Context: The Economy is Strong

Labor Markets Are Strong
% Unemployed

Household Debt Service Ratio
Debt as % of Disposable Income
Key Focus for Economy, Construction, Cement Outlook

Inflation → Real Wages → Spending

Inflation → Price Expectations → Interest Rates

Interest Rates → Private Sector Demand → Cement Consumption
US Economic Outlook: External Forecast Considerations

Russia-Ukraine War

Key Assumptions:
Will the War stay Within Ukraine Borders?
How long will Supply disruptions persist?
Is a Nuclear Option off the Table?

• Scenario Analysis

Potential Impacts:
• Inflation
• Consumer Sentiment
• Fed Policy.

Covid

Key Assumptions:
Will disease Worsen or Improve?
Will a New Variant Emerge?

• Institute of Health Metrics & Evaluation (IHME) Projections.

Potential Impacts:
• Consumer Sentiment & spending.
• Labor Force Participation
• Supply-Chain improvement.
Covid Impact
Covid Global Decline: Impacts

**Demand Improvement**

**Key Judgements:**
- Consumer in a strong position
- Return to “normal”
- Pent-Up Demand Release

**Potential Impacts:**
- GDP Strengthens
- Adds to Employment Requirements
- Adds Mildly to Inflation.

**Supply-Side Improvement (Inflation)**

**Key Judgements:**
- Labor Participation Rate Improves
- Logistics Improve (US & Globally)
- Inventory-Sales Ratio Improves

**Potential Impacts:**
- Supply-Side Inflation Eases
- Relieves Some Pressure on Fed to Raise Rates.
IHME Projections Daily Death rates drop to 100 per day in Q2 and 28 Per Day in beginning Q3.

IHME Projections roughly 1,000 Deaths Per Day Low. PCA Adjusts for IHME Average Error
Back to Normal
Is a critical measure for a return of pre-covid activity and signals a more complete “demand side” recovery – supporting stronger economic activity.

With declines in Covid and reduction in mask mandates, recent rapid improvement

By itself, if this continues, it suggests a release of Pent-Up demand in second half 2022

With vaccine, indices increased by roughly 30 basis points.

Consumer Comfort
Morning Consult, % All Adults
The largest contributor to supply-chain disruptions has been the lack of available workers.

Participation rate accelerates as covid declines and mask mandates reduced.
PCA Supply Chain Index
2019=100

Components
- Jolts Total
- Delivery Days
- Back Orders
- Inventory/Sales Ratio
PCA Supply Chain Index
2019=100

Key Assumption:
As Covid declines, supply constraints ease. The easing in supply-chain pressures are “sticky” downward and slow to correct.

Reasons for “Stickiness
• Global & China Resurge
• Labor Participation Improvement slow
• Strong Demand conditions likely to prevail
• Inventories remain lean
  • Logistics

Impact:
Declining at a 2.5% Quarterly rate, “normal” ranges are not reached until 2024.

Components
• Jolts Total
• Delivery Days
• Back Orders
• Inventory/Sales Ratio
Ukraine Impact
Russia/Ukraine Contribution to World Production

<table>
<thead>
<tr>
<th>Commodity/Item:</th>
<th>Share, World Production:</th>
<th>Potential Impacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>12%</td>
<td>Higher Global Oil Prices</td>
</tr>
<tr>
<td>Titanium</td>
<td>13%</td>
<td>---</td>
</tr>
<tr>
<td>Wheat</td>
<td>14%</td>
<td>Impacts LDCs</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>17%</td>
<td>European Focused Impacts</td>
</tr>
<tr>
<td>Palladium</td>
<td>30%</td>
<td>Catalytic Converters</td>
</tr>
<tr>
<td>Helium</td>
<td>30%</td>
<td>----</td>
</tr>
<tr>
<td>Neon</td>
<td>70%</td>
<td>Required in Chip production</td>
</tr>
</tbody>
</table>

Russia contributes to the global supply chain. As trade in these materials are depressed, improvement in supply-chain is impaired.
Oil Price Assumptions
WTI Dollars Per Barrel

Average: Includes Bank of America, Energy Information Agency, Comerica Bank, Moody’s

None of the Estimates Included the US ban on Russian oil.

Impact:
By Itself, projected oil prices reduce US RGDP growth by 0.4% during 2022.

Greatest adverse impact materializes in Q2.

Gradual Decline
High energy prices encourage greater production resulting in some easement in prices from Q2 high.

