

MARKET INTELLIGENCE

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November 2016

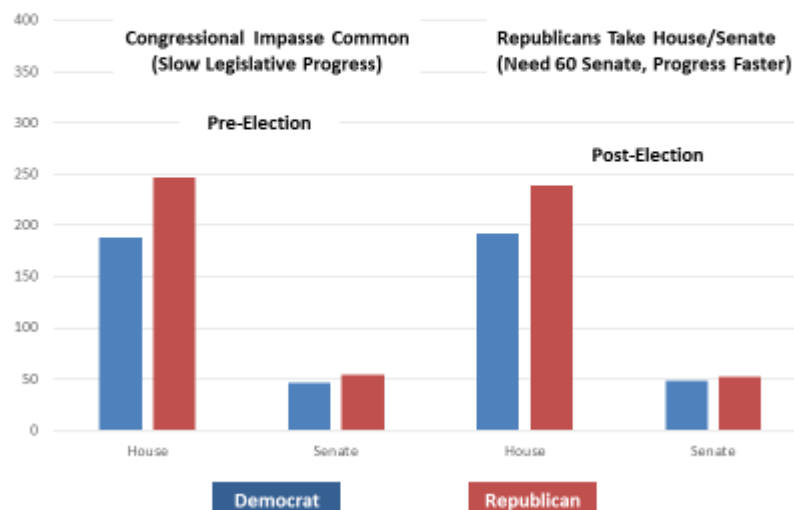
Fall Cement Outlook

Introduction

The election of Donald Trump as the next President of the United States has surprised many. Trump's initiatives, achieved by executive order or with the possible collaboration of a Republican controlled Congress, could have a significant imprint on growth in cement consumption over the next four years. Unfortunately, details of his policy initiatives are lacking. Priorities are vague. Hard lined election stands appear to be in the process of being walked back. As a result of all this, there is a tremendous amount of uncertainty regarding the economic impacts of policy initiatives under the Trump presidency.

Adding to the uncertainty is the political landscape. Trump is not a traditional Republican presidential victor. Along the campaign trail there was distancing among some Republicans and Trump. In this context, questions are raised as to whether Trump can count on traditional House and Senate Republican support for his initiatives. If he can, then many of his initiatives may proceed. If not, compromise and perhaps tension may arise leading to the potential for an impasse on the Trump agenda and its resulting impact on economic growth.

Legislative Assumptions



Risk is also generated by the timing and prioritization of initiatives. Whether the infrastructure, tax reform, or trade reform occurs first has an impact on economic growth because each initiative has a speed factor regarding how fast a program impacts economic growth. Each initiative also carries a different multiplier affecting the magnitude of the policy on economic growth.

This risk is compounded by the issue of “walking back” campaign promises. Trump’s statements, promises and commitments on the campaign trail may not necessarily reflect his actual agenda. Many suggest that businessman Trump will surface. Campaign commitments could be crossed. Understanding the potential adverse consequences and impacts on the economy arising from some of his campaign promises, the pragmatic businessman may refocus the direction and timing of his initiatives.

Despite the heightened risks, projections must be made to support and guide, as best possible, our members’ planning efforts. While all economic projections contain risk, the lack of policy specifics forces significant and strong assumptions to be made in lieu of details. Given all this, the spectrum of outcomes that could arise under the Trump presidency is widened. The projections presented in this forecast, therefore, contain a much greater amount of forecast risk – on the up and downside.

To address this issue, PCA presents three scenarios regarding the impact of Trump policy on the economy and the cement market. While these policies could be considered high-medium-low scenarios, each are predicated on one of three political scenarios. In reality, the laws of permutation suggests there are many more scenarios and not all can be captured.

Uncertainty

The election of a president always represents at least the potential that processes and procedures established during the previous four years may change – to a greater or lesser degree. With change, uncertainty materializes. Economic activity, particularly large scale consumer spending or business investment decisions, typically do not perform well in the context of uncertainty of what the future holds.

Comparing the average three quarter real GDP growth rate prior to a presidential election with the average three quarter real GDP growth rate following a presidential election reveals a modest softening in real GDP growth. In general, the economy’s growth rate declines by roughly 70 basis points following the election of a president. This trend is based on a review of elections dating back to 1960. There appears to be little difference whether the election represented a re-election of an existing president or an entirely new administration and party.

Using like comparisons shows a slightly less significant adverse impact on consumer sentiment, but a greater adverse impact on construction activity. These adverse impacts are likely a reflection on increased uncertainty. While general economic conditions could also explain the softening, one would expect this phenomenon to average out over the 56 year period assessed.

The transition of power carries uncertainty. It is likely that Trump’s presidency carries elevated risk considering the lack of policy specifics or a prioritized agenda. This uncertainty is expected to carry forward through at least the first half of 2017 – to the detriment of economic growth and construction activity.

