Welcome
The Portland Cement Association assigns the highest priority to full compliance with both the letter and the spirit of the antitrust laws, and it is vital that this meeting be conducted in a manner consistent with that policy. If at any time during the course of the meeting, PCA counsel or staff believe that a sensitive topic under the antitrust laws is being discussed, or is about to be discussed, they will so advise the meeting and halt further discussion. As attendees at this meeting, you should likewise not hesitate to voice any concerns you may have in this regard.

It is important to bear in mind that those in attendance at this meeting may be your competitors. Any discussions of commercial matters with one's competitors may create the appearance of an antitrust violation, even though there is none. Therefore, such discussions should be avoided at all times before, during, and after this meeting.

Portland Cement Association
California Regional Economic Conference Agenda
October 23, 2019
Key Focus Area: California, Nevada, Arizona

Economic and Construction Outlooks

8:30 – 9:00 a.m. Continental Breakfast
9:00 – 9:15 a.m. Intro and Greeting (Ed Sullivan)
9:15 – 10:15 a.m. Moody’s Regional Economist (Martin Wurum)
10:15 – 11:15 a.m. National Forecast (Ed Sullivan)
11:15 – 11:30 a.m. Break
11:30 – 12:20 p.m. Regional Outlook (Dave Zwieke & Brian Schmidt)
Introduction: Market Intelligence as a Resource
Over the past 40 years, U.S. cement manufacturers have reduced their energy usage by over 40 percent.

Data important for ENERGYSTAR Awards
Industry Impact Reports & Special Surveys

- PCA Market Intelligence regularly assesses the industry impacts of various legislative and regulatory proposals

- Requests on behalf of member committees or Washington D.C. office

- These reports will often be supplemented by special member surveys to get unique industry data specific to the issue at hand

- Reports in recent years have covered NAAQS, WOTUS, NESHAP, Fly Ash Storage, and gas tax Proposals
Results

• Cumulatively, PCA analysis in the advocacy arena has saved the U.S. cement industry billions in compliance costs.

• Over the past few years, PCA has tackled NESHAP, WOTUS, NAAQS, CCR Storage, carbon tax, and a myriad of other potential regulations.

• In addition to defending against regulation, PCA has demonstrated the ability of the industry to supply infrastructure projects, argued for rule changes with the NTSB, and reported on the affects of highway bill and gas tax proposals.
Advocacy On the Horizon

- Coordinating a GHG strategy
- Leveraging industry data and expertise to form a proactive approach
- We are only as effective as the strength of the data we collect
U.S. Monitor

- Comprehensive report on all aspects of the economy relevant to the cement industry
- Cement consumption, production, and imports at the national and state level
- Real monthly & annual construction put-in-place
- Also includes:
  - Masonry Consumption
  - Clinker Imports
  - Housing permits by state
U.S. Consumption Trends Report

- Report provides a preliminary view of monthly cement consumption by state based on member shipments by destination

- Implied YTD growth rates are calculated using USGS data and two months of member dues estimates

- Report includes monthly and YTD precipitation maps
## Colorado Nonresidential Indicators

### Nonresidential Construction Spending

<table>
<thead>
<tr>
<th>Category</th>
<th>FY17-Change</th>
<th>FY18-Change</th>
<th>FY19-Change</th>
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### Change from Last Year

<table>
<thead>
<tr>
<th>Category</th>
<th>Dec-17</th>
<th>Dec-18</th>
<th>Dec-19</th>
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## Colorado Public Indicators

### Public Construction Spending

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<tr>
<th>Category</th>
<th>FY17-Change</th>
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State Ranking Report

• States ranked monthly by residential, nonresidential and public construction fundamentals

• **Residential:** mortgage delinquency rates, unemployment rates, home price growth

• **Nonresidential:** manufacturing, office, retail, hospitality and total employment

• **Public:** employment, long-term debt to GSP, transportation capital expenditure, tax revenues, unfunded pension obligations

Regional Analysis: Ranking Cement Market Fundamentals

Home appreciation decelerated slightly in June but remains elevated on the account of continued tight supplies. Cooling in home prices is healthy given emerging affordability concerns in some markets. However, home price appreciation will likely remain elevated in the near term as inventory-to-sales ratios are near historic lows. Homebuilders continue to cite lack of labor availability, labor shortages and rising material prices as constraints. Given that the market appreciation is driven more by tight supply rather than exuberant demand, residential construction appears much better positioned in this cycle.