This scenario does not include a European ban on Russian energy.
Ukraine Assumptions: Baseline

Key Assumptions:
- Russia occupies Ukraine
- Ukraine resistance continues
- Oil WTI peaks at $115 per barrel.
- Revoke Russia MFN Status
- Aggression constrained to Ukraine
- No cyberattacks
- No nuclear

Potential Impacts:
- Key commodities rise significantly
- Additional disruption to supply chain
- Inflation higher
- Real wage declines
- Slower global growth
- Sustained increases in interest rates
- Cement consumption growth slows

Growth Slowdown. No Recession
Inflation
Key Focus for Economy, Construction, Cement Outlook

- Inflation → Real Wages → Spending
- Inflation → Price Expectations → Interest Rates
- Interest Rates → Private Sector Demand → Cement Consumption
Contributors to Inflation Outlook

PCA Supply Chain Index
2019=100

Oil Prices
West Texas Intermediate, 7 Day Moving Average
Inflation Outlook
CPIU % Change

- 2019: 0.0%
- 2020: 1.0%
- 2021: 2.0%
- 2022: 7.0%
- 2023: 4.0%
- 2024: 3.0%
- 2025: 2.0%
- 2026: 1.0%
Interest Rates
Monetary Policy: Update

Fed Funds Rate

Interest Rate Drivers

**Tapering:** Has begun and is expected to be complete by mid-year. Further reduction in Fed balance sheet are expected beyond mid-year.

**Federal Funds Rate:** Fed begins rate hikes this month. Rate increases are small. Assume 25 basis point increases.

**Inflationary Expectations:** Have already become noticeable in mortgage rates.

Near term risks for mortgage rates are on the upside.
Macroeconomic Summary
Macroeconomic Summary: Baseline

**GDP Growth**
Real GDP Annual Growth

- 2021: 5.7%
- 2022: 2.8%
- 2023: 2.7%

**Unemployment Rate**
Percent Unemployed

- 2021: 3.9%
- 2022: 3.6%
- 2023: 3.5%

**Inflation Rate**
CPIU, Annual Percent Change

- 2021: 4.8%
- 2022: 6.6%
- 2023: 4.3%
Growth by Market Segment
Composition of Growth
2020-2021

- Residential
- Nonresidential
- Public
- Oil/Other
Residential
Composition of Mortgage Rates Changes

100 Basis Points

<table>
<thead>
<tr>
<th>Year</th>
<th>Inflation Expectations</th>
<th>Tapering</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>3.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>4.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>4.9%</td>
<td></td>
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</tr>
</tbody>
</table>

2021
2022
2023
2024
2025
2026
New Home Price Outlook

Annual % Growth

-2% 0% 2% 4% 6% 8% 10% 12% 14% 16% 18%

2020 2021 2022 2023 2024 2025 2026

Monthly Payment

Annual % Growth

$0 $500 $1,000 $1,500 $2,000 $2,500

2020 2021 2022 2023 2024 2025 2026

New Home Affordability

58% Increase since 2020
Rising Mortgage Rate Impact on Affordability - 2021

(Conventional, 30 Year Fixed 3.4%)

Mortgage Payment Relative to Household Income (Top 100 MSAs)

Caution: 20% Above 5 Year Average Affordability

Concern: 30% Above 5 Year Average Affordability

Source: PCA
Rising Mortgage Rate Impact on Affordability - 2022
(Conventional, 30 Year Fixed 4.6%)
Mortgage Payment Relative to Household Income (Top 100 MSAs)

Source: PCA
Rising Mortgage Rate Impact on Affordability- 2023
(Conventional, 30 Year Fixed 4.9%)
Mortgage Payment Relative to Household Income (Top 100 MSAs)

Source: PCA
Residential Outlook

Single Family Starts
Thousands

- 2021: 13.1%
- 2022: 1.6%
- 2023: -7.1%
- 2024: -6.2%
- 2025: 1.8%
- 2026: 3.7%

Multifamily Starts
Thousands

- 2021: 19.2%
- 2022: 1.1%
- 2023: -2.0%
- 2024: -0.8%
- 2025: 1.1%
- 2026: 1.1%
Nonresidential
Nonresidential Recovery Process

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

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

Scarring & Bankruptcies
Vacancy Rates Increase

Nonresidential Construction Decline
Banks Tighten Lending Standards

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

Nonresidential Construction
Real PIP, Y-O-Y Change

<table>
<thead>
<tr>
<th>Year</th>
<th>Y-O-Y Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>-7.7%</td>
</tr>
<tr>
<td>2022</td>
<td>-0.2%</td>
</tr>
<tr>
<td>2023</td>
<td>0.6%</td>
</tr>
<tr>
<td>2024</td>
<td>2.0%</td>
</tr>
<tr>
<td>2025</td>
<td>2.3%</td>
</tr>
<tr>
<td>2026</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
Public
Evolving State Fiscal Conditions