Even lacking a specific policy initiative targeting Obamacare reform, for example, some plans to build new outpatient facilities may be put on hold until clarity in policy. This phenomenon is likely to be repeated, to a greater or lesser degree, in other areas of construction. This uncertainty leads to a slowdown in the growth rate anticipated for construction activity during 2017. The adversity is expected to be greatest in the early part of the year and fade as the year progresses and policies are clarified. This front-end adversity is expected to be reflected in cement consumption during 2017.

Uncertainty regarding Trump’s economic policies has also led to speculation that aggressive, perhaps debt based, stimulatory fiscal policies may add pressure on already tight labor markets, resulting in inflation. Higher inflation expectations soon get reflected in long-term interest rates – such as mortgage

rates. Higher mortgage rates, in the context of rising home prices, suggests an acceleration in average new home monthly payments. This has already materialized. Mortgage rates have increased 50 basis points since Trump's election. Pressure on mortgage rates is expected to continue through 2017. Higher mortgage rates has prompted PCA to lower its single family starts projection for 2017.

Economic Performance Post Election: Real GDP

Election Year	Real GDP Growth Rate Average 3 Quarter			
	Pre-Election	Post Election	Difference	
Same Administration - Same Party	4.95%	4.17%	-0.78%	
LBJ-Goldwater	1964	6.28%	5.58%	-0.70%
Nixon-McGovern	1972	6.71%	7.01%	0.30%
Reagan-Mondale	1984	6.30%	3.61%	-2.69%
Clinton-Dole	1996	4.44%	4.44%	0.00%
Bush-Kerry	2004	2.96%	3.27%	0.31%
Obama-Romney	2012	3.01%	1.12%	-1.89%
New Administration - Same Party	3.28%	4.16%	0.88%	
Bush-Dukakis	1988	3.28%	4.16%	0.88%
New Administration - New Party	2.49%	1.84%	-0.65%	
Kennedy-Nixon	1960	2.80%	1.77%	-1.03%
Nixon-Humphrey	1968	5.92%	3.10%	-2.82%
Carter-Ford	1976	4.70%	5.17%	0.47%
Reagan-Carter	1980	-2.48%	4.26%	6.73%
Clinton-Bush	1992	4.34%	2.38%	-1.96%
Bush-Gore	2000	3.07%	1.09%	-1.98%
Obama-McCain	2008	-0.89%	-4.84%	-3.95%

Total Construction Contract Awards Average 3 Quarter

Election Year	Total Construction Contract Awards Average 3 Quarter			
	Pre-Election	Post Election	Difference	
Same Administration - Same Party	9.3%	6.3%	-3.0%	
Clinton-Dole	1996	10.1%	6.0%	-4.1%
Bush-Kerry	2004	8.9%	7.1%	-1.8%
Obama-Romney	2012	9.0%	5.9%	-3.1%
New Administration - New Party	7.8%	1.9%	-5.9%	
Clinton-Bush	1992	8.9%	5.0%	-3.9%
Bush-Gore	2000	8.5%	5.3%	-3.2%
Obama-McCain	2008	6.1%	-4.5%	-10.6%

Heightened risk, coupled with higher mortgage rates are responsible for PCA's reduction in expected 2017 growth in consumption from 4.2% to 3.0%.

Economic Policies

Much of Trump's economic policy initiatives could depend on his success with Congress and/or his willingness to compromise. Trump is not a traditional Republican presidential victor. Along the campaign trail there was distancing among some Republicans and Trump. In this context, questions are raised as to whether Trump can count on traditional House and Senate Republican legislative support for his initiatives. If he can, then many of his initiatives may proceed. If not, compromise and perhaps tension may arise leading to the potential for an impasse on the Trump agenda and its resulting impact on economic growth.

Given the spectrum of possible results depending upon Trump's support in the House and Senate, PCA has developed three distinct political scenarios. The permutation of possible outcomes is vast. Consider the following three scenarios that serve as a starting point in formulating PCA's assessment for cement consumption:

- **Trump Face Value:** Under this scenario, Trump receives some crossover support from the Democrats and unites the Republican Party behind his agenda. Trump policy agenda proceeds forward with little compromise from the policies initiatives outlined during his campaign.
- **Trump Lite:** Under this scenario, Trump receives some crossover support from the Democrats and unites the Republican Party behind his agenda. Trump policy agenda proceeds forward but only after significant compromise from the policies initiatives outlined during his campaign. This scenario would also reflect a partial walking back on campaign promises.
- **Impasse:** Under this scenario, Trump does not receive any crossover support from the Democrats and has trouble uniting the Republican Party behind him. Trump's policy agenda is held at an Impasse. This scenario would also reflect a significant walking back on campaign promises. This scenario most closely resembles the baseline scenario presented during the summer forecast.

Trump policies that may have a direct impact on economic activity include regulatory reform, Obamacare replacement, trade reform, increased infrastructure investment, tax reform, and immigration reform. Some of these policy initiatives can only be enacted through the passage of legislation. Some of these policy initiatives can be partially enacted through executive order.

