Cement Outlook: 2009-2011

Ed Sullivan, Chief Economist PCA
Introduction: Overview

- Economic fundamentals are deteriorating quickly.

- Outlook shaped by policy actions.
Cement Composition - Virginia

2005
- Public: 39%
- Residential: 41%
- Nonresidential: 20%

2009
- Public: 49.0%
- Residential: 26.6%
- Nonresidential: 24.4%
Introduction: Stimulus

Underlying Economic Fundamentals
And…they are deteriorating at an alarming rate!

Stimulus Size  
Stimulus Details  
Stimulus Effectiveness  
Stimulus Timing

Metals Volume Estimates
Underlying Economic Fundamentals
States in Recession

Source: PCA/BLS
# Economic Outlook: Five Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Financial Crisis</th>
<th>Energy/Inflation</th>
<th>Labor Markets</th>
<th>State Deficits</th>
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<td>Risk Aversion</td>
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<td>Gasoline Prices</td>
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<td>Slower Job</td>
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<td>Tight Lending Standards</td>
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<td>Heating Prices</td>
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<td>Revenues Slow</td>
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<td>Commercial, Consumer, homeowner capital access reduced</td>
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<td>Fertilizer/Biofuels hit Ag Prices</td>
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<td>Entitlement Programs Continue</td>
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<td>Global</td>
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<td>Supply Side Costs Ingrained</td>
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<td>Deficits</td>
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<td>Cost of Business</td>
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<td>Drag on Recovery</td>
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<td>Adds Weakness to Dollar</td>
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<td>Offsets Possible</td>
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<td>Federal Stimulus Package</td>
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<td>Credit Cards</td>
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<td>Home Price Declines</td>
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<td>Reliance on Home Equity Gone</td>
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<td>Mortgage Payments</td>
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<td>Slower Economic Growth</td>
<td>Slower Job</td>
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<td>One Million Job Loss in 2008</td>
<td>Revenues Slow</td>
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<td>Housing Recovery Delayed</td>
<td>Entitlement Programs Continue</td>
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<td>State Fiscal Crisis Looming</td>
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</tbody>
</table>

**Global Financial Crisis**
- Mortgage Payments
- Credit Cards
- Defaults
- Tight Lending Standards
- Home Price Declines
- Reliance on Home Equity Gone

**Energy/Inflation**
- Structural Global Realities
- Gasoline Prices
- Heating Prices
- Fertilizer/Biofuels hit Ag Prices
- Supply Side Costs Ingrained
- Cost of Business
- Adds Weakness to Dollar
- Global

**Labor Markets**
- Slower Economic Growth
- One Million Job Loss in 2008
- Housing Recovery Delayed
- Nonresidential Declines
- State Fiscal Crisis Looming
- Public Declines

**State Deficits**
- Slower Job
- Revenues Slow
- Entitlement Programs Continue
- Deficits
- Drag on Recovery
- Offsets Possible
- Federal Stimulus Package
Economic Adversity

- Sub-Prime
- Energy
- Financial Crisis
- Inflation
- Labor Markets
- State Deficits

2006 2007 2008 2009 2010
Net Job Creation (Loss)
- Annual Change, Thousand Net Jobs

Job Loss 2009 = 4.1 Million
Job Loss 2010 = 1.8 Million
Unemployment Peaks at +11% Early-2010
Consumers feel the crunch...

Annual Percent Change

Retail Sales (L)

Consumer Confidence (R)
No Stimulus Job Loss Estimates

Million Jobs

2008

2009-2010

2008

2009-2010

Obama Economists

PCA
Point One

Regardless of Stimulus’ Effectiveness, Laid Atop Weaker Fundamentals
Point One

- Regardless of Stimulus’ Effectiveness…it will be laid atop dramatically weaker fundamentals......

- ...Impacting volume estimates for 2009-2010
Stimulus Size: Expectations for Growth

Stimulus Not a Silver Bullet...and..the untold Story on Expectations
“Stimulus Timeline”

<table>
<thead>
<tr>
<th>Phase</th>
<th>Policy Tool</th>
<th>Objective</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>Tax Cuts, Entitlement Spending,</td>
<td>Stabilize Economy, halt adverse momentum</td>
<td>Job Saving</td>
<td>Job Creating</td>
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<tr>
<td>Phase II</td>
<td>Shovel Ready Projects</td>
<td>Job Creation</td>
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<td>Phase III</td>
<td>Long Term Investments</td>
<td>Job Creation, Address Structural Economic Issues</td>
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</tbody>
</table>
Stimulus: GDP Impacts

Change in GDP From No Stimulus Scenario

Obama Economists

GDP 4th Q 2010: $12.2 Trillion

PCA

GDP 4th Q 2010: $11.6 Trillion

Note: Stimulus in PCA Outlook Overlaid upon weaker Fundamentals.
Stimulus: Job Creation Estimates