Percent increases in General Fund tax revenues from Pre-COVID levels

- **+10%**
- 6% to 9.9%
- 3% to 5.9%
- 0% to 2.9%
- Decline

**Covid Relief:**
The last Federal Covid Relief program included $350 Billion to support fiscal duress encountered by states, countries, cities and tribes.
Infrastructure
Cement Consumption by Construction Sector

46 Million Metric Tons Over Five Year Program

- Roads & Bridges: 18.63
- Power & Grid: 1.36
- Western Water: 1.81
- Ports & Waterways: 2.99
- Airports: 5.78
- Water: 6.93
- Resiliency: 8.06
- Legacy Pollution: 0.76
- Reconnecting Communities: 0.32
- Rail: 0.17
- Public Transit: 0.14
- Broadband: 0.09
- Safety: 0.08
- Electric Vehicle Charging: 0.03

Cement Consumption by Construction Sector

46 Million Metric Tons Over Five Year Program
There Will Be a Wait for Pouring to Begin

Small Volumes of cement consumption associated with the program materialize in second half 2022.

Federal & State Paperwork

Bid Letting & Review

Contract Award to Construction

Average Construction Start: Early/Mid-2023
## Infrastructure Timing Distribution
### Highway & Bridges

<table>
<thead>
<tr>
<th>Fiscal Year Spending</th>
<th>Spending Allocation Billion $</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>Total Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2023</td>
<td>$20</td>
<td>$4</td>
<td>$9</td>
<td>$4</td>
<td>$3</td>
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<tr>
<td></td>
<td>2024</td>
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<td>$4</td>
<td>$9</td>
<td>$4</td>
<td>$17</td>
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<tr>
<td></td>
<td>2025</td>
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<td></td>
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<td>$20</td>
<td>$4</td>
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<tr>
<td></td>
<td>2027</td>
<td>$20</td>
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<td>---</td>
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<td>$4</td>
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<tr>
<td><strong>Total Spending</strong></td>
<td></td>
<td>$100</td>
<td>$4</td>
<td>$13</td>
<td>$17</td>
<td>$20</td>
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<table>
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<tr>
<th>Year</th>
<th>Total Spent</th>
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<tbody>
<tr>
<td>2023</td>
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<td>2024</td>
<td>$17</td>
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<td>2025</td>
<td>$13</td>
<td>$22</td>
</tr>
<tr>
<td>2026</td>
<td>$4</td>
<td>$14</td>
</tr>
</tbody>
</table>

This is an representation of the process and not actual numbers.

Process repeated across all construction segments that are impacted by the Infrastructure Program.
S&L Sterilization
Percentage Foregone

Utilities
Public Misc.
Conservation
Public Buildings
Highway
Bridges
Water
Shovel Ready

TEA/SAFETY-LU: 31%
ARRA: 81%
Public Construction Spending
Put-In-Place Real $

Public starts later than some expect, but has a considerably strong impact in "out" years of the forecast.

2021  -5.8%
2022  -2.2%
2023  2.8%
2024  9.8%
2025  12.6%
2026  10.4%
Baseline US Cement Consumption Outlook

Baseline Annual % Growth

- 2019: -2.0%
- 2020: 0.0%
- 2021: 4.1%
- 2022: 1.2%
- 2023: -0.8%
- 2024: 2.0%
- 2025: 3.9%
- 2026: 3.3%

Factors:
- Slow supply-chain improvement
- Oil disruption limited
- Hostilities constrained to Ukraine
- Cautious Fed
Cement Consumption
% YTD through December 2021

2021 Growth Rates By Region

- West North Central: 3.5%
- West South Central: -0.3%
- New England: 4.6%
- East North Central: 1.9%
- Middle Atlantic: 8.2%
- South Atlantic: 9.2%
- East South Central: 8.8%
- Pacific: 1.6%
- Mountain: 4.3%
- United States: 4.1%
Alternatives
There is such high levels uncertainty these “scenarios” are offered as a measure of risk that can be attached to the baseline.