Many of Trump's initiatives are considered controversial. The more controversial a policy initiative, the more likely it will meet push back from Congress. Based on this criteria, PCA has identified two key legislative actions that are most likely to come before Congress. These policy initiatives address an acceleration in infrastructure investment and tax reform. Other initiatives such as building the wall or deporting illegal persons and trade reform are highly controversial. If these initiatives are pushed by Trump, he may poison the well for other initiatives that have broader bipartisan appeal. PCA assumes these controversial policies are not pushed forward under any of the scenarios.

This leaves infrastructure investment and tax reform the key legislative issues. Reduced regulations and immigration reform are pursued largely through executive order. The most likely initiatives are listed in the following table.

Trump Policies That Impact Economic Growth

Most Likely

- Infrastructure Investment (L)
- Reduce Regulations (EO)
- Obamacare Revision (L)
- Tax Reform (L)
- Immigration Reform (EO)

Least Likely

- Illegal Immigration (L)
- Building the Wall (L)
- Trade Reform (L)

* EO = Executive Order Action, L=Legislative Action

Lacking a clear prioritization of policy initiatives, PCA assumes one key legislative passage per year. No policies are enacted during 2017. During 2017, infrastructure is assumed to be debated and passed. The program is assumed to start July 1, 2018. The following year, tax reform is debated and passed. During the 2017-2021 period, the Trump administration engages in regulation reform and immigration reform, such as hiring additional custom agents. Trade issues, Obamacare, building the wall and mass deportations are not addressed in the PCA scenario. It is possible these programs may also take hold and provide unaddressed economic impacts.

Timing: Economic Scenario

- **2017**
 - No legislative policy initiatives.
 - Executive orders (EO) occur on regulations & immigration.
- **2018**
 - Infrastructure program initiated.
 - Regulation & Immigration EO continue.
- **2019**
 - Tax Reform program initiated.
 - Infrastructure continues.
 - Regulation & Immigration EO continue.

Infrastructure

Trump's infrastructure plan is not clear. While much of his pre-election discussion was focused on how he would finance additional infrastructure spending, that is not the focus of this report. Arguably, the funding mechanism could determine the level of spending. The focus here is the level of spending, the distribution of spending amongst competing infrastructure needs, and the timing of spending. These spending assumptions, weighted with appropriate cement project intensities, are pushed through to determine cement consumption. This approach, while seeming direct and simple, requires rather significant assumptions which can yield huge influence on the amount of cement consumption associated with the infrastructure program.

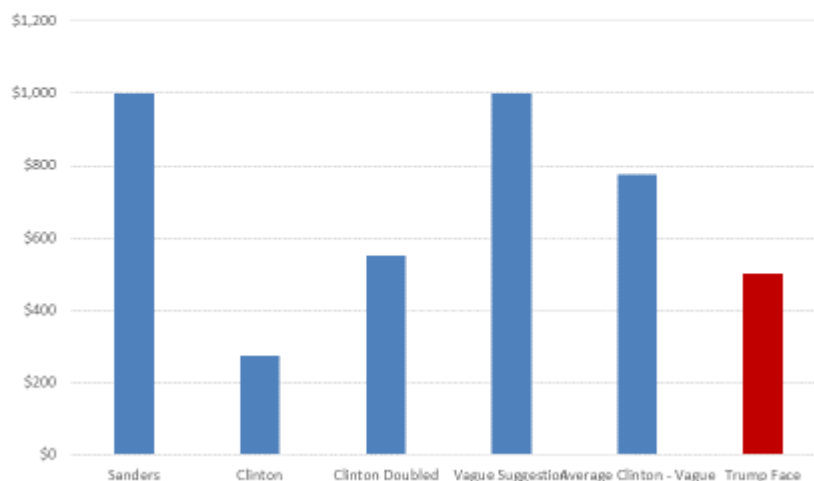
The size of Trump's planned infrastructure program spans from "double whatever Hillary's program is" to one trillion over ten years. How those funds are spent, no information is given. This poses two forecast issues that must be solved by way of assumption. They include the actual level of spending as well as the distribution of spending.

Spending Level: The infrastructure spending level offered by the Clinton campaign was \$275 billion over five years. Trump at one point suggested his spending would double whatever was outlined under the Clinton plan. This would imply a level of \$550 billion over five years. An alternative spending level was outlined as an example of how an investment multiplier would work to fund \$1 trillion in infrastructure spending. Whether the \$1 trillion number was a Trump policy objective or just an example of the power of a multiplier is unclear. In any case, the figure is out there.

PCA averages the two proposals yielding a proposed infrastructure spending program of \$775 billion over five years. It is then assumed that through congressional compromise spending is knocked down to \$500 billion over five years, or \$100 billion annually. This represents the **Trump Face Value** infrastructure spending program.

