetary policy has long and uncertain time lags between the initiation of the policy actions and its full impact on the economy. Keep in mind, the recent monetary policy efforts are not constrained only to increases in the Federal Funds rate. It has also included a draw down in Federal Reserve' balance sheets and the economy's money supply. Each of these impact economic growth presumably with different transmission mechanisms and lag time. PCA believes the monetary policy lag structure favors a later impact than previously believed.

Economic resiliency has prompted an even more aggressive tact by the Federal Reserve. The terminal rate has been elevated - compared to 4.5% in the Fall Forecast. A tighter monetary policy stance suggests more adverse consequences.

Relatively favorable conditions are expected to turn sour during 2023. Long time lags typically characterize monetary policy initiatives. This makes the precise impacts of these policy initiatives difficult to calibrate. According to economic studies, the lag between start of the policy initiative and its' maximum potential impact on economic activity is as long as 18 months. This implies two things including;

- We have yet to see the full brunt of the policy actions already undertaken, and
- It is likely that the full adverse brunt of monetary policy actions already undertaken will materialize during the second half of 2023 and early 2024.

With the onset of the full effects of monetary policy in place, real GDP growth is expected to average near zero during the second half of 2023 and into the first quarter of 2024 (qualifying it for some people's definition of a recession). Job losses are expected to materialize during this time. Unemployment is expected to peak at 4.6%. Inflation declines to 4% by year end.

The growth slowdown is expected to be mild. With the demand decay associated with this mild downturn, inflation shows a clear path of sustained decline toward the Fed target rate. Inflation premiums attached to long term loans, such as mortgage rates, shrink. By mid-to-late 2024, the Fed gradually reduces its Federal Funds rate – signaling a turning point in monetary policy. The economy, at this point, is characterized by easing inflation and interest rates.

## Post-Forecast News: Bank Meltdowns

After the forecast cycle was complete news of Silicon Valley's Bank (SVB) demise materialized. Based on information understood at this time, SVB's demise was brought about largely by poor risk and portfolio management at the bank, and perhaps poor oversight by regulators. At this time it is believed that a contagion of bank runs is unlikely. The Fed's decision to back depositors probably reduces the likelihood even further.

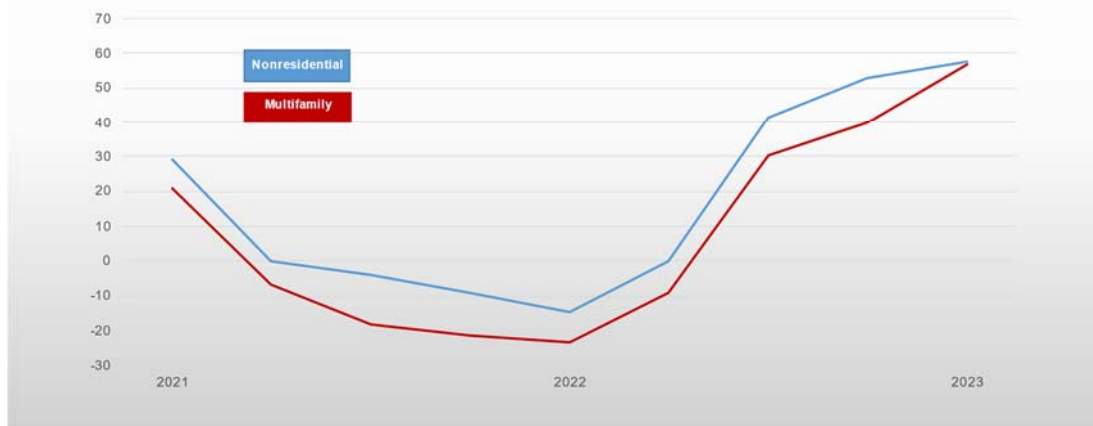
The SVB event will likely prompt a more conservative lending profile among the banking system. Banks as a whole may interpret the current environment containing more risk than previously thought. Tightening in lending standards may become more severe. Some calculate that this acts as an equivalent of as much as two percentage points onto the Federal Funds rate. Recognizing this, the Federal Reserve may not raise rates as aggressively as previously thought. In any case, the credit costs and availability are likely to slow the economy and construction activity.

Some suggest a fallout from this bank crisis may be a more severe credit tightening among smaller regional banks. These banks are active participants in commercial real estate and development. If this materialized, construction activity could face an additional negative.

As a whole, the bank system is believed to be in very strong condition. The recent bank failures are believed to be unique, and not reflective of the banking system as a whole.

## Lending Standards: Survey of Bank Lending Officers

, Percent Tightening Standards to Qualify for a Loan



## Implications for Construction

Private construction activity is greatly influenced by interest rates. Federal Reserve policy, coupled with inflation expectations, form the basis for long term residential and commercial construction loans. In addition, high inflation, coupled with the prospects of cooling labor markets, suggest the potential for higher risk premiums added to those loans. Furthermore,