**Ukraine Occupation Only (Baseline)**

**Key Assumptions:**
- Russia occupies Ukraine
- Ukraine resistance continues
- Oil WTI peaks at $115 per barrel.
- Revoke Russia MFN Status
- Aggression constrained to Ukraine
- No cyberattacks
- No nuclear

**Potential Impacts:**
- Key commodities rise significantly
- Additional disruption to supply chain
- Inflation higher
- Real wage declines
- Slower global growth
- Sustained increases in interest rates
- Cement consumption growth slows
- Growth slowdown. No recession

**War Expands**

**Key Assumptions:**
- NATO attacked resulting in a hot war
- Cyberattacks disrupt US economy
- Russian Oil Shunned
- Inflation increases
- Global growth recession ensues
- US demand destruction materializes

**Potential Impacts:**
- Consumer Sentiment worsens versus baseline
- Investment spending slows considerably
- Cement consumption experiences moderate decline
- Recession

**Everything Works**

**Key Assumptions:**
- Diplomatic Solution in Ukraine.
- Covid drastically reduced mid-year.
- Pent-up demand released late 2022
- Rapid Supply-Chain Improvement.
- OPEC Plus adds to Global Oil Production
- Labor Participation accelerates
- Inflation eases faster than baseline
- Fed less aggressive on Fed Funds

**Potential Impacts:**
- Stronger economic growth
- Lower inflation
- Slower increase in interest rates
- Impact on private construction muted.
- Stronger Cement Consumption
- Growth Slows then accelerates.
Scenario: War Expands

War scenario assumes hostilities start with economic warfare (cyberattacks) followed by “hot war” initiated by Russian attack on a NATO country. Cyber attacks assumed third to begin third quarter 2022, “Hot War” fourth quarter 2022. Prolonged war. No Nuclear.

- **Cyberattacks** begin 2\textsuperscript{nd} half of 2022. Attacks double from existing levels. Reduces economic growth by -0.1% in 2022 and -0.3% in 2023.

- **Russian Oil Shunned.** Oil Prices rise to $200 per barrel. Direct impact reduces GDP growth -0.86% in 2022 and -1.4% in 2023.

- **Inflation rate boosted** 150 BP over baseline in 2022 and 200 BP in 2023. Interest rates rise similarly.

- **Consumer spending retreats** due to oil, interest rates, and sentiment. Gasoline Prices exceed $9 per gallon. Consumer Sentiment drops 35% within six months of hostilities. Reduces GDP growth by -1.2% in 2022 and -1.6% in 2023.
Scenario: War Expands

**GDP Growth**
Real GDP Annual Growth

- 2021: 5.7%
- 2022: 1.4%
- 2023: -1.8%
- 2024: 0.5%

**Unemployment Rate**
Percent Unemployed

- 2021: 3.9%
- 2022: 4.2%
- 2023: 6.4%
- 2024: 4.3%

**Inflation Rate**
CPIU, Annual Percent Change

- 2021: 4.8%
- 2022: 8.1%
- 2023: 6.3%
- 2024: 4.3%
Scenario: Everything Works

*Everything works scenario assumes a quick diplomatic solution to Russia-Ukraine hostilities, an improvement in inflation and interest rates rise at a slower pace.*

- **Covid retreats.** IHME projections are correct and covid virtually disappears by mid-year. Improvement for US and Globally.

- **Supply chain improvements accelerate** due to improvement in covid. Inflation declines and US rate reaches 3% in 2023.

- **Federal Reserve takes a less aggressive policy stance** in light of lower inflation. Inflation expectations ease. Risk premiums ease. Interest rates rise at a slower pace versus baseline.

- **Consumer spending accelerates.** With covid retreat, pent-up demand released. Strong consumer position enhanced by lower inflation, lower interest rates, strong labor market conditions, and cessation of hostilities in Europe.
Scenario: Everything Works

GDP Growth
Real GDP Annual Growth

Unemployment Rate
Percent Unemployed

Inflation Rate
CPIU, Annual Percent Change

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP Growth</th>
<th></th>
<th>Unemployment Rate</th>
<th></th>
<th>Inflation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>5.7%</td>
<td>2021</td>
<td>3.9%</td>
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<td>4.8%</td>
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</tr>
<tr>
<td>2023</td>
<td>3.5%</td>
<td>2023</td>
<td>3.2%</td>
<td>2023</td>
<td>2.8%</td>
</tr>
<tr>
<td>2024</td>
<td>2.8%</td>
<td>2024</td>
<td>3.1%</td>
<td>2024</td>
<td>2.2%</td>
</tr>
</tbody>
</table>
Scenario Comparisons

Annual Growth Rates

- Everything Works: 2022=3.0%, 2023=2.8%, 2024=3.3%
- War: 2022=-0.8, 2023=-5.8%, 2024=2.3%

Volume, Thousand MT

- Baseline
- War
- Everything Works