In terms of construction spending outlook for 2018, recent patterns are expected to remain in place. Moderate growth is expected for residential with a slight decline in nonresidential. Public construction spending is expected to improve slightly from the decline in 2017 but growth is to remain tepid.

**Market Ranking**

The level and degree of the obstacles slowing the construction recovery vary widely by state and region. The purpose of the fourth report is to provide insight into the economic dynamics that will help shape regional construction recoveries. The rankings are based on economic fundamentals which identify regional markets most favorable for improved cement consumption. Due to the broad nature of the criteria, individual states inordinately influence rankings due to project type variation, cement intensity, policy/permittions actions, and other unique drivers.

Construction recovery will continue to emerge in local markets before being reflected in national numbers. Homebuilders, for example, are unlikely to significantly accelerate construction activity until two critical conditions are met: 1) low levels in inventories of undelivered new homes resulting in lower than five months supply, and 2) stable or rising home prices. Both conditions are now increasingly being met and signaling the residential construction recovery.

Labor shortages continue to influence the speed and magnitude of recovery which varies by region. Regions with weakest residential fundamentals will likely lead the market in rates of growth given years of under-building. PCA expects single family construction to take a more prominent role in residential construction in coming years.
U.S. Tracking Report

- Report tracks PCA National Forecast accuracy
- Provides transparency with regards to forecast
- SAAR trend line compared against national forecast data
- Graphs of 3 & 12 month moving averages for all forecast categories
Competitive Materials Report Update

- Monthly update of producer price indices of the competing materials of concrete: steel, lumber, and asphalt

- Features graphs charting the relative prices and cost indicators for concrete’s three main competitors

Series include:
- Canadian Lumber Imports
- Steel Scrap PPI
- West Texas Intermediate
- U.S. Coking Capacity
Cement Consumption by User Groups

Precast Concrete: Data

The market for precast concrete in the U.S. experienced an increase of 0.1% to 250,800 MMDT during the fourth quarter of 2017, when compared to the year ago levels. Precast concrete accounted for 3.5% of total Portland cement shipments in the fourth quarter of 2017. The highest region was the west region of the cement industry in this category with 105,821 MMDT, followed by California with 116,235 MMDT.

Precast Concrete: Analysis

Precast concrete is concrete used in forms in a controlled environment and allowed to achieve a specified strength prior to placement on location. Examples of products include, but are not limited to, architectural walls, pavers, catch basin covers, concrete furniture, and fence posts.

<table>
<thead>
<tr>
<th>Precast Concrete (000 MT)</th>
<th>PCA Projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2016</td>
</tr>
<tr>
<td>1st Quarter</td>
<td>560</td>
</tr>
<tr>
<td>% Change Y/Y</td>
<td>2.3%</td>
</tr>
<tr>
<td>% Change YTD</td>
<td>4.2%</td>
</tr>
<tr>
<td>2nd Quarter</td>
<td>629</td>
</tr>
<tr>
<td>% Change Y/Y</td>
<td>10.5%</td>
</tr>
<tr>
<td>% Change YTD</td>
<td>7.3%</td>
</tr>
<tr>
<td>3rd Quarter</td>
<td>685</td>
</tr>
<tr>
<td>% Change Y/Y</td>
<td>5.5%</td>
</tr>
<tr>
<td>% Change YTD</td>
<td>10.2%</td>
</tr>
<tr>
<td>4th Quarter</td>
<td>628</td>
</tr>
<tr>
<td>% Change Y/Y</td>
<td>12.1%</td>
</tr>
<tr>
<td>% Change YTD</td>
<td>10.7%</td>
</tr>
<tr>
<td>Total</td>
<td>2,405</td>
</tr>
<tr>
<td>% Change Y/Y</td>
<td>5.7%</td>
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</table>