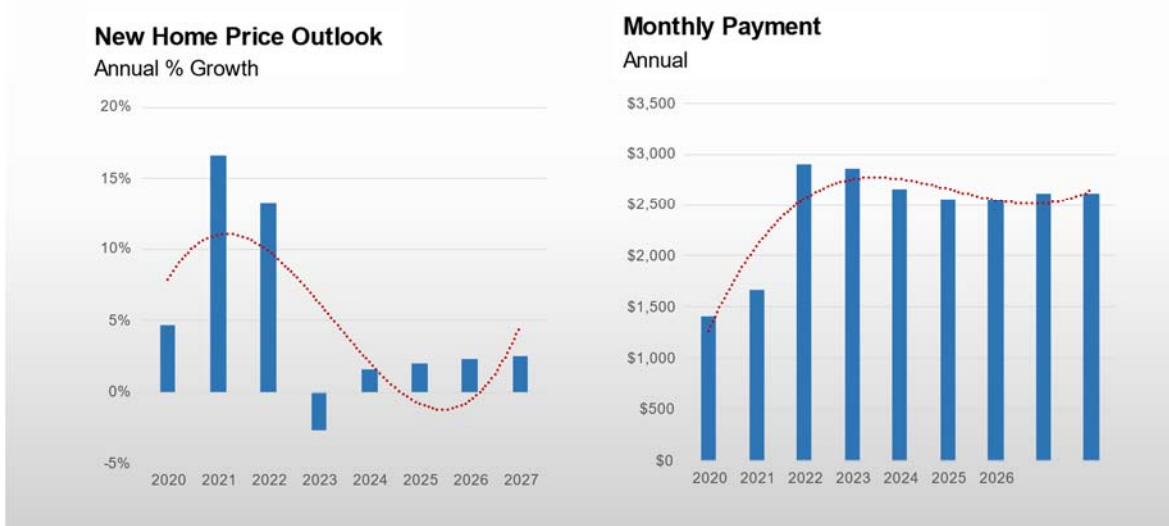
banks are tightening standards for commercial loans - the first time since the 2008 “Great Recession”.

The combination of higher interest rates and tighter lending standards suggests strong headwinds facing private sector construction. PCA expects these adverse economic conditions for both the residential and much of nonresidential construction will result in negative growth rates during 2023 and into 2024. As those conditions turn, and interest rates ease in the second half of 2024, the private sector is expected to recover.

Job growth is expected to remain relatively strong through the first half of 2023. This is coincident with fiscal year 2023 (September through August). With strong hiring, state revenue conditions improve and support higher levels of state spending, including construction activity. Given a year lag between revenue collection and spending, this implies that fiscal conditions are supportive of state spending conditions through fiscal 2024. This, coupled with the prospects of increased spending materializing from the Infrastructure and Investment Jobs Act suggests a mildly favorable public construction spending outlook.

Construction markets during 2023 will be marked by these divergent trends reflecting weakness in private construction segments and the emergence of modest strength in public segments. The overall direction of growth for the year will be determined by the strength of each opposing force. Consider the following assessments of each sector.

## New Home Affordability



## Residential Construction

### Single Family

Single family starts declined nearly 11%% during 2022. Unfortunately, PCA expects further declines will materialize in 2023. The factors behind this expected decline include:

- **High new home prices are high.** Since the pandemic nationwide home prices increased on a sustained and aggressive basis. In 2022 alone, home prices increased 16%. While the rate of increase has slowed, and may record outright declines this year, they remain high (37% above pre-pandemic levels) and a hinderance to affordability.
- **Relative price movements tilt against new homes.** PCA expects existing home prices will record moderate declines this year (-4.5%) as a result of higher mortgage rates. The decline for new home prices are expected to be less severe (-2.7%). Homebuilders must pay for scarce labor, inflated materials, stringent codes, and high site costs. These factors limit the rate at which new home prices will likely decline.

New homes compete against existing homes. More aggressive price discounting on existing homes will come at the expense of new homes sales. This relative price movement can result in some added weakness to the single family starts (new homes) outlook.

- **Mortgage rates are high.** At least some of this rapid escalation in prices that materialized during the last two years was a result of low mortgage rates. Things changed. High inflation rates, Federal Reserve actions in raising the Federal Funds rate and reduced support in Federal Reserve balance sheets for mortgage backed securities all contribute toward the creation of adverse mortgage rate environment.

Mortgage rates essentially doubled during 2022 rising from 3% to more than 6% – reflecting roughly a 300-basis point increase. While inflation premiums attached to long term mortgage rates, will begin to ease, PCA expects these declines will be delayed and modest. Mortgage rates are expected to remain near 6.5% to 6.75% throughout the year.

- **New home affordability has eroded.** The combination of high mortgage rates laid atop of high new home prices has resulted in a dramatic increase in the average new home monthly payment. Since 2020, the average new home monthly payment has doubled.
- **Lending standards are tightening.** Heightened recession risks have added to banking risks. According to the Federal Reserve's Survey of Lending Managers, lending standards have tightened for a series of bank loans – including mortgages.

## Multifamily

Multifamily construction is expected to remain near record high levels. The erosion in single family home affordability is expected to push some would-be buyers to condo or townhouse construction. Furthermore, some would be buyers will stay renting. Each of these factors supports multifamily construction.

Rapid multifamily construction has materialized during the last two years – adding to overall supply. While vacancy rates are low, they are expected to rise modestly over the next 18 months. With this, rent prices are beginning to slow. At the same time, inflation driven maintenance costs are rising. Net operating costs are expected to ease. These trends are reflected in many multifamily REITs and is expected to lead to less investment.

The prospect of recession adds further to the sector’s uncertainty. This outlook unfolds in the context of tighter lending standards by banks. Combined, these factors suggest a decline during 2023, from record 2022 levels. This downturn is expected to be short-lived with a modest recovery materializing in 2025 and beyond.

