Cement Consumption
% Implied YTD through August 2023

Growth Rates by Region
YTD - August

East North Central 3.5%
East South Central 2.8%
South Atlantic 0.2%
New England -1.0%
West South Central -1.6%
West North Central -1.9%
Middle Atlantic -3.1%
Mountain -7.3%
Pacific -15.0%
United States -3.2%

Source: USGS/PCA
General Economic Context
Federal Reserve Responded to Elevated Inflation

In response to inflation generated by Covid. The Federal Reserve was forced to respond. They responded aggressively with the largest rate increases in more than 40 years.
Inflation Has Improved…

Consumer Price Index
- BLS
And Yet…. Labor Markets Have Remained Strong

Unemployment Rate

Since the Fed started raising rates, more than 7 million net new jobs have been created.
Economic Growth Has Not Been Shaken…
Annual Y-O-Y Growth Rate

Real GDP has averaged roughly a 2% annual growth rate.
Consumer Spending Has Been the Key Source of Strength…

Annual Y-O-Y Growth Rate

Strong labor markets, easy access to credit, and Covid Relief support have been key factors for this growth.
But...Headwinds Lie Ahead
Macroeconomic Headwinds

Assessed

- Student Loan Hiatus Ends
- Sunset of Covid Relief Programs
- Lagged Impact of FF Increases
- Savings Cushion Depleted
- Credit Tightening

Transitory

- Spike In Oil Prices
- UAW Strike Impacts
- Government Shutdown

These areas could represent forecast risks to the extent they persist and are not assessed.

Sustained oil prices and potential reduction in US Government credit rating are viewed as largest risks.
Monetary Policy Leans Against Economic Growth Throughout Forecast Horizon
Federal Reserve’s Federal Funds Outlook

Fed Funds Rate

Forecast Assumption
• No further Federal Funds Rate Increases
• Rates Held at Current Level Until 2nd Half 2024
Monetary Policy: Lag Structure Revisited Skew
- In-Place & Projected Additional Actions

What it Means

• Suggests longer lags and adverse impacts delayed.

• Late 2023 and Early 2024 Bare Brunt

• Impacts Linger and Suppress Strength of 2024 Growth Recovery
What This Means…..

Rate Increases Quarterly Impact on GDP
Monetary Policy: It’s More than Federal Funds Rate

Federal Reserve Assets

Quantitative Monetary Policy (Q)

- Changes in the Interest Rates as a result of manipulating the purchase & sale of financial assets.
- Buy Assets – Results in lower interest rates
- Sell/Retire Assets – Results in higher interest rates
- Assets: (T-Bills & Mortgage Backed Securities)
Monetary Policy Still Tightens Even If The Fed Stops Raising the FF Rate

What it Means

Quantitative Tightening Is Equivalent to 150 BP
That Pushes the Equivalent Rate to 7%

Monetary Policy Is Not Expected to be as Tight as Most of 2023

BUT

“Real” Interest Rates remain high and Monetary Policy Will Still be Restrictive and Inhibit Growth throughout the forecast horizon.
Consumers Strength Will Be Challenged
Net Private Savings
Trillion $

More than $5 trillion in covid relief spending and stay-at-home lifestyle resulted in dramatic increase in savings.
Excess Savings
Trillion $

Each Month Adds to Cumulative Savings
Cumulative Excess Savings
Million $

Peak Cumulative excess Savings = $27.4 Trillion

What it Means
Excess consumer savings support eliminated by year end. Leaves consumer more exposed to inflation & tighter credit conditions.

Ending of Student Loan Hiatus adds to decay in savings.

• By itself equals $100 billion annually impacting 40 million borrowers.
Credit Conditions Are Tightening
Credit Standards are Tightening: Economy Survey of Bank Lending Officers

What it Means

Just when consumers may have to lean more heavily on debt, access will be more difficult.