Under the **Trump Lite scenario**, the spending proposal is knocked down further and approximates the Clinton program of \$275 billion over five years, or \$46 billion annually. Under the **Impasse scenario** no infrastructure bill is passed.

Infrastructure Size of Program Billion \$, Stated As Five Year Spending



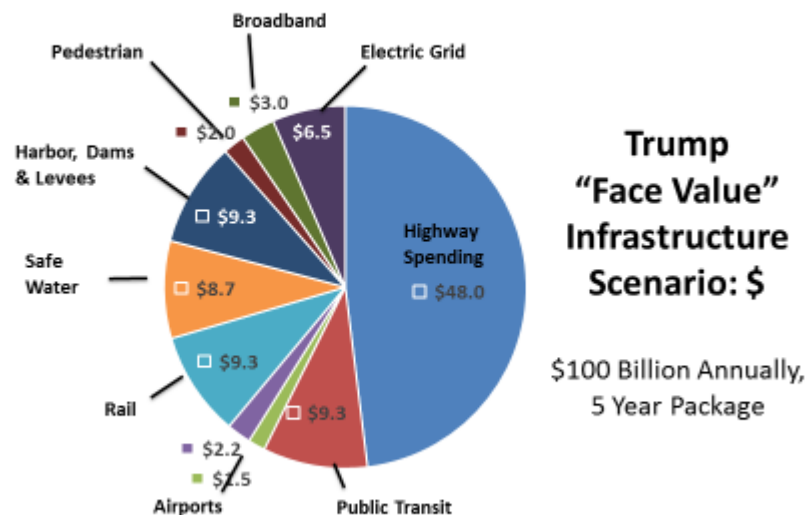
Spending Distribution: Trump’s infrastructure initiative does not include any details regarding the distribution of spending amongst competing infrastructure needs. Given the disparity in cement intensities amongst specific infrastructure programs could have significant impact on cement consumption associated with the initiative.

Absent these details, PCA assumes the distribution of spending mirrors the Sanders’ Senate Bill proposal S.268. From that bill, PCA calculates the spending share attributed to various infrastructure programs. The resulting shares are applied to the Trump Face Value \$500 billion program and the Trump Lite \$275 billion program. (The Clinton infrastructure initiative was equally lacking in detail.)

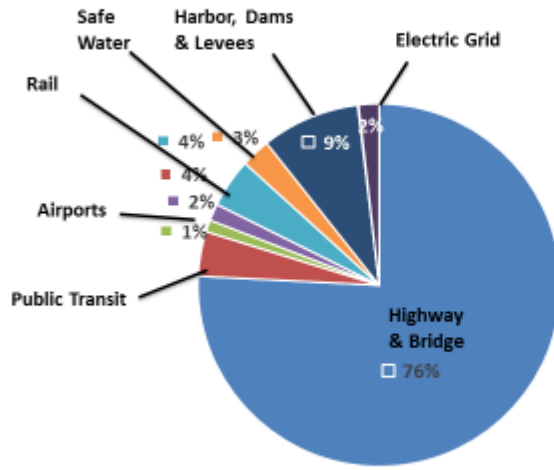
Given this spending distribution scheme, spending values are estimated for 10 different infrastructure programs. The same distribution scheme is applied to the \$500 billion Trump Face Value and the \$275 billion Trump Lite program. This yields specific spending levels for each scenario. Cement intensities, derived from PCA’s apparent consumption model, are applied to each spending category to yield cement consumption estimates. The intensities applied to each spending category are identical in each scenario.

Timing: Raw cement consumption is calculated for each scenario. Several adjustments, however, must be made before final cement consumption estimates are calculated. Consider the Trump Face Value scenario of \$500 billion over five years, or \$100 billion annually *is allocated*.

According to an analysis of ARRA spending as well as the Federal Highway Administration estimates, funds allocated to a construction project could take several years until they are finally spent. Funds, for example, are allocated for a project and that project may take years to be completed. The FHWA calculates a very long timing of spending from a beginning allocation to the end of construction spending. ARRA analysis reflects a shorter period. PCA assumes the shorter time horizon reflecting the ARRA analysis. Accordingly, 21% of funds allocated to a project materialize in the first year; 43% in the second year; 22% in the third year; and 14% in the final year.



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Trump Infrastructure Scenario: Cement Distribution of Gains

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According to this scheme, while \$100 billion is **allocated** in year one of the Trump Face Value infrastructure plan, only \$21 billion is spent during the fiscal year. In the second year, \$43 billion is spent from year one allocation and \$21 billion is spent in year two (its first year). This timing scheme proceeds throughout the forecast horizon. Finally, it should be noted that these are fiscal year spending and must be converted to calendar year spending.