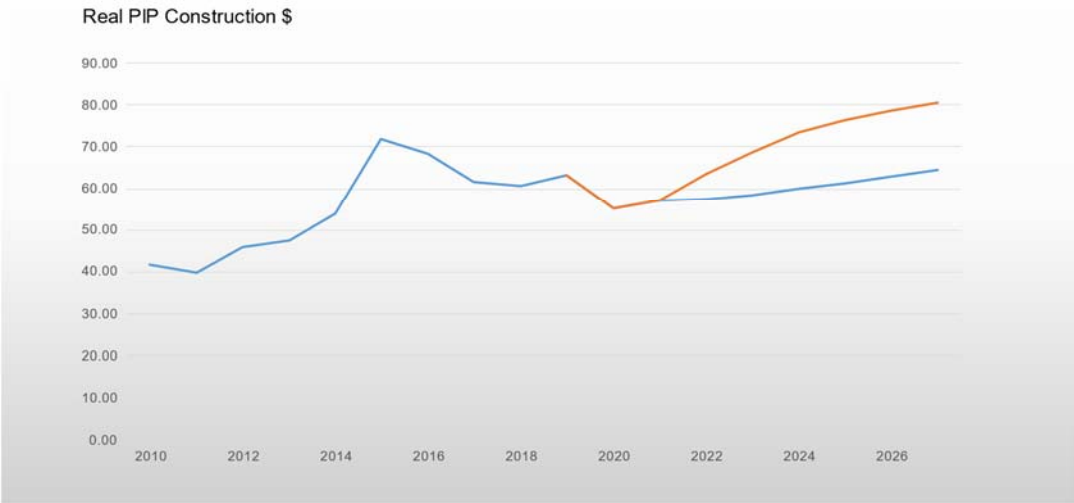
### Nonresidential Construction

Many sectors of nonresidential construction have not begun their recovery from the Covid shock in 2020. At that time, bankruptcies accelerated and these businesses shed their space onto the nonresidential market. Some regional markets have yet to absorb this venting of commercial space. The process of recovery in nonresidential construction is ongoing. This, coupled with a tightening in commercial bank lending standards are expected to work to depress nonresidential construction during 2023.

Once an economic recovery develops, the nonresidential recovery may be muted. Covid accelerated existing trends impacting nonresidential construction activity. E-retail, for example, reduces the need for big box retails and increases the need for warehousing. Work at home reduces regular office workers and arguably the need for total office space. With the explosion in the use of virtual meetings, the incidence of face-to-face meetings may be reduced. This implies less travel and less hotel stays – reducing hotel construction. Similar arguments can be made for virtual learning and its impact on education construction. All totaled, PCA believes these structural trends will soften the recovery associated with nonresidential construction as the economy recovers in 2024 and beyond.

Covid also brought to light the fragility of the US supply chain. Some of this fragility has materialized due to a reliance on global manufacturers. Seeking to reduce risks, some manufacturers have begun to build facilities in the US – thereby replacing the risks associated with foreign suppliers. Arguments for localized production of key products, technologies, and materials has also been supported by national security arguments. Finally, some argue that the United States’ must invest in high-profile research and development efforts to assure stronger long-term economic growth.

### Industrial Forecast Adjustments





To these ends the Biden Administration has pushed two programs, the Chips and Science Act and the Inflation Reduction Act. Combined these programs are expected to add to nonresidential cement consumption.

PCA's Spring forecast reflects these trends and by 2027 show \$25 billion more in spending than the Fall forecast. In some cases, these plants are huge and require substantial cement. In some cases, and on a regional basis, this demand can go a long way in offsetting other sectors of nonresidential weakness

## **Public**

Public sector growth is propelled by state, local and federal finances. The stronger the finances, typically the stronger public sector cement consumption. State and local finances are in good shape entering 2023. A new hire is a new taxpayer. The large additions to payrolls over the past two years have increased state income and sales tax revenues. The outlook for general funds is solid. The National Association of State Budget Officers (NASBO) expects sound finances and has revised its spending forecast upwards to 6.7% from 4.3% increase in 2023 based on higher expected revenues. As employment conditions weaken in 2023, so will state revenues. This suggests a modest weakening in general fund revenue growth in fiscal 2024 and potentially materializing in slower spending in fiscal 2025.

The public sector focus, however, is on the Infrastructure Investment Jobs Act (IIJA). PCA expects the program will propel growth in the public sector. The IIJA is a five-year \$1.2 trillion commitment to enhance the United States' infrastructure. Some of the spending includes extending existing programs. These aspects of IIJA helps maintain cement consumption at past levels. New initiatives represent \$550 billion. This portion represents growth in cement consumption.

PCA went through the IIJA line-by-line and identified nominal spending amounts. Nominal spending amounts were deflated by historical put-in-place cost patterns. This spending was then categorized by type of construction activity. Unique cement intensities were applied to each type of construction. This process yielded an estimate that the IIJA would add considerable cement consumption tonnage during the life of the program.

While the outlook for public construction is optimistic, there are factors that moderate the outlook for public construction. Consider the following:

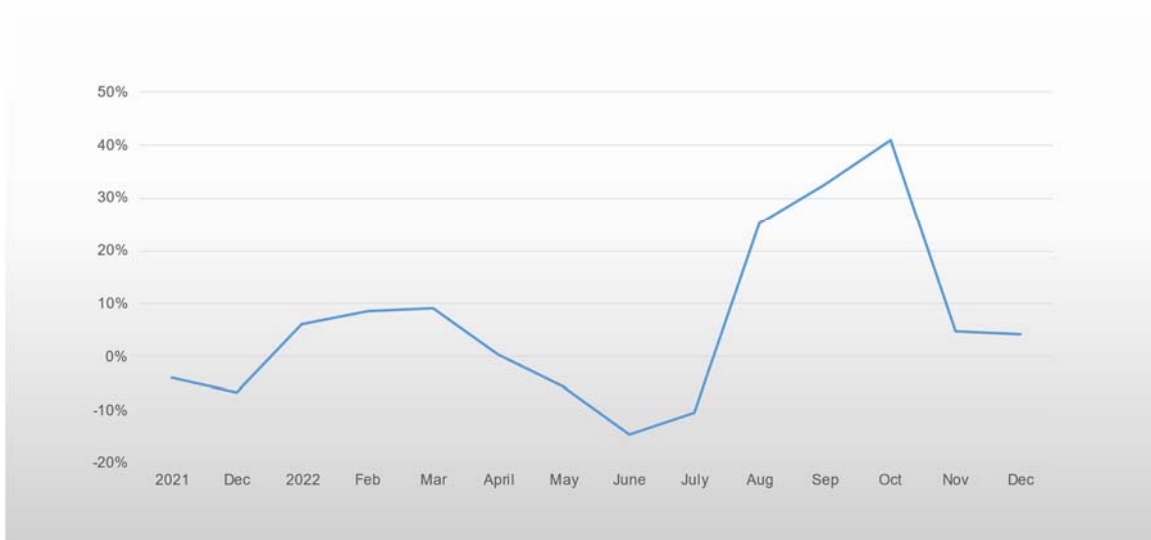
- IIJA spending is stated in nominal, non-inflation adjusted dollars. Inflation has run strong. In the context of higher inflation, this means that larger deflators must be applied the nominal spending levels specified in the Act. In doing so, the stimulative impact of the Act on cement consumption is reduced. Simply put, the Act will not add to as much construction activity because the spending power of the Act has been diluted.
- State and local governments expecting an inflow of infrastructure funding from the federal government due to IIJA, may reduce their spending plans. This is referred to as "sterilization". PCA has observed this phenomenon occurring in the past. We assume a 20% sterilization impact – similar to the levels observed during the Obama infrastructure program.