Could steal as much as 50 BP from GDP growth. This adds to potential of job loss.
Credit Tightening Has Specific Risks for Construction
Survey of Bank Lending Officers

What it Means
Regional & smaller banks have become vulnerable due to rapid rate hikes.
Hold bulk of $1.4 trillion in commercial loans scheduled for refinance.
Deterioration of business fundamentals & ROI could worsen refinancing.
Macroeconomic Summary
Inflation Improvement

**Consumer Price Index**
- BLS

**Inflation Outlook**
CPIU % Change, Monthly Average
An Economic Slowdown is Likely, But No Recession

The Economy Will Slow
GDP Growth Rate

Job Losses Will Materialize
Quarterly Change in Employment, Thousands Average Monthly Rate
Construction Summary
Construction Outlook: 2024

The Burden of High Interest Rates
Tight Lending Standards
Weakened Economy

VS

Higher Volumes Attributed to IIJA
Onshoring Plant Construction (Limited to Regional Impacts)
Residential
New Home Affordability

New Home Price Outlook
Annual % Growth

Monthly Payment
Annual

101% Increase since 2020
Affordability Has Deteriorated Across the Country

Median mortgage payment share of median family income

2020 Q2

2023 Q2

Darker = Greater Share Mortgage Payment as Percent of Income
Affordability Erosion Is Not Expected to Improve Soon….
New Home Starts Correction Spill Into 2024…

Building momentum slows gradually in 2023.

Correction of inventory imbalance materializes in 2024 as a result of fewer starts.
Housing Starts Outlook

Single Family Starts
Thousands

- 2022: -10.8%
- 2023: -11.6%
- 2024: -3.8%
- 2025: 4.2%
- 2026: 7.1%
- 2027: 8.1%
- 2028: 8.5%

Multifamily Starts
Thousands

- 2022: 14.9%
- 2023: -9.5%
- 2024: -9.1%
- 2025: 2.9%
- 2026: 3.3%
- 2027: 3.3%
- 2028: 3.5%
Nonresidential
Nonresidential Recovery Process

Banks Tighten Lending Standards → Vacancy Rates Increase → Sq Feet Vented onto Market → NOI Declines → Scarring & Bankruptcies → Nonresidential Construction Decline

Working Capital Factor:
The longer below “normal” economic conditions persist – the more pressure occurs on working capital and ability to stay open.

Structural Factors Contribute to Vacancy Rates:
- Work-At-Home
- E-Retail
- Virtual Meeting
- E-Learning
- Urban Trend Slows

1.5-2.5 MMT annual reduction

Bank Lending Officer Survey:
More Banks Tightening Lending Standards Since 2008

Nonresidential Construction *
Real PIP, Y-O-Y Change

* Excludes Industrial Manufacturing
Onshoring US Manufacturing

PCA’s MI Study

- Investment in response to national defense, supply chain, Chips Act & Inflation Reduction Act.
- Identified all (42) investments $500 Million or Larger
  - Totaling more than $300 billion.
  - Adding 80,000 direct jobs.
- Established baseline characteristics for each plant.
- Based on this established estimates for direct & indirect cement consumption
  - Plant, infrastructure, housing, nonresidential.
On-Shoring Adds Significant Volume
Thousand Metric Tons
Nonresidential Recovery Process
Annual Y-O-Y Percent Change Real Spending

2021: -7.8%
2022: -0.6%
2023: 17.7%
2024: 2.9%
2025: 1.4%
2026: -5.0%
On-Shoring Adds to Residential, Nonresidential & Public
Thousand Metric Tons
Public
General Fund Percentage Expenditure Change – FY2024

On a state weighted basis, 2024 general fund expenditures are expected to increase 6.7%.
Net Job Creation, State Finances & Public Construction

- **General Fund**: Less employment, less wages, less tax collection.
- **HW Trusts**: Less commuting (atop work at home trend & electric vehicle)
- **Sterilization**: May increase in 2025 and represents a small forecast risk.
Cement Consumption by Construction Sector