With strong nonresidential construction spending in 2016, the precast segment was able to bounce back and grew nearly 9%. Construction spending for nonresidential in 2017 was not as strong but it does not appear to have negative effects on cement consumption in the sector. Precast concrete consumption was up 7% compared to the prior year.

Cement consumed in nonresidential construction projects has been growing at a healthy pace. However, it seems that some large commercial projects have been completed or nonresidential construction spending slowed throughout 2017. Looking ahead, PCA forecasts moderate growth in terms of nonresidential spending next year, which will benefit the precast segment.

Precast concrete is also allocated on upwards of 40% to public construction, which fell in 2017. The long term outlook remains positive though with the likelihood of increased federal investment from an infrastructure bill. Public construction spending and cement consumption are expected to rebound and grow in 2018.

Precast concrete consumption finished 2017 with another strong year of growth. This segment was largely supported by gains in the nonresidential sector during the year. Looking to 2018, precast concrete is projected to experience more modest growth near 9% due to increased public and nonresidential spending.
U.S. Cement Industry Annual Yearbook

- Report provides detailed statistics from all facets of the cement industry
- 48 Data tables; 20-year historical time series
- Categories include:
  - Economic activity & construction drivers
  - Cement consumption
  - Infrastructure
  - Cement Supply
  - Operating characteristics
  - International cement markets
Rain. Said it all. Rain.

Monthly Precipitation Ranks

Year-to-Date Precipitation Ranks
PCA Regional Divisions

- Brian Schmidt
- Dave Zwicke
- Joe Chiappe
- David Lan
Slower Growth Ahead

Martin A. Wurm, Senior Economist

October 2019
Late Cycle Expansion Across the Nation

Status as of August 2019 data

Sources: Moody’s Analytics
The First Warning Signs are Emerging

Share of metro area GDP in late-cycle expansion, %

Source: Moody’s Analytics
Labor Market Have Rarely Been This Tight

Unemployment rate, %

Sources: BLS, Moody’s Analytics
Labor Shortages Persist

Job hire rate net job opening rate*, %, quarterly

*Sum of hires each month vs. openings at a point in time.

Sources: BLS, Moody’s Analytics
Tech Is Driving West Leaders…

Employment, % change since 2011, 2019Q3

San Francisco 160%
Reno
Las Vegas
Seattle
Salt Lake City
Denver
San Jose
Portland
Phoenix
U.S.
Oakland
San Diego
Los Angeles
Riverside
Orange County

Sources: BLS, Moody’s Analytics
The South Is Catching Up To The West

Wage and salary income, % change yr ago

Sources: BEA, Moody’s Analytics
…Where House Prices Remains Hot
Core Logic Single-Family Home Price Index, 2012Q1 = 100

Sources: Core Logic, Moody’s Analytics
Existing-Home Markets: Still Very Tight
Existing single-family home listings, months of sales, 4-qtr. MA

Sources: NAR, Moody's Analytics
…But West Construction No Longer Lags

Completions-household formation, % of vacant housing stock

Sources: Census Bureau, Moody’s Analytics
Affordability Holds Mostly Steady

Moody’s Analytics housing affordability index, Equilibrium=100

Sources: BEA, BOC, NAR, Moody’s Analytics
Affordability: The Perennial West Problem

MA housing affordability index *, % of qualifying income, 2018Q4

* Median family income, % of qualifying income for standard mortgage on median price existing single-family home

Sources: Census Bureau, NAR, FHFA, Moody’s Analytics
Few Low Cost Areas Still Shine