Trump Infrastructure :Time Distribution

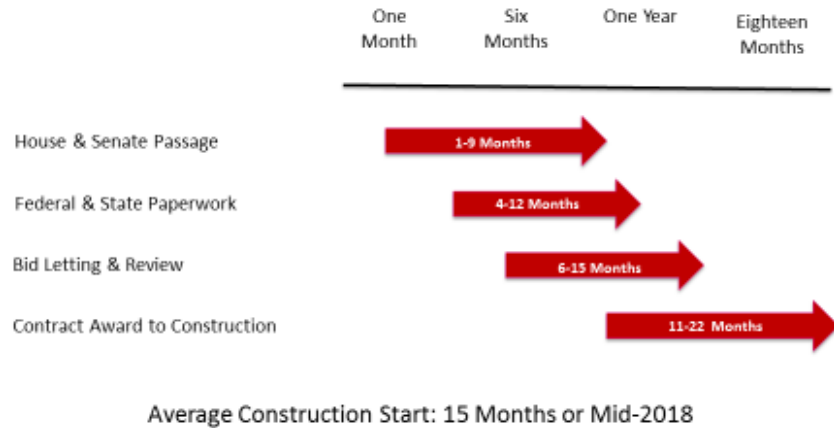
		Fiscal Years							
		Billion \$							
Spending Allocation		1	2	3	4	5	6	7	8
2018	\$100	21	43	22	14	---	---	---	---
2019	\$100	---	21	43	22	14	---	---	---
2020	\$100	---	---	21	43	22	14	---	---
2021	\$100	---	---	---	21	43	22	14	---
2022	\$100	---	---	---	---	21	43	22	14
Total		\$21	\$64	\$86	\$100	\$100	\$79	\$36	\$14

Based on ARRA spending & DOT

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Infrastructure spending is unlikely to materialize until mid-2018. The infrastructure proposal must clear Congress, then federal and state paperwork surrounding the funding programs take place. This is followed by a bid letting and review process. Once that is all set, there is typically a significant lag between the final contracts and the spending of significant construction dollars. The process, in other

Infrastructure Timing: Nothing Soon

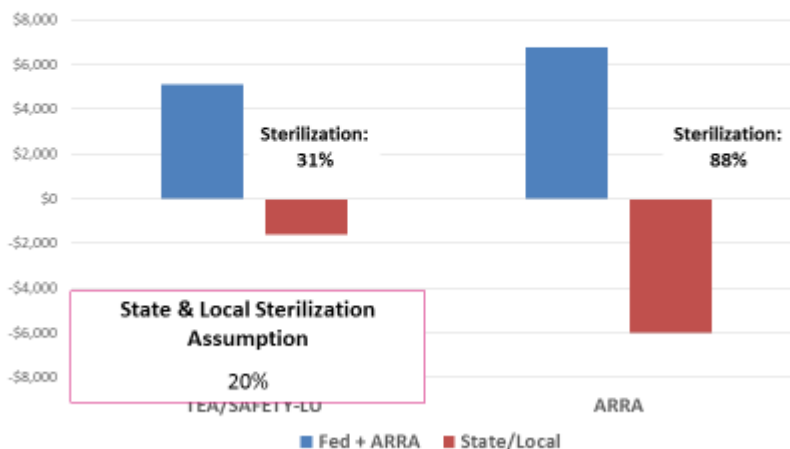


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words, takes time. PCA estimates the whole process could be as short as 11 months or as long as 22 months. Averaging the two, PCA assumes 15 months. This implies significant construction begins in mid-2018.

S&L Sterilization

Changes in Spending, Mil \$



Offsets: There is one final adjustment that needs to be undertaken to complete the assessment of Trump’s infrastructure plan on cement consumption. The Trump infrastructure program increases federal spending. Often, increases in federal highway spending are met with offsetting reductions in spending by the state and local DOTs. This phenomenon is referred to as state and local sterilization. Increases in federal highway spending from TEA-21 to SAFETEA-LU coincided with reductions in state and local funding – sterilizing 31% of the federal increase. This occurred again with ARRA – sterilizing 88% of the federal spending increases. Deteriorating fiscal conditions at the state level undoubtedly played a role in the extent that sterilization materialized. Fiscal conditions are better now and will likely lead to less sterilization. It would be a mistake, however, to expect that sterilization would be completely absent. While risk should be attached to the estimate, PCA assumes 20% sterilization will occur at the state and local level.

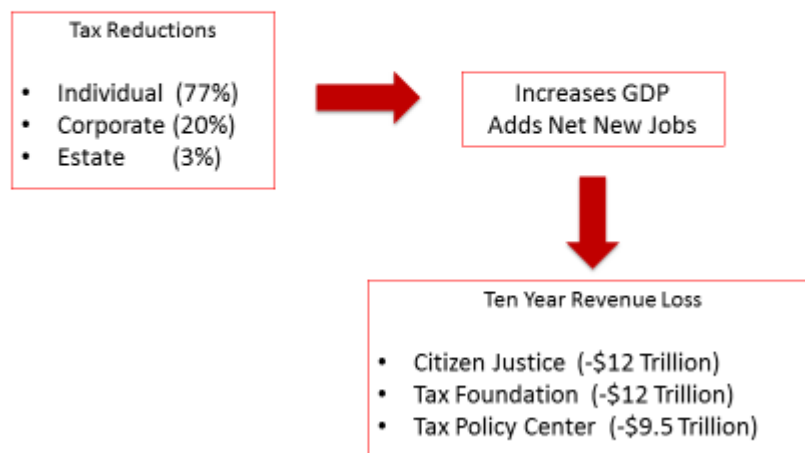
Tax Reform

The second economic policy initiative included in PCA’s assessment is Trump’s promise to reform taxes. PCA assumes the Trump tax plan is debated during 2017-2018 and implemented in 2019.