46 Million Metric Tons Over Five Year Program
Infrastructure Has Experienced Higher Relative Inflation

Highway Construction Costs vs CPI

Source: FHWA, BLS PCA

Bureau of Reclamation Construction Cost Index

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Annual Percent Change 2Q22/2Q21</th>
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</thead>
<tbody>
<tr>
<td>Steel Tower Transmission Lines</td>
<td>19.8%</td>
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<tr>
<td>Laterals And Drains</td>
<td>18.5%</td>
</tr>
<tr>
<td>Secondary Roads</td>
<td>15.2%</td>
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<tr>
<td>Switchyards And Substations</td>
<td>14.4%</td>
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<tr>
<td>Earth Dams</td>
<td>14.2%</td>
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<tr>
<td>Steel Pipelines</td>
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<tr>
<td>Primary Roads</td>
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<td>Canals</td>
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<td>Pumping Plants</td>
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<td>Diversion Dams</td>
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<td>Concrete Pipelines</td>
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<td>Distribution Pipelines</td>
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<tr>
<td>Bridges</td>
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<tr>
<td>Wood Pole Transmission Lines</td>
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<tr>
<td>Powerplants</td>
<td>7.3%</td>
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</tbody>
</table>

Source: FHWA, Bureau of Reclamation, BLS PCA
Current Awarded & Announced Reported IIJA Funding By County

Estimated Discretionary Tracking

Bill Completion

34.5%

- Total Discretionary Funding
- Awarded / Announced

* Used as an estimate to track the completion of the 150 Billion allocated for discretionary spending.

Estimated Transportation Tracking

Bill Completion

26.5%

- Estimated funding for FHWA
- Awarded / Announced

* Department of Transportation estimated FHWA funding FY22 - FY26
Public Construction
Real PIP Construction

2021: -14%
2022: -12%
2023: -10%
2024: -8%
2025: -6%
2026: -4%
2027: -2%
2028: 0%
2029: 2%
2030: 4%
2031: 6%
2032: 8%
2033: 10%
2034: 12%
2035: 14%

2023: 1.5%
2024: 5.5%
2025: 4.1%
2026: 3.7%
2027: -0.5%
2028: -1.9%
Summary
Baseline US Cement Consumption Outlook

Baseline Annual % Growth

<table>
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<tr>
<th>Year</th>
<th>Growth</th>
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<tbody>
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<td>4.3%</td>
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<tr>
<td>2022</td>
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<tr>
<td>2023</td>
<td>-2.9%</td>
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<tr>
<td>2024</td>
<td>1.4%</td>
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<tr>
<td>2025</td>
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<td>2027</td>
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</tr>
<tr>
<td>2028</td>
<td>1.6%</td>
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Alternatives
Alternative US Cement Consumption Outlooks
Thousand Metric Tons

<table>
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<tr>
<th>Year</th>
<th>Baseline</th>
<th>Pessimistic</th>
<th>Optimistic</th>
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<tbody>
<tr>
<td>2023</td>
<td>-2.9%</td>
<td>-4.2%</td>
<td>-1.8%</td>
</tr>
<tr>
<td>2024</td>
<td>1.4%</td>
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<tr>
<td>2025</td>
<td>3.2%</td>
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<td>3.2%</td>
</tr>
</tbody>
</table>
Upcoming PCA Regional Forecast Conferences

- Texas Economic Summit  
  November 7  
  Austin, Texas  
  In conjunction with Cement Council of Texas

- Pennsylvania Economic Conference  
  November 14  
  Hershey, PA  
  In conjunction with Pennsylvania Concrete & Aggregates Association

- Western Economic Summit  
  November 16  
  Sacramento, CA  
  In conjunction with California, Nevada Cement Association

Sample Agenda

- ½ Day Session
- PCA National Economic, Construction & Cement Outlook
- Moody’s National & Regional Economic Outlook
- PCA Regional Economic, Construction & Cement Outlook