- The slowdown in economic activity, high gasoline prices, and increases in work-at-home combine to reduce vehicle miles travelled (VMT). With fewer VMT, state fuel taxes collections will weaken. With weaker funding levels, construction activity at the state level could also weaken.
- Initial volumes are expected to be modest due to the “tiering” of spending. For every years’ spending allocation, actual spending is distributed over several years. PCA assumes a four-year horizon. PCA assumes roughly 21% of each year’s allocation is spent in the first year, 41% in the second, 22% in year three, and 14% in year four.

In addition to taking these factors into consideration, PCA has adjusted the timing of when construction activity attributed to IIJA is expected to materialize in significant volumes. In the Fall forecast, PCA expected significant volumes attributed to IIJA to materialize in the first half of 2023. Based on available data and informal surveys, significant IIJA volumes may not show up until the second half of 2023.

## Public Contract Awards

Dodge Contract Awards, Y-O-Y, 3 Month Moving Average



PCA’s timing of IIJA’s impact on construction activity was based on three stages. They include:

- **Stage One: Federal and State paperwork related to funding** – either discretionary or by formula. This stage is expected to take up to one year. Based White House data, \$200 billion in projects has been awarded, resulting in the funding of 20,000 projects, and representing 17% of the total \$1.2trillion covered by the program. In PCA’s view this stage is well underway.
- **Stage Two: Bid Letting and Review.** This stage is expected to take as long as 15 months. Tracking progress on this stage is not a clear-cut process as little government

data is available. PCA has relied upon Dodge Contract Awards data to estimate progress in this stage.

Dodge Contract Awards monitor when a contract is signed by a contractor. This implies a stage that has completed the bid letting, the review of contractors, and a decision on a particular contractor.

Beginning in late summer of last year Dodge Contract Awards for public projects show a dramatic increase. PCA assumes this is the initial flow through tied to IIJA.

- **Stage Three: Contract Award to Construction.** Depending on the type of project, this stage is expected to take from as little as six months to as long as 21 months. By this reasoning, construction spending (this includes white collar work as well as blue collar work) would be expected to materialize this summer.

A further lag exists between construction spending (site preparation, and other) and the pouring of concrete. Given PCA estimated lags for this, significant concrete consumption attributed to IIJA is not expected until the second half of 2023. This is one quarter later than previously expected. As a result, PCA has adjusted the volumes attributed to IIJA cement consumption downward in 2023.

## The Disconnect Risk

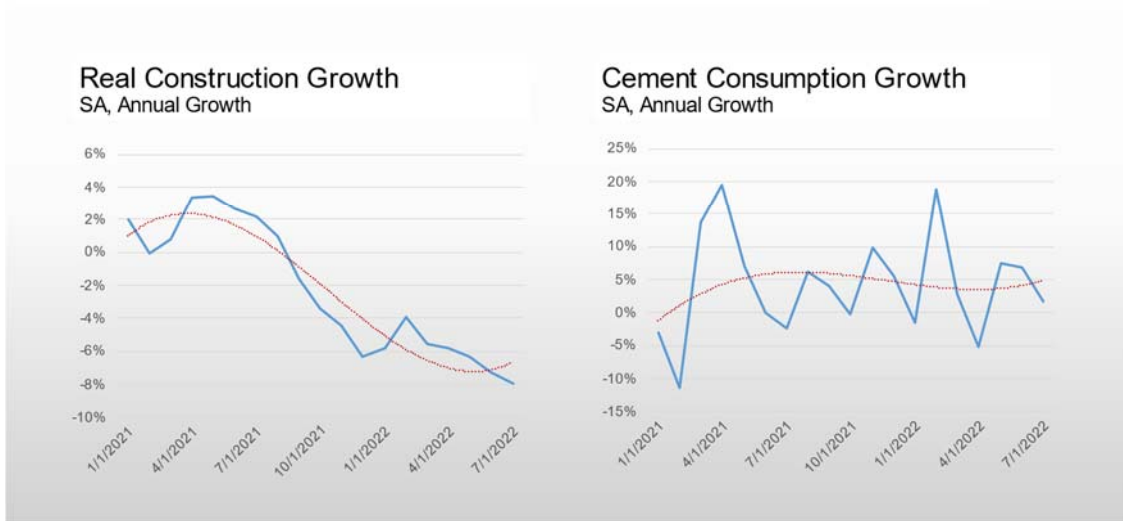
Typically, cement consumption forecasts closely reflect the foregoing assessments regarding construction activity. Movements in cement intensities contribute to the cement forecast but are often specific to a construction segment and a relatively small factor in overall growth projections. This is not the case in today's environment characterized by tight market conditions and long order books.