Million Jobs

<table>
<thead>
<tr>
<th>Obama Economists</th>
<th>PCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2010</td>
<td></td>
</tr>
<tr>
<td>Unemployment: 7.0%</td>
<td>8.8%</td>
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</tbody>
</table>

Job Estimates have large impacts on Cement/Concrete recovery assessments.
Economic Growth Outlook

Percent Change, GDP Growth Rate

Recession Scenario: With Stimulus

Recession Scenario: No Stimulus
Point Two

Expectations Vs Reality: More Stimulus May be Needed
Point Two

- Obama’s $789 billion plan may not be enough.
  - Obama economists expect an additional 2.8 million jobs lost.
    And plan aimed at creating/saving 3.7 million jobs.
  - PCA estimates that 8.5 million jobs may need to be created/saved.

- Stimulus plan required = $1.2 trillion (conservative)
  - And...Obama Economists implied it.....
  - Taxpayer pushback, politics prevented full initiation for now...
  - Don’t be surprised if a second stimulus plan materializes.
Phase One: Tax Cuts, Entitlements, State Aid

Expectations Vs Reality: More Stimulus May be Needed
"Stimulus Timeline"

**Policy Tool**
- Phase I: Tax Cuts, Entitlement Spending, State Aid
- Phase II: Shovel Ready Projects
- Phase III: Long Term Investments

**Objective**
- Phase I: Stabilize Economy, halt adverse momentum
- Phase II: Job Creation
- Phase III: Job Creation, Address Structural Economic Issues

**Timeline**
- 2009: Job Saving
- 2010: Job Creating
- 2011: Job Creating
Phase One: Impacts on Construction

- Tax cuts, Entitlement spending and State Aid are not going to boost construction from 2008 levels.....They are going to improve conditions that would have transpired without stimulus during 2009-2010.
- Job saving...Concrete Volume Saving
Phase One: Tax Impacts on Construction

- Tax cuts improve extremely adverse economic conditions.
  - Accent on Job Savings
  - Lags suggest roughly half of tax cuts impacts materialize in second half of 2009 and first half of 2010.
  - Impacts dissipate quickly.
  - Impacts on construction activity are modest.
  - Cement SAARs increase roughly 1% late 2009/early 2010, compared to a no stimulus scenario.
Phase One: State Aid Impacts on Construction

- State Aid reduced fiscal hardship facing states.
  - 94% of all public construction performed by state and local governments.

- Current state fiscal crisis estimated to be 5 times worse than 2002-2003 “crisis” – measured by potential deficits.
2009 Fiscal Deficits

Deficit % Share of Total Expenditures

Source: PCA/Census
Fiscal Health – Sum of States

Surplus/Deficit Index, 2005=100

<table>
<thead>
<tr>
<th>Year</th>
<th>Surplus</th>
<th>Deficit</th>
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<tbody>
<tr>
<td>1995</td>
<td>40</td>
<td>-60</td>
</tr>
<tr>
<td>1997</td>
<td>50</td>
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</tr>
<tr>
<td>1999</td>
<td>60</td>
<td>-50</td>
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<td>2001</td>
<td>70</td>
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<td>2003</td>
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<td>2005</td>
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<td>2007</td>
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<td>2009</td>
<td>110</td>
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<tr>
<td>2011</td>
<td>120</td>
<td>-30</td>
</tr>
<tr>
<td>2013</td>
<td>130</td>
<td>-40</td>
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</table>
## States Most at Risk of Budget Shortfalls

### Public Cement Consumption Share of Total

<table>
<thead>
<tr>
<th>State</th>
<th>Share</th>
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<tbody>
<tr>
<td>SOUTH CAROLINA</td>
<td>52.8%</td>
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<tr>
<td>NATIONAL</td>
<td>51.2%</td>
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<tr>
<td>MARYLAND</td>
<td>47.8%</td>
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<tr>
<td>WEST VIRGINIA</td>
<td>46.4%</td>
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<tr>
<td>GEORGIA</td>
<td>46.0%</td>
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<tr>
<td>VIRGINIA</td>
<td>42.9%</td>
</tr>
<tr>
<td>NORTH CAROLINA</td>
<td>41.1%</td>
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<tr>
<td>FLORIDA</td>
<td>38.6%</td>
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<tr>
<td>DELAWARE</td>
<td>30.0%</td>
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</tbody>
</table>

Source: PCA
Phase One: State Aid Impacts on Construction

- Fiscal hardship facing states: No stimulus scenario suggests:
  - 500,000 state/local employee layoffs in 2009, 650,000 layoffs in 2010
  - Tax increases
  - Deep cuts in spending
  - Priorities to fund entitlements: Medicaid
  - Construction spending faces dramatic cuts.
  - 50% of cement consumption – hard infrastructure.
Phase One: State Aid Impacts on Construction

- State reaction to Federal Funds
  - Reduce or forego layoffs
  - Fund entitlement programs
  - Reduce or forego tax increases

- These state reactions reduce potential money directed to construction.