Cost of Doing Business, U.S.=100, 2017

Sources: Moody’s Analytics
Cost Advantage Bolsters Mountains

Net domestic migration per 1,000 residents, 2012 to 2018

Sources: Census Bureau, Moody’s Analytics
Aging Expansion, Slower Hiring

Payroll employment, % change year ago

Sources: BLS, Moody’s Analytics
…While Land and Labor Costs Stay High

Total personal income, 2014Q1 = 100

Sources: BEA, Moody’s Analytics
Trade War: Consumers at Risk

Tariffed imported goods from China by type, value % of total

Sources: Census Bureau, USTR, USITC, Moody’s Analytics

*Total value is $300 bil
Tariffs’ Impact Is Discernible

U.S. goods imports from China, % change yr ago

Sources: Census Bureau, USITC, Moody’s Analytics  *Imposed before Sep 1, 2019
Businesses Lose Faith

Business sentiment diffusion index, net % positive

- Brexit vote
- Trump elected
- Tax cuts
- Trade war
- Oil price peak
- China devalues
- Government shutdown

Source: Moody’s Analytics
Escalation a Self-Inflicted Wound

Real GDP, % change yr ago, Trade War Escalation scenario

Source: Moody’s Analytics
Direct Trade War Impact Hurts Farm Belt

Economic impact of goods tariffs with China, U.S. = 1.0

Sources: BEA, Moody’s Analytics
Manufacturing Hubs Hurt by Indirect Costs

Economic impact of goods tariffs with China, U.S. = 1.0

Sources: BEA, Moody’s Analytics
PCA Cement Outlook

Ed Sullivan, SVP & Chief Economist

2019 I California Regional Conference
Strength & Duration of U.S. Recoveries

Real GDP Percentage Growth From Previous Trough

- 1945-1953
- 1961-1969
- 1983-1990
- 1991-2000
- 2001-2007
- 2009 - Current
- 2009- ?: 124 Months

- 1945-1953: 120 Months
- 1961-1969: 120 Months
- 1983-1990: 120 Months
- 1991-2000: 120 Months
- 2001-2007: 120 Months
- 2009 - Current: 124 Months

Duration (# of Quarters)
Recession Indicators
The inverted yield curve - where the federal funds or 2 year treasury rate yield is higher than the 10-year bond yield. This can point to a recession because when investors pile into long-dated bonds it means they are becoming more risk-averse about the economy.

Length and Magnitude matter as a predictor.
Leading Economic Indicators
Quarterly % Change, Composite Index

Source: Conference Board
Economic Fundamentals

Two Key Pillars
The Labor Market & Consumer Spending
Labor Markets

Net Job Creation
Monthly Gain

Net Job Creation
Annual

Net Employment (Thousands):
2008-2009
8.6 Million Jobs Lost
2010-2018
19.4 Million Jobs Created

Net Employment Gains (thousands):
158K During 2019 Months
Labor Markets

Unemployment Rate
U3 Measurement

Labor Costs
Quarterly Growth
Inflation Rates

Labor Costs
Quarterly Growth

Inflation Rate
CPUI, Annual % Change
Sentiment & Wealth

Home Prices
Thousand Current $

Consumer Confidence
1985=100
The Potential for a Near Term Recession

• All these strengths will take time to unravel under normal cyclical conditions.
  • According to Moody’s there is only a 21% chance the economy slips into a recession in the next 12 months based on its economic data. Its separate financial model, which includes the yield curve, puts the risks at 47%.

• Recessions typically occur because imbalances materialize, and there is a sectoral retreat in response to these excesses.
  • Nothing lies in the near term horizon that seems particularly threatening.

• This is an abnormal economic recovery, from an abnormal recession.
  • The pace of economic recovery has been extremely slow and perhaps has reduced the generation of excesses and imbalances.