In real dollar spending, Put-In-Place construction activity declined 5.5% during 2022. This weakness did not translate into softer cement consumption. Cement consumption grew by 2.5% - reflecting a 8% disconnect from historical relationships between construction spending and cement consumption.

PCA is concerned that this phenomenon could materialize again in 2023 resulting in stronger than expected cement consumption. Most cement producers face strong backlogs. These backlogs must be burned off before cement consumption growth recedes. This suggests a cushion exists between weakening demand in construction activity and cement consumption. The timing of the dissipation of these backlogs represents considerable risk to our near term forecast projections. Last year for example, the economic and construction fundamentals deteriorated. The presence of tight market conditions and strong backlogs cushioned cement consumption from a decline.

Current order books seem to suggest strength for the next six months. PCA does not expect a sustained weakening in cement consumption will materialize until the second half of 2023. Increasingly, it is likely that some of the expected weakness in cement consumption will leak into 2024. The presence of tight market conditions and strong backlogs suggests the potential for upside risk to our 2023 forecast projections.

## Order Books Cushion Deteriorating Fundamentals



PCA's assessment on the timing of the backlog burn-off represents a significant risk to the current forecast. Even if all our assessments regarding the economy and construction activity are correct, cement consumption could substantially differ if the backlogs are not burned off.

### The Outlook

Overall, the gains in public sector construction activity this year are not expected to offset the declines anticipated for the private sector. Cement consumption, as a result, is expected to contract in 2023. This expected weakness may not materialize until the second half of the year. Tight market conditions were widespread during 2022. Order books among many cement companies currently reflect a full six months. It will take time for this strength to fade. PCA expects cement consumption will weaken during 2023 – but not until the second half. Given some of the risks associated with monetary policy, some of this weakness in cement consumption could spill over into the first half of 2024.

Beyond 2023, inflation is expected to gradually subside. Inflation expectations are expected to ease. Inflation premiums added to long term loans will start to shrink, resulting in lower interest rates such as mortgages. With inflation easing and in the context of sluggish economic performance, we expect the Federal Reserve will begin to pivot and reduce the Federal Funds rate – but not until 2024. This lower interest rate environment is expected to abet a modest 2024 recovery in private construction. Furthermore, by 2024 more meaningful cement consumption is expected to materialize from the infrastructure program. Combined, these factors generate moderate growth in cement consumption during the remainder of the forecast horizon.





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# MARKET INTELLIGENCE

## U.S. Forecast Tables

Spring 2023

## Economic Forecast

	2020	2021	2022	2023	2024	2025	2026	2027
<b>General Economic Factors</b>								
- Real GDP Growth (%)	-3.5%	5.6%	2.1%	0.8%	1.8%	2.6%	2.4%	2.4%
- Unemployment Rate (%)	8.1%	3.9%	3.5%	4.3%	4.1%	3.9%	3.8%	3.7%
- Employment	143,055	150,294	155,108	156,282	157,537	160,059	162,527	165,514
- Change in Employment	-9,458	7,239	4,814	1,174	1,255	2,522	2,468	2,987
- Inflation Rate (%)	1.2%	4.7%	8.0%	4.9%	3.4%	2.5%	2.1%	2.0%
- Consumer Sentiment Index (Year End)	101.0	112.7	104.5	97.5	99.5	105.8	109.1	113.7
- Total Housing Starts (000)	1,394	1,603	1,552	1,338	1,308	1,382	1,472	1,549
- Oil Price, WTI Per Barrel	39	68	95	78	72	70	71	73
- Note: Oil Rig Count	436	475	721	771	762	801	833	912
<b>Key Interest Rates</b>								
- Mortgage Rate - 30 Yr Fixed (%)	3.05	3.10	6.63	6.76	5.91	5.41	5.16	5.16
- Federal Funds Rate	0.38	0.08	1.71	5.58	4.91	4.14	3.87	3.75
- Three Year Treasury (%)	0.43	0.76	3.05	5.24	5.24	4.55	4.22	4.10
<b>Key Single Family Factors</b>								
- Single Family Starts (000)	998	1,129	1,007	831	845	890	955	1,022
- Average New Home Sq Footage	2,473	2,487	2,499	2,507	2,512	2,517	2,522	2,527
- Total Single Family Sq Footage (Million)	2,467	2,808	2,516	2,082	2,123	2,240	2,409	2,583
- Average Cement Tons Per Start	27.0	27.1	29.2	27.6	27.6	27.7	27.7	27.8
- Mortgage Rate - 30 Yr Fixed	3.05	3.10	6.63	6.76	5.91	5.41	5.16	5.16
- Median Home Price (000)	\$333.4	\$389.0	\$452.1	\$440.1	\$446.7	\$455.6	\$466.1	\$477.7
- Home Appreciation Rate	4.7%	16.7%	16.2%	-2.7%	1.5%	2.0%	2.3%	2.5%
- Average Monthly Payment	\$1,414	\$1,661	\$2,898	\$2,857	\$2,652	\$2,561	\$2,548	\$2,612
<b>Key Multi-Family Factors</b>								
- Multi-Family Starts (000)	396	474	545	507	463	492	517	527
- Average New Home Sq Footage	1,311	1,311	1,326	1,326	1,332	1,336	1,332	1,328
- Total Multi-Family Sq Footage (Million)	519	621	723	672	617	657	689	700
- Average Cement Tons Per Start	8.3	8.5	8.7	8.7	8.7	8.8	8.7	8.7
- Vacancy Rate (%)	6.4	5.5	5.1	5.3	5.5	5.6	5.6	5.5
- Mortgage to Rent Ratio	1.4	1.5	2.2	2.4	2.3	2.2	2.1	2.1
- Target Rental Population (20-29) Index	135	134	134	133	135	136	137	138
<b>Key Nonresidential Factors</b>								
- Capacity Utilization (%)	76.3	79.5	79.0	76.5	76.9	77.2	78.3	78.7
- Office Vacancy Rate (%)	16.6	17.0	17.3	18.0	17.8	17.7	17.7	17.5
- Office Worker Employment	31,737	32,844	34,216	34,851	34,948	35,442	35,501	35,856
<b>General Cement Ratios</b>								
- Cement Consumption (Per 000 Capita)	295.2	310.0	314.9	300.8	308.0	315.6	323.9	332.2
- Cement Tons Per Mil Construction	91.7	98.0	107.0	105.9	107.5	107.5	107.6	107.7