The Trump Plan will collapse the current seven tax brackets to three brackets. The rates and breakpoints result in significant tax reductions. The standard deduction is increased. On the corporate side, the Trump Plan will lower the business tax rate from 35 percent to 15 percent and eliminates the corporate alternative minimum tax. It will provide a deemed repatriation of corporate profits held offshore at a one-time tax rate of 10 percent. It eliminates most corporate tax expenditures except for the Research and Development credit. Finally, estate taxes are reduced or eliminated.

There are many more details. Outlining the tax program is not the purpose of this report. Rather it is to assess the potential impact of Trump’s tax reform on economic activity. Such an endeavor could result in a lengthy report, and its results still be subject to criticism. PCA has reviewed such studies of Trump’s tax reform and integrates the results on GDP growth into this report. Studies included are those performed for the Citizens Justice Association, Tax Foundation, and the Tax Policy Center.

Trump Tax Policies

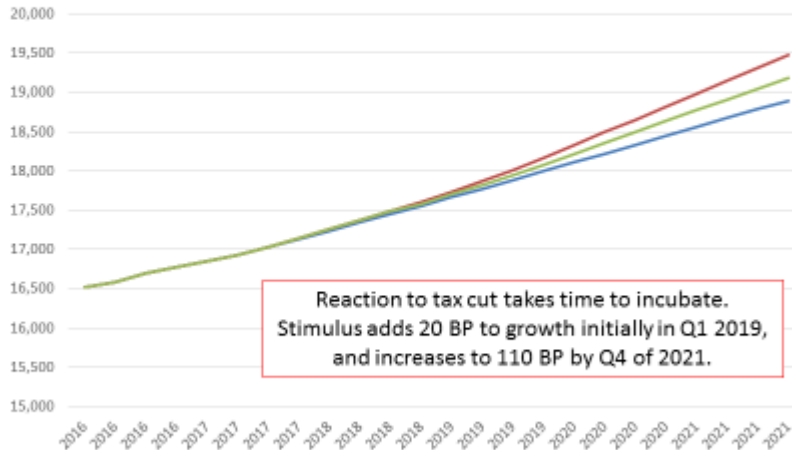


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Accordingly, PCA assumes that the tax reform suggested by Trump will stimulate real GDP growth by 1.1% annually over a scenario reflecting no tax reform. Tax reduction policies usually take time before they show up in added economic activity. PCA assumes that the added contribution to growth starts slow, adding 10 basis points to growth in the initial quarters, and gradually increases, reaching 110 basis point impact on growth by the end of 2021.

Tax Policy: RGDP Growth

Billion \$



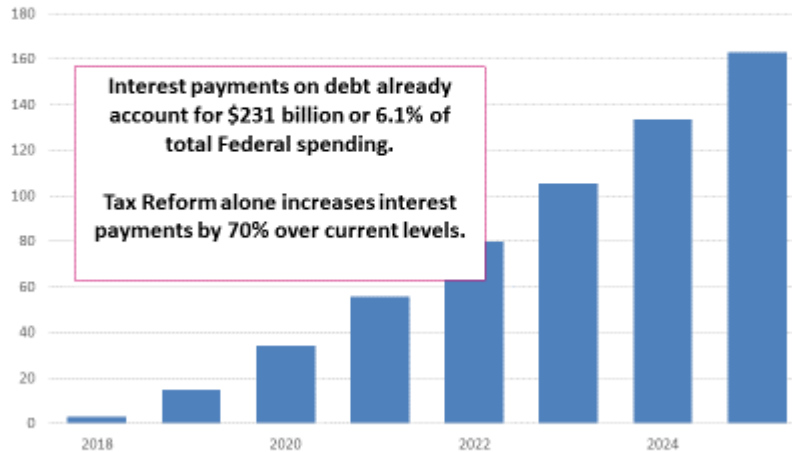
Tax Policy: Revenue Shortfall

Trump Face Value, Billion \$



Tax Policy: Interest Payments

Billion \$



The changes in real GDP growth rates are translated into employment impacts as well as impact on construction spending. PCA applies the same cement intensities to these elevated construction levels as exist in the baseline/Impasse scenario.