- Nevertheless, state aid is largest contributor to construction activity during “Phase I”
Phase Two: Shovel Ready

Expectations Vs Reality: More Stimulus May be Needed
“Stimulus Timeline

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<td>Spending, State Aid</td>
<td>momentum</td>
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<tr>
<td>Phase II</td>
<td>Shovel Ready Projects</td>
<td>Job Creation</td>
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<td>Phase III</td>
<td>Long Term Investments</td>
<td>Job Creation, Address Structural</td>
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<td>Economic Issues</td>
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</table>
“Shovel Ready” Timeline

House Bill
Obama Inaugurated
Senate Passes & Bill Signed
Federal Paperwork
State Paperwork
Bid Letting
Bid Review
Contractor Paperwork
Construction Begins

Jan Feb March April May June July August

Job Creation May Come Later Than Many Expect
Phase Two: Ready to Go

- Projects that can be undertaken within 180 days.
  - Paint a bridge Versus new ramp for a bridge.
  - Resurface a road Versus Expand a road
  - Low cement intensities per $ spent.

- These programs will create jobs and cement volume increases...but not as many as “Hard” infrastructure investment.
  - Panic to spend Versus Patience and Payoff
Point Three

Significant Relief for Construction does not Materialize in 2009
Due to administration lags, potential construction impacts begin to materialize late third quarter/early fourth quarter...

...and..."shovel ready" projects carry very low cement intensities....

...leaving 2009 volume impacts muted.
Phase Three: “Hard” Infrastructure

Expectations Vs Reality: More Stimulus May be Needed
“Stimulus Timeline

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<td>Job Creating</td>
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<td>Job Saving</td>
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<td>Job Creating</td>
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<td>Long Term Investments</td>
<td>Job Creation, Address Structural Economic Issues</td>
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Phase I: 2009

- Tax Cuts, Entitlement Spending, State Aid
- Stabilize Economy, halt adverse momentum

Phase II: 2010

- Shovel Ready Projects
- Job Creation

Phase III: 2011

- Long Term Investments
- Job Creation, Address Structural Economic Issues
Concrete Intensive Projects Create More Jobs Than Resurfacing
Economic Growth Outlook

Percent Change, GDP Growth Rate

Recession Scenario: With Stimulus

Recession Scenario: No Stimulus
Connect With Concrete

Adding it Up
Spending Details
Millions of $
Direct Stimulus Impacts – United States

Share of increased cement demand

- Aid-to-States: 42%
- Infrastructure Investment: 53%
- Tax Cuts: 5%
Total Added Cement Consumption – U.S.

000 Metric Tons

Source: PCA
Percent Increase In Consumption Compared to No Stimulus

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption Increase</th>
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<tbody>
<tr>
<td>2009</td>
<td>6</td>
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<td>2010</td>
<td>30</td>
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<tr>
<td>2011</td>
<td>25</td>
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### Stimulus Scenario – Cement Demand

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<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>Fall Forecast</td>
<td>85,485</td>
<td>83,327</td>
<td>91,507</td>
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<tr>
<td>Annual Change</td>
<td>-11.6%</td>
<td>-2.5%</td>
<td>9.8%</td>
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<tbody>
<tr>
<td>No Stimulus</td>
<td>76,950</td>
<td>70,025</td>
<td>76,327</td>
</tr>
<tr>
<td>Annual Change</td>
<td>-19.0%</td>
<td>-9.0%</td>
<td>+9.0%</td>
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<tr>
<td>Direct Tons</td>
<td>5,004</td>
<td>16,972</td>
<td>6,641</td>
</tr>
<tr>
<td>Indirect Tons</td>
<td>500</td>
<td>3,394</td>
<td>13,281</td>
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<tr>
<td>Total Added Demand</td>
<td>5,504</td>
<td>20,366</td>
<td>19,922</td>
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<tr>
<td>Total Market (With Stimulus)</td>
<td>82,454</td>
<td>90,391</td>
<td>96,248</td>
</tr>
<tr>
<td>Annual Change</td>
<td>-13.2%</td>
<td>+9.6%</td>
<td>+6.5%</td>
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## Stimulus: State Impacts