	2020	2021	2022	2023	2024	2025	2026	2027
<b>Total</b>	<b>1,091.4</b>	<b>1,082.1</b>	<b>1,015.0</b>	<b>988.8</b>	<b>1,006.2</b>	<b>1,040.5</b>	<b>1,076.0</b>	<b>1,112.9</b>
<b>Residential Buildings</b>	<b>446.6</b>	<b>492.6</b>	<b>472.4</b>	<b>432.7</b>	<b>432.5</b>	<b>450.9</b>	<b>473.2</b>	<b>497.0</b>
New Housing Units	280.7	324.1	285.1	248.2	250.5	267.3	287.2	308.1
Single Family	219.7	261.1	229.0	196.0	202.9	216.7	234.0	253.9
Multi Family	61.0	63.0	56.1	52.2	47.6	50.6	53.2	54.2
Improvements	165.9	168.5	187.4	184.6	182.0	183.6	186.0	188.9
<b>Nonresidential Buildings</b>	<b>241.4</b>	<b>223.9</b>	<b>213.9</b>	<b>215.8</b>	<b>220.8</b>	<b>226.5</b>	<b>231.7</b>	<b>236.9</b>
Industrial	55.3	57.2	63.5	68.7	72.8	76.4	79.1	81.5
Office	69.2	61.5	52.6	49.2	48.6	49.1	49.8	50.7
Hotels, Motels	20.2	12.9	11.7	12.8	13.3	13.7	14.1	14.4
Hospitals, Institutions	21.9	21.0	18.8	17.7	17.7	18.0	18.3	18.7
Religious	2.5	2.1	1.8	1.8	1.7	1.8	1.8	1.8
Educational	13.9	11.6	11.7	11.6	11.7	11.9	12.1	12.3
Other Commercial	58.3	57.7	53.8	54.1	54.9	55.7	56.6	57.6
<b>Public Utility &amp; Other</b>	<b>108.7</b>	<b>100.0</b>	<b>82.9</b>	<b>89.6</b>	<b>92.8</b>	<b>95.3</b>	<b>97.6</b>	<b>100.1</b>
<b>Farm Nonresidential</b>	<b>5.9</b>	<b>5.7</b>	<b>5.6</b>	<b>5.8</b>	<b>5.9</b>	<b>6.0</b>	<b>6.1</b>	<b>6.1</b>
<b>Miscellaneous</b>	<b>49.9</b>	<b>45.7</b>	<b>42.8</b>	<b>43.6</b>	<b>44.5</b>	<b>45.4</b>	<b>46.4</b>	<b>47.4</b>
<b>Public Construction</b>	<b>238.9</b>	<b>214.2</b>	<b>197.4</b>	<b>201.2</b>	<b>209.8</b>	<b>216.4</b>	<b>221.0</b>	<b>225.4</b>
Buildings	106.0	94.8	83.1	82.3	83.9	85.4	86.5	87.6
Highways & Streets	77.2	71.6	66.9	68.0	71.9	74.4	76.4	78.3
Military/Public Security	13.8	8.5	7.2	7.0	7.0	7.1	7.3	7.5
Conservation	6.9	5.5	5.7	5.9	6.9	7.8	8.2	8.7
Sewer Systems	20.5	20.0	20.3	22.0	22.7	23.4	24.0	24.5
Water Supply Systems	14.5	13.7	14.2	15.9	17.3	18.2	18.6	18.7