Tax reform is expected to be a significant job creator – adding 440,000 net new jobs in 2019; 1.5 million in 2020; and 3.0 million in 2021 according to the Face Value scenario. By itself, the rate is reduced by more than 180 basis points by 2021. According to this scenario, cement consumption is increased by 150,000 metric tons in 2019; 810,000 metric tons in 2020; and 1,950,000 metric tons in 2021.

Under the Trump Lite scenario, compromise in Congress dilutes the tax reform package. While it is likely that compromise will not only dilute the Trump tax proposal, it is likely the tax reform could change in substance – potentially resulting in an entirely different economic stimulatory scenario. The Trump Lite scenario, however, only assumes a dilution. According to the Trump Lite scenario, net job creation is half that of the Trump Face Value scenario. According to this scenario, cement consumption is increased by 70,000 metric tons in 2019; 400,000 metric tons in 2020; and slightly less than one million metric tons in 2021.

Under the Impasse scenario, tax reform is not passed by Congress and has no impact on economic activity.

While tax reform will stimulate economic activity, it holds a dark side for the economy. Even allowing for stronger economic activity and the tax revenue generated from these additions, the Trump tax reform policy will probably not be “revenue neutral”.

Put more simply, the program is deficit spending. It adds to the already high level of federal debt. According to the studies surveyed, the Trump tax reform plan could add \$9 to \$12 **trillion** in federal debt in a ten year horizon. The Federal Government currently spends \$231 billion (6% of the total budget) in interest payments. According to the Trump tax reform plan, interest payments alone could increase by an additional \$160 billion. This will put pressure on interest rates. This potential of added pressure on interest rates is not included in PCA's assessments.

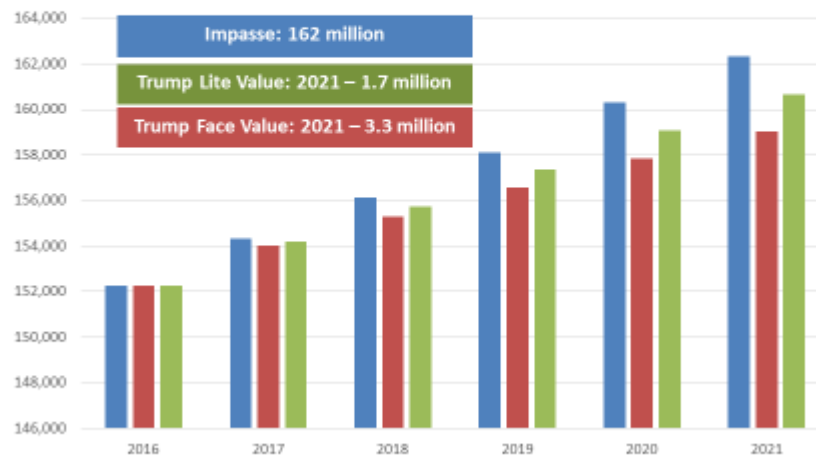
Immigration Reform

Immigration reform is the last policy proposal that holds significant economic impact that is examined in this analysis. According to various estimates, there are 11.5 million illegal persons in the United States. These persons account for as much as 5% of the labor force, a number that is probably higher within the construction industry. These persons also add to demand within the United States and they also weigh on local government services. The focus of this analysis is the potential impact Trump's immigration reform program has on unemployment, the scarcity of labor, and its contribution to rising wage rates.

Immigration reform policies, defined in this report, are very specific and exclude building the wall and/or mass deportations. Each initiative would require a legislative directive, which may be difficult to achieve. For the purposes of this report, immigration reform initiatives are limited to executive order actions. This could include a pause or slowdown in legal immigration, E-verify and employment policies which make it more difficult to hire illegal workers, penalizing sanctuary cities by withholding federal grants, and by hiring additional customs agents.

PCA's immigration executive order analysis focuses on the impact of hiring additional customs agents. There are roughly 5,000 customs agents currently – a level that has been held constant for some time. According to the Center for Immigration Studies, past peak deportations were estimated at 400,000 persons. Given the number of customs agents, that translates into 80 deportations per agent. Trump has suggested that he will increase the number of customs agents to 15,000. At 80 deportations per agent, this could translate into 1.2 million deportations annually.

Labor Force Estimate Policy Only, No Reaction



Based on studies, 46% of those deported return within one year. This implies the net deportations of roughly 650,000 annually. This is supplemented with voluntary departures of roughly 500,000 annually. Of these, 60% return in one year. Totaling the net deportations and the net voluntary departures leaves a reduction in illegal persons of 850,000 annually. Of these persons, not all work. PCA estimates the impact on the workforce translates into a potential reduction of roughly 600,000 workers annually.