• The possible factor that may lead to the next recession may be old age.
Risks to the recovery.
US Near Term Forecast Risks

Real GDP Growth: Tariffs
Annual % Change

Real GDP Growth: Global Slowdown
Annual % Change
Economic Policy Uncertainty Index
Indexed to 1985=100

Survey Papers

- Chicago Tribune
- USA Today
- Miami Herald
- SF Chronical
- LA Times
- WSJ
- Boston Globe
- Dallas News
- Houston Chronical
- Washington Post
Federal Reserve Policy
The Fed’s Dual Mandate

Unemployment Rate
U3 Measurement

Inflation Rate
CPUI, Annual % Change
The Outlook
Economic Growth
Annual Percent Change, Real Gross State Product

- Aging recovery but fundamentals solid.
- Increased vulnerability to threats.
- Federal Reserve will defend, but with limited tools.

Source: PCA
Even in context of low mortgage rates areas of affordability pressures exist.

- Millennials and Gen X more important as a share of home buying population.
- Student debt
Multifamily Housing Starts

- Home affordability issues add to rental and condo.
- Household formation remains strong.
- Aging baby boomers move to condos.
- Vacancy rates low, despite marginally worsening mortgage-to-rent ratios.

Source: PCA
Nonresidential Cement Consumption
Thousand Metric Tons

- Job market strength supports cyclical portions of segment.
- Retail vulnerability partially offset by warehousing.
- Late stage recovery in some markets.
- Ag recession continues.
- Oil shows modest growth.
Cement/Concrete Market Segments

<table>
<thead>
<tr>
<th>Segment</th>
<th>2014-18 Average</th>
<th>2019-2024 Average</th>
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<tbody>
<tr>
<td>Highway &amp; Streets</td>
<td>29%</td>
<td>31%</td>
</tr>
<tr>
<td>Residential</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>Buildings</td>
<td>23%</td>
<td>19%</td>
</tr>
<tr>
<td>Misc. Commercial</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Misc. Public</td>
<td>9%</td>
<td>12%</td>
</tr>
<tr>
<td>Misc. Commercial</td>
<td>1%</td>
<td>9%</td>
</tr>
</tbody>
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2014-18 Average

2019-2024 Average
Regional Markets

National growth rates mask the variances in regional performances.

- **Northeast & Great Lakes Regions** – are generally older communities and hubs of manufacturing. Characterized by a deterioration in population and economic bases reflected in slower cement consumption growth rates.

- **The Middle Regions** – are dominated by agriculture and energy industries. Ag industries tend to be less volatile and slow growing. Energy regions tend to be highly volatile and growth is influenced by oil prices.

- **Western & Southeastern Regions** – attract high tech and retirees. Dynamic job markets and population growth characterize these regions and reflected in strong cement consumption.
Longer Term Considerations

- Demographics
- Debt
- Sourcing
Population Growth
Thousand Persons

Cement Consumption
Million Metric Tons

Population growth adds 58.8 million more persons by 2040.

Range: 140 to 150 MMT
Medicare & Medicaid have grown from 8% of social benefit payments in 1965 to 45% in 2017.
Industrial Greenhouse Gas Emissions

Millions Metric Tons CO2e

Source: EPA
Net Supply
Cement Supply
Million Metric Tons.

Assumes 3% annual growth in SCM usage.

Net Supply Capabilities
Million Metric Tons
Regional Cement Trends: Through 2020

Based on year-over-year % Growth

Exceed National
National Average
Subnational

Source: PCA 2019 Summer State Forecast
U.S. Total Net Migration
2016 through 2018

Source: U.S. Census Bureau
Total Net Migration 2016-2018 (000s)

Source: U.S. Census Bureau
Change in Net Migration

Change Between 2018/2017 (000s)

Source: U.S. Census Bureau
Total Net Migration - California

(000s)