**Percent Change**

<b>Total</b>	<b>4.3%</b>	<b>-0.9%</b>	<b>-6.2%</b>	<b>-2.6%</b>	<b>1.8%</b>	<b>3.4%</b>	<b>3.4%</b>	<b>3.4%</b>
<b>Residential Buildings</b>	<b>11.0%</b>	<b>10.3%</b>	<b>-4.1%</b>	<b>-8.4%</b>	<b>-0.1%</b>	<b>4.3%</b>	<b>4.9%</b>	<b>5.0%</b>
New Housing Units	5.5%	15.4%	-12.0%	-12.9%	0.9%	6.7%	7.4%	7.3%
Single Family	6.2%	18.8%	-12.3%	-14.4%	3.5%	6.8%	8.0%	8.5%
Multi Family	3.1%	3.3%	-11.0%	-7.0%	-8.7%	6.3%	5.1%	1.9%
Improvements	21.8%	1.6%	11.2%	-1.5%	-1.4%	0.9%	1.3%	1.6%
<b>Nonresidential Buildings</b>	<b>-4.1%</b>	<b>-7.2%</b>	<b>-4.5%</b>	<b>0.9%</b>	<b>2.3%</b>	<b>2.6%</b>	<b>2.3%</b>	<b>2.3%</b>
Industrial	-12.6%	3.4%	10.9%	8.2%	6.0%	5.0%	3.5%	3.0%
Office	1.1%	-11.1%	-14.5%	-6.5%	-1.1%	0.9%	1.4%	1.8%
Hotels, Motels	-15.4%	-36.2%	-9.1%	9.6%	3.5%	3.0%	2.7%	2.6%
Hospitals, Institutions	-0.6%	-4.4%	-10.4%	-6.0%	0.3%	1.6%	1.9%	2.2%
Religious	-4.8%	-18.2%	-12.6%	-2.6%	-0.5%	0.7%	0.6%	0.6%
Educational	-15.2%	-16.6%	0.9%	-0.8%	1.0%	1.4%	1.6%	1.7%
Other Commercial	6.0%	-1.0%	-6.7%	0.6%	1.4%	1.5%	1.6%	1.7%
<b>Public Utility &amp; Other</b>	<b>-2.2%</b>	<b>-8.0%</b>	<b>-17.1%</b>	<b>8.1%</b>	<b>3.6%</b>	<b>2.7%</b>	<b>2.5%</b>	<b>2.5%</b>
<b>Farm Nonresidential</b>	<b>8.0%</b>	<b>-3.7%</b>	<b>-0.9%</b>	<b>4.1%</b>	<b>1.7%</b>	<b>1.2%</b>	<b>0.9%</b>	<b>0.7%</b>
<b>Miscellaneous</b>	<b>1.3%</b>	<b>-8.4%</b>	<b>-6.4%</b>	<b>1.9%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.1%</b>	<b>2.1%</b>
<b>Public Construction</b>	<b>5.6%</b>	<b>-10.4%</b>	<b>-7.8%</b>	<b>1.9%</b>	<b>4.3%</b>	<b>3.1%</b>	<b>2.1%</b>	<b>2.0%</b>
Buildings	4.6%	-10.5%	-12.4%	-0.9%	1.9%	1.8%	1.3%	1.3%
Highways & Streets	0.4%	-7.3%	-6.5%	1.6%	5.7%	3.4%	2.7%	2.6%
Military/Public Security	68.6%	-38.5%	-15.0%	-3.3%	0.7%	1.6%	2.2%	2.4%
Conservation	-2.7%	-20.8%	3.3%	3.9%	16.8%	13.2%	5.5%	5.6%
Sewer Systems	0.3%	-2.1%	1.1%	8.8%	3.2%	3.1%	2.4%	2.1%
Water Supply Systems	16.9%	-5.6%	3.8%	11.9%	8.8%	4.8%	2.1%	1.0%



**Portland Cement Consumption**  
(000 Metric Tons)

**United States**  
**Spring 2023**

	2020	2021	2022	2023	2024	2025	2026	2027
<b>Total</b>	<b>101,716</b>	<b>106,005</b>	<b>108,637</b>	<b>104,711</b>	<b>108,187</b>	<b>111,852</b>	<b>115,821</b>	<b>119,871</b>
<b>Residential Buildings</b>	<b>38,115</b>	<b>42,006</b>	<b>42,649</b>	<b>35,706</b>	<b>35,670</b>	<b>37,303</b>	<b>39,533</b>	<b>41,741</b>
New Housing Units	30,719	34,637	34,127	27,311	27,393	28,952	31,010	32,998
Single Family	27,375	30,624	29,388	22,903	23,349	24,641	26,494	28,409
Multi Family	3,344	4,013	4,739	4,409	4,044	4,311	4,516	4,590
Improvements	7,397	7,369	8,522	8,394	8,277	8,351	8,523	8,743
<b>Nonresidential Buildings</b>	<b>13,284</b>	<b>12,137</b>	<b>12,397</b>	<b>12,608</b>	<b>12,883</b>	<b>13,182</b>	<b>13,479</b>	<b>13,783</b>
Industrial	895	816	968	1,069	1,155	1,225	1,281	1,332
Office	1,790	1,349	1,285	1,250	1,261	1,298	1,336	1,376
Hotels, Motels	588	316	312	345	361	376	391	406
Hospitals, Institutions	882	728	724	708	724	747	770	795
Religious	58	43	40	40	40	40	41	41
Educational	1,686	1,438	1,494	1,505	1,543	1,580	1,617	1,653
Other Commercial	7,386	7,447	7,573	7,692	7,800	7,917	8,043	8,180
<b>Public Utility &amp; Other</b>	<b>3,264</b>	<b>2,664</b>	<b>2,429</b>	<b>2,756</b>	<b>2,926</b>	<b>3,035</b>	<b>3,142</b>	<b>3,252</b>
<b>Farm Nonresidential</b>	<b>3,118</b>	<b>3,654</b>	<b>3,705</b>	<b>3,856</b>	<b>3,833</b>	<b>3,759</b>	<b>3,714</b>	<b>3,666</b>
<b>Oil &amp; Gas Wells</b>	<b>1,169</b>	<b>1,366</b>	<b>2,164</b>	<b>2,274</b>	<b>2,233</b>	<b>2,323</b>	<b>2,373</b>	<b>2,554</b>
<b>Miscellaneous</b>	<b>1,452</b>	<b>1,701</b>	<b>1,735</b>	<b>1,839</b>	<b>1,894</b>	<b>1,944</b>	<b>1,986</b>	<b>2,027</b>
<b>Public Construction</b>	<b>41,313</b>	<b>42,477</b>	<b>43,557</b>	<b>45,672</b>	<b>48,748</b>	<b>50,305</b>	<b>51,595</b>	<b>52,847</b>
Buildings	1,723	1,360	1,334	1,375	1,418	1,464	1,505	1,548
Highways & Streets	30,821	31,365	31,822	33,327	35,730	36,817	37,802	38,767
Military/Public Security	127	177	181	175	173	172	170	169
Conservation	2,319	2,271	2,448	2,537	2,756	2,965	3,087	3,261
Sewer Systems	3,455	3,869	4,071	4,276	4,391	4,455	4,540	4,587
Water Supply Systems	2,868	3,435	3,701	3,982	4,280	4,433	4,490	4,515