**Added Cement Demand: 2009-2011**

<table>
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<th>Rank</th>
<th>State</th>
<th>MT</th>
<th>Share of Total (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>California</td>
<td>6,080</td>
<td>13.4</td>
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<tr>
<td>2</td>
<td>Texas</td>
<td>4,860</td>
<td>10.7</td>
</tr>
<tr>
<td>3</td>
<td>Florida</td>
<td>3,266</td>
<td>7.2</td>
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<tr>
<td>4</td>
<td>Ohio</td>
<td>1,744</td>
<td>3.8</td>
</tr>
<tr>
<td>5</td>
<td>Illinois</td>
<td>1,718</td>
<td>3.8</td>
</tr>
<tr>
<td>6</td>
<td>Pennsylvania</td>
<td>1,664</td>
<td>3.7</td>
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<tr>
<td>7</td>
<td>Georgia</td>
<td>1,600</td>
<td>3.5</td>
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<td>8</td>
<td>New York</td>
<td>1,523</td>
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<td>Arizona</td>
<td>1,271</td>
<td>2.8</td>
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<td>Virginia</td>
<td>1,097</td>
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</tr>
<tr>
<td>11</td>
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<tr>
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<td>Indiana</td>
<td>923</td>
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<td>Missouri</td>
<td>919</td>
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<td>Wisconsin</td>
<td>905</td>
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</tr>
<tr>
<td>15</td>
<td>Louisiana</td>
<td>889</td>
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</tr>
</tbody>
</table>

*Source: PCA*
Portland Cement Consumption
Thousand Metric Tons

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Point Four
Point Four

- Stimulus gains are substantial beginning in second half of 2010...

- ...But even with these gains...past cyclical peaks are not expected to materialize until 2015.
Implications

Market Imbalances
Capacity Expansion

Thousand Metric Tons

Stated Capacity Expansions

Potential Increases From Specification Changes
Market Imbalances

- Changes in Cement Consumption Tons + Capacity Expansion Tons
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Import Volume

Thousand Metric Tons

- 13 MMT Decline: Absorbs Entire Imbalances
- 11 MMT Decline: Absorbs Most Imbalances
- 5 MMT Decline: Absorbs Little Imbalance
Capacity Adjustments *

* Adjustments Include Five Delays in Plant Commissioning and Eleven Plant Closures
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Capacity Utilization Rates
Clinker Production/Clinker Capacity

Percentage Utilization:
- 50.0%
- 55.0%
- 60.0%
- 65.0%
- 70.0%
- 75.0%
- 80.0%
- 85.0%
- 90.0%
- 95.0%
- 100.0%

Years:
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
Point Five

Industry Hardship Eases, But Not Avoided with Stimulus
Point Five

- Stimulus will provide some relief....

- ...but hardship facing the industry will not be avoided...

- Further plant closures will materialize in the context of market imbalances.
Beyond the Crisis

Stimulus Payback in context of Global Recovery
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Introduction: Overview

- Cyclical correction is temporary.
Point Six

Spending Payback: Softer Economic Growth
Point Six

- Spending must be paid for...resulting in higher interest rates, higher taxes and potentially higher inflation....
- ...and...American consumer..the engine of US economic growth may show significantly different spending patterns...
- ...combining for the potential of slower longer term economic growth (50 basis points).
The Economic Recovery:

- Sub-Prime Drag Abates
- Bank Lending Aversion Improves
- Stimulus Gains Employment Traction
- Lending Risk Declines: Credit Easing
- Energy Stimulus
- State Deficits Improve
- Pent-Up Demand Released
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Single Family Housing– United States

000 Starts

Interest Rates low, Decline in Home Price, Job Recovery Translate into Improved Affordability

Pent-Up Demand

Excess Inventories Worked Off
Nonresidential Long Term Trend
Million Real $, 1996
Current:
Gasoline Prices Vs Asphalt Prices Per Barrel

Price Per Barrel

1990-2003:
Average Differential = $15
Gasoline - Asphalt Margin Per Barrel Differential
- Net Threshold of $14 Per Barrel

Price Differential Per Barrel

Threshold Differential = $14 per barrel Estimated on a Ten Year Payoff for Coker Investment
Announced New Coker Installations
Cumulative: Thousands of Barrels Per Day
Liquid Asphalt Supply
Thousands of Barrels

1996 - 190,000
2000 - 180,000
2004 - 170,000
2008 - 160,000
2012 - 150,000

44 Million Barrel Decline by 2011
Projected:
Initial Bid Concrete Vs Asphalt Paving Costs
Per Two Lane Road Mile - Urban

Parity Achieved in Fiscal 2009
Projected:
Life Cycle Concrete Vs Asphalt Paving Costs
Per Two Lane Road Mile - Urban

Concrete Advantages Materialize in Fiscal 2009
Point Seven

A “V” Shaped Construction Recovery?
Point Seven

- Once recovery is in place....

- And despite payback costs for stimulus...

- Concrete construction could record large and sustained gains in growth.