Source: U.S. Census Bureau
Demographics

10Y Population Growth

Total Population – AZ, CA, NV
Thousands

Source: Census
Employment Growth

YTD Growth

CA

NV

AZ

Total Employment – AZ, CA, NV

Thousands

Source: BLS, PCA
Regional Employment Trends

Year-over-Year Growth

Source: BLS, PCA
U.S. Business Confidence Waning

1985=100

- First Round of Tariff Expansion & Retaliation
- Level Not Seen Since Great Recession

Source: OECD
Manufacturing Exposure

10% or Greater Manufacturing Share of Total Employment

AZ CA NV Manufacturing Employment (000s)
Agriculture Exposure

Crop Cash Receipts 1% or Greater Share of Gross State Product

Agriculture Price Index—Food Grain (2011=100)

China Trade Retaliation
Regional Trade Exposure

Exports to China as a Percent of Total State Exports (2017)

Source: Census, PCA
Regional Trade Exposure

Exports to China as a Percent of Total State Exports (2017)

Top 100 Metro Areas

- 1.2 to 4.9%
- 5.0 to 9.9%
- 10.1 to 14.1%
- 3.1 to 4.9%
- 5.0 to 9.9%
- 10 to 14.9%
- 15 to 19.9%
- > 20%

Source: Census, PCA
Regional Trade Exposure
Exports to China as Percent of Total Exports

Top 100 MSA Rank

Bakersfield 1 Las Vegas 100
Fresno 2 San Francisco 95
Stockton 3 Los Angeles 86
Phoenix 73

Source: Census, PCA
California Labor Markets Worth Monitoring

Year-over-Year Change in Unemployment Rate

= Recession

Source: BLS, PCA
Economic Growth
Annual Percent Change, Real Gross State Product

Average Annual Growth
<table>
<thead>
<tr>
<th></th>
<th>Historical</th>
<th>Projected</th>
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<tr>
<td>California</td>
<td>2.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Arizona</td>
<td>1.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Nevada</td>
<td>1.8%</td>
<td>2.9%</td>
</tr>
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Source: PCA
Residential
Single Family Construction – AZ, CA, NV

Single Family Permits, 6mma, SAAR

Source: Census, PCA

% Recovered to Trend
Arizona 63%
California 51%
Nevada 47%

-46%
Recent Weakness in Single Family Permits

Single Family Permits, SAAR

Source: Census, PCA
The average college graduate has 2.5 times - or $20,900 - more debt than their 1993 peers in inflation-adjusted dollars.

- United States: $34,444
- Nevada: $23,170
- California: $23,927
- Arizona: $25,168

Source: U.S. Department of Education, PCA
Multi Family Construction – AZ, CA, NV

Multi Family Permits, 6mma, SAAR

Source: Census, PCA
On the national level, home values are in line with long term trends

Single Family Existing Home Price Relative to Household Income

High inflation of 70s drove home prices up faster than incomes

Long-Term Average

Housing Bubble

Source: BEA, BLS, PCA
Regional Affordability Concerns

Price-Income ratios are rising faster than the national average in an already expensive market…

…with affordability concerns showing up to varying degrees city to city…

Regional MSA Weighted Price-Income Ratio

Long-Term Average

MSA's Price-Income Ratio

…but larger affordability troubles are being shielded by low interest rates.

Source: BEA, BLS, PCA
MSA Level Momentum

Residential Building Permits
12 mma/24 mma

Market Intelligence’s new
MSA Construction Performance Report

Top 100 MSA’s ranked based upon construction fundamentals and macro drivers

Report for each Census Division

Source: Census, PCA
AZ, CA, NV: Single Family Housing Permits

Average Annual Growth

<table>
<thead>
<tr>
<th>Average Annual Growth (Projected)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>2.9%</td>
</tr>
<tr>
<td>California</td>
<td>2.4%</td>
</tr>
<tr>
<td>Nevada</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Source: PCA
Rental Vacancy Rates Remain Low Throughout Region

4Q Moving Average, Percent

Source: Census – Current Population Survey
AZ, CA, NV: Multifamily Housing Permits