**Percent Change**

	2020	2021	2022	2023	2024	2025	2026	2027
<b>Total</b>	<b>2.0%</b>	<b>4.2%</b>	<b>2.5%</b>	<b>-3.6%</b>	<b>3.3%</b>	<b>3.4%</b>	<b>3.5%</b>	<b>3.5%</b>
<b>Residential Buildings</b>	<b>15.2%</b>	<b>12.1%</b>	<b>1.5%</b>	<b>-16.3%</b>	<b>-0.1%</b>	<b>4.6%</b>	<b>6.0%</b>	<b>5.6%</b>
New Housing Units	18.2%	14.7%	-1.5%	-20.0%	0.3%	5.7%	7.1%	6.4%
Single Family	21.4%	13.8%	-4.0%	-22.1%	1.9%	5.5%	7.5%	7.2%
Multi Family	-2.9%	22.0%	18.1%	-7.0%	-8.3%	6.6%	4.8%	1.6%
Improvements	4.5%	1.3%	15.6%	-1.5%	-1.4%	0.9%	2.1%	2.6%
<b>Nonresidential Buildings</b>	<b>-11.6%</b>	<b>-7.1%</b>	<b>2.1%</b>	<b>1.7%</b>	<b>2.2%</b>	<b>2.3%</b>	<b>2.2%</b>	<b>2.3%</b>
Industrial	-15.2%	-7.3%	18.7%	10.4%	8.1%	6.0%	4.5%	4.0%
Office	-8.1%	-23.4%	-4.7%	-2.7%	0.9%	2.9%	3.0%	3.0%
Hotels, Motels	-26.9%	-45.3%	-1.4%	10.7%	4.5%	4.2%	4.0%	3.8%
Hospitals, Institutions	-13.4%	-16.0%	-0.5%	-2.2%	2.3%	3.1%	3.1%	3.2%
Religious	-19.5%	-24.6%	-7.4%	0.3%	0.5%	0.7%	0.6%	0.6%
Educational	-12.9%	-13.3%	3.9%	0.7%	2.5%	2.4%	2.4%	2.2%
Other Commercial	-9.9%	2.5%	1.7%	1.6%	1.4%	1.5%	1.6%	1.7%
<b>Public Utility &amp; Other</b>	<b>-4.4%</b>	<b>-17.0%</b>	<b>-8.8%</b>	<b>13.5%</b>	<b>6.2%</b>	<b>3.7%</b>	<b>3.5%</b>	<b>3.5%</b>
<b>Farm Nonresidential</b>	<b>0.1%</b>	<b>19.2%</b>	<b>1.4%</b>	<b>4.1%</b>	<b>-0.6%</b>	<b>-1.9%</b>	<b>-1.2%</b>	<b>-1.3%</b>
<b>Oil &amp; Gas Wells</b>	<b>-54.0%</b>	<b>16.9%</b>	<b>58.4%</b>	<b>5.1%</b>	<b>-1.8%</b>	<b>4.1%</b>	<b>2.1%</b>	<b>7.6%</b>
<b>Miscellaneous</b>	<b>2.9%</b>	<b>19.1%</b>	<b>2.0%</b>	<b>6.0%</b>	<b>3.0%</b>	<b>2.7%</b>	<b>2.1%</b>	<b>2.1%</b>
<b>Public Construction</b>	<b>0.3%</b>	<b>4.6%</b>	<b>2.5%</b>	<b>4.9%</b>	<b>6.7%</b>	<b>3.2%</b>	<b>2.6%</b>	<b>2.4%</b>
Buildings	-17.6%	-19.7%	-1.9%	3.1%	3.1%	3.3%	2.8%	2.8%
Highways & Streets	5.1%	3.5%	1.5%	4.7%	7.2%	3.0%	2.7%	2.6%
Military/Public Security	-12.9%	41.6%	2.0%	-3.3%	-0.9%	-0.9%	-0.8%	-0.6%
Conservation	-20.0%	-0.4%	7.8%	3.6%	8.7%	7.6%	4.1%	5.6%
Sewer Systems	-8.1%	13.9%	5.2%	5.0%	2.7%	1.5%	1.9%	1.0%
Water Supply Systems	-3.7%	21.8%	7.8%	7.6%	7.5%	3.6%	1.3%	0.6%

**U.S. Cement Consumption Forecast**  
(000 Metric Tons)

**United States**  
**Spring 2023**

	2020	2021	2022	2023	2024	2025	2026	2027
Total Cement Consumption	104,090	108,407	111,130	107,076	110,577	114,346	118,414	122,567
Portland Cement	101,716	106,005	108,637	104,711	108,187	111,852	115,821	119,871
Masonry Cement	2,374	2,402	2,493	2,365	2,390	2,493	2,593	2,696
- Portland Share of Total, (%)	97.7%	97.8%	97.8%	97.8%	97.8%	97.8%	97.8%	97.8%
Cement and Clinker Imports	17,207	22,115	26,561	25,816	25,801	27,136	28,263	30,637
- Import Share, (%)	16.5%	20.4%	23.9%	24.1%	23.3%	23.7%	23.9%	25.0%
<b>Percent Change</b>								
Total Cement Consumption	1.9%	4.1%	2.5%	-3.6%	3.3%	3.4%	3.6%	3.5%
Portland Cement	2.0%	4.2%	2.5%	-3.6%	3.3%	3.4%	3.5%	3.5%
Masonry Cement	-1.1%	1.2%	3.8%	-5.1%	1.0%	4.3%	4.0%	4.0%
Cement and Clinker Imports	6.3%	28.5%	20.1%	-2.8%	-0.1%	5.2%	4.2%	8.4%

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