Average Annual Growth

Projected

Arizona  1.9%
Nevada   0.8%
California 2.6%

Source: PCA
Source: PCA

AZ, CA, NV: Residential Cement Outlook

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>11.2%</td>
</tr>
<tr>
<td>2019</td>
<td>-4.3%</td>
</tr>
<tr>
<td>2020</td>
<td>1.6%</td>
</tr>
<tr>
<td>2021</td>
<td>-0.7%</td>
</tr>
<tr>
<td>2022</td>
<td>4.1%</td>
</tr>
<tr>
<td>2023</td>
<td>3.9%</td>
</tr>
<tr>
<td>2024</td>
<td>3.6%</td>
</tr>
</tbody>
</table>
Nonresidential
Nonresidential Construction Spending: AZ, CA, NV

2009$, Billions, SAAR

Year-to-Date
- Arizona: -4.4%
- California: -7.0%
- Nevada: -18.1%

Source: PCA
Nonresidential Construction Spending by Major Component
2009$, Billions, SAAR

Year-Over-Year

<table>
<thead>
<tr>
<th>Component</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>-33.8%</td>
</tr>
<tr>
<td>Office</td>
<td>3.5%</td>
</tr>
<tr>
<td>Medical</td>
<td>-7.0%</td>
</tr>
<tr>
<td>Retail</td>
<td>-14.3%</td>
</tr>
</tbody>
</table>

Source: PCA
Will Businesses Spend on Capital Investment?

Corporate profits remain healthy while business confidence has been declining for 12 months.

Source: BLS, BEA, OECD, PCA
Nonresidential MSA Level Momentum

Based on moving average growth relative to the past 24 months

Gives indication if market is accelerating or decelerating

Based on contract awards, which are forward looking

Las Vegas’ commercial construction market, for instance, has been hot. This will show up in previous contract awards as tons start to be poured.

Source: Dodge, PCA
Wind Energy in California

- Installing wind capacity cement intensive.
- California “carbon-zero” electricity by 2045
- California has longest wind exposed coastline, yet a distant fourth in installed wind capacity and less than quarter of Texas’ capacity

Pacific Wind Energy Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Megawatts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,000</td>
</tr>
<tr>
<td>2004</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
</tr>
</tbody>
</table>

Installed Wind Capacity by State

<table>
<thead>
<tr>
<th>State</th>
<th>Megawatts</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>25,629</td>
</tr>
<tr>
<td>Texas</td>
<td>8,072</td>
</tr>
<tr>
<td>Other States</td>
<td></td>
</tr>
</tbody>
</table>

Source: AWEA, PCA
Nonresidential Cement Consumption: AZ, CA, NV

Metric Tons

Annual Growth
- 2018: -1.2%
- 2019: -1.4%
- 2020: 4.1%
- 2021: 1.4%
- 2022: 2.6%
- 2023: 2.3%
- 2024: 3.0%

Source: PCA
Building Trends
Concrete Framing Shares in Total Commercial & Multifamily Buildings

SQFT based, 3YMA

The region has a higher concrete market share in the vertical arena than the broader U.S.

Source: Dodge, PCA
Mid and High Rise Gaining in Importance

SQFT Based; California Lodging Construction

Source: Dodge Data & Analytics
Wood Framing Share (Lodging)

SQFT – Share of total construction activity (6-10 stories)

Source: McGraw Hill, PCA
Wood Framing Share (Lodging)

SQFT – Share of total construction activity (6-10 stories)

Source: McGraw Hill, PCA
Concrete Framing Share in California Mid & High Rise Lodging

SQFT Based; 4+ Stories; Multifamily, Dorms, Hotels

Source: Dodge Data & Analytics
California Cement Consumption: Lodging Construction
(000 Metric Tons); Multifamily, Dorms, Hotels

Volume lost to market share erosion reflects additional cement consumption if concrete market share remained at ‘00-’05 average levels.
Low Carbon Building Code: Tons at Stake
(000 Metric Tons); Lodging Construction Market

Baseline Cement Consumption

Tons Lost with Cement Limits

Assumes cement limits are enacted state-wide in 2020 resulting in an average 23.7% reduction in cement intensity relative to baseline consumption projections.

Source: PCA
Public Construction Outlook
Public Cement Consumption: AZ, CA, NV

Metric Tons

Source: PCA

Policy has potential to greatly shape outlook:

Annual Growth
2016: -12.2%
2017: 10.9%
2018: 2.3%

Timing? Size? Allocation?
The Need for Infrastructure Funding

% Share of lane miles rated ‘poor’ based on IRI

National Average
12.8%

Source: FHWA – Table HM-64, PCA
Public Capital Investment
Share of GDP

State & Local capital investment in as a share of GDP has declined to a post WWII low.

Capital investment based on structures, i.e. schools & roads. Excludes equipments & software.

Source: BEA, PCA
Medicare & Medicaid have grown from 8% of social benefit payments in 1965 to 45% in 2017.

Source: BEA, PCA
Unfunded State Pension Liabilities as Share of GSP

Unfunded State Pension Liabilities as Share of GDP (2018)

National Rank

<table>
<thead>
<tr>
<th>Per Capita</th>
<th>% of GSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>44</td>
</tr>
<tr>
<td>California</td>
<td>48</td>
</tr>
<tr>
<td>Arizona</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: ALEC
Public Construction Spending: Arizona

2009$s, Millions, 6MMA

Source: PCA
States are Increasingly Less Reliant on Federal Funds

Cents Per Gallon

Source: Federal Tax Administrators, FHWA, PCA
California SB – 1 (Annual Funding)

- Maintenance & Rehabilitation of State Highway System: $1.8 billion
- New Funding to Transit Agencies: $750 million
  - Funds will help transit increase access and build capital projects
- Maintaining & Repairing the State’s Bridges and Culverts: $400 million
- Trade Corridor Enhancement: $300 million
  - Program will fund freight projects along import trade corridors
- Repair Local Streets & Roads: $1.5 billion
- Solutions for Congested Corridor Program: $250 million
  - Funds dedicated to improve traffic flow along states most congested routes
- Matching Funds for Local Agencies: $200 million
- Bike & Pedestrian Projects: $100 million
- Research, training, grants and other: $62 million
Potential Cement Impact

• SB – 1 Allocation at face value:
  • Estimated SB -1 Intensity : 154,000 Metric Tons Cement Per $1 billion of construction spending
  • 820,812 Metric tons per year.

• SB – 1 Allocation adjusted for maintenance & sterilization:
  • Intensity : 110,000 Metric Tons Cement Per $1 billion of construction spending
    • Assumes 30% funding sterilization
    • Assumes maintenance intensities
  • 422,043 Metric tons per year.
Public Construction Spending: AZ, CA, NV

2009$s, Millions, 6MMA

Region YTD:
Total Public: +0%
Highway: +8%

Source: PCA
Highway Construction Spending:

2009$'s, Millions

Source: PCA
Oman Concrete Paving Shares
4Q Moving Average, Volume Based Share

Source: OMAN PCA
Public Cement Consumption: AZ, CA, NV

Metric Tons

2018-2024 CAGR: 2.9%

Annual Growth
- 2018: 2.3%
- 2019: 6.7%
- 2020: 2.6%
- 2021: 0.5%
- 2022: 2.9%
- 2023: 3.9%

Source: PCA
Total Cement Consumption – AZ, CA, NV

Metric Tons

2020/19 Growth

- Arizona: 2.3%
- California: 2.7%
- North: 2.3%
- South: 2.9%
- Nevada: 0.1%

Source: USGS, PCA

2018-2024 CAGR: 2.2%


0.3% 9.0% 7.3% 1.6% 2.4% 1.1% 2.4% 2.9% 3.1%