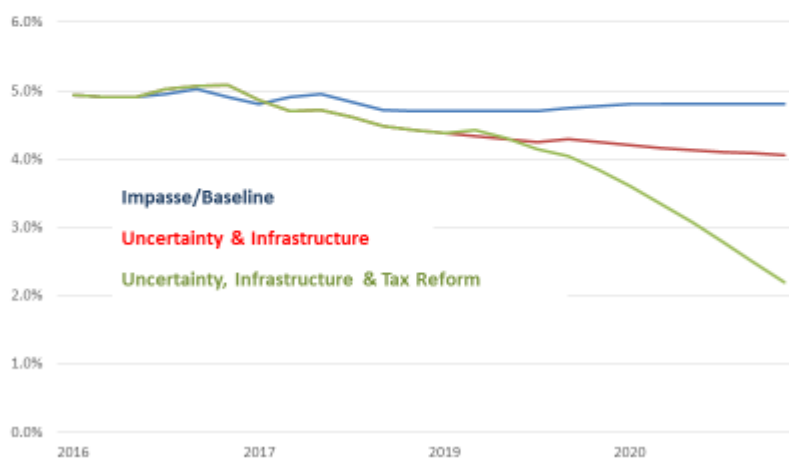
PCA assumes that the executive order to hire additional customs agents will occur almost immediately. It will take time, however, to ramp-up and train the new agents. The full hiring of an additional 10,000 agents is assumed to be completed by the end of 2020. As a result, deportations and the draw on the United States labor force, will occur slowly and steadily. By 2021, the labor force under Trump Face Value is reduced by 3.3 million workers. Under the Trump Lite scenario, the labor force is reduced by 1.7 million workers. Under the Impasse scenario, Trump walks back his statements on immigration due to the potential adverse impact on the scarcity of labor and the adverse impact on business activity. The labor force grows from roughly 152 million currently to 162 million in 2021.

Market & Monetary Policy Responses

Even though the United States' economy struggled to achieve real GDP growth in excess of 2% annually, the economy is currently supported by strong fundamentals. Consumers have pared down their debt, and debt as a percent of household income is at all-time lows. Large pent-up demand was generated during the recession and remains untapped. The labor market is stable and growing at nearly 200,000 net new jobs monthly. Unemployment is at 4.9%. In the wake of low unemployment and sustained strong job creation, wages are starting to tick upwards with the last reading showing a 2.8% annualized gain. Despite this, slack in the economy, low energy prices, and a strong dollar have kept inflation relatively tame. Interest rates are extremely low by historical standards. Home prices are rising and, along with it, middle class' wealth holdings. Consumer sentiment is solid. Although the recovery from the great recession has proceeded at a very slow pace, the economy's fundamentals are sound.

Unemployment Rates

U3 Measurement, No Reaction



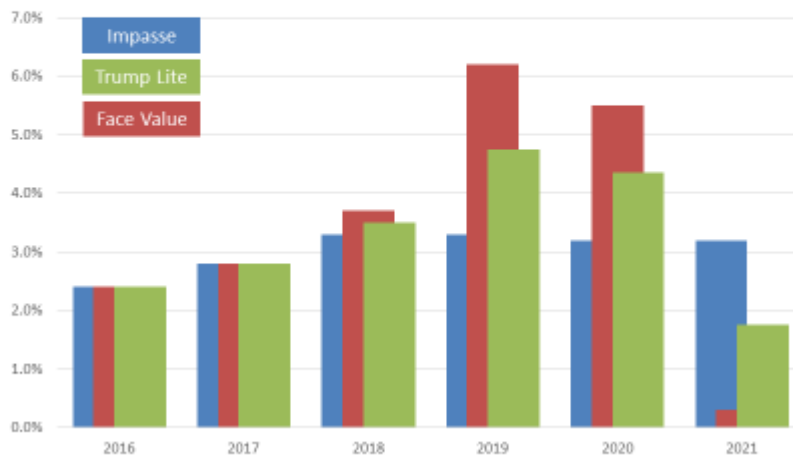
From a position of relative strength and full employment, Trump’s economic policies suggest a significant fiscal policy stimulus. Not only will the infrastructure and tax reform initiatives add to new demands for labor, but promises to rebuild the military and penalize players in globalization could add further to domestic job creation. Finally, immigration reform could significantly reduce the labor force at a time new pressures on the labor force emerge. All this could lead to strong cost-push inflationary pressures.

According to PCA estimates, the Impasse scenario shows marginal declines in already low unemployment and averages 4.7%. The infrastructure program under the Trump Face Value scenario creates 970,000 jobs by 2021 and by itself reduces the unemployment rate to 4.2%. Tax reform adds further to the demand for labor – adding as much as 3.2 million jobs by 2021. Immigration reform will reduce the unemployment rate even further.

The pressures generated by these forces will cause a market reaction. Wage rates will rise dramatically under both the Face Value and Trump Lite scenarios. Rising from 2.8% annual growth currently to more than 6% in mid-2019 under the Face Value scenario. Investment in labor saving equipment accelerates – but lags the pace of wage gains. Some jobs are foregone. Inflation is expected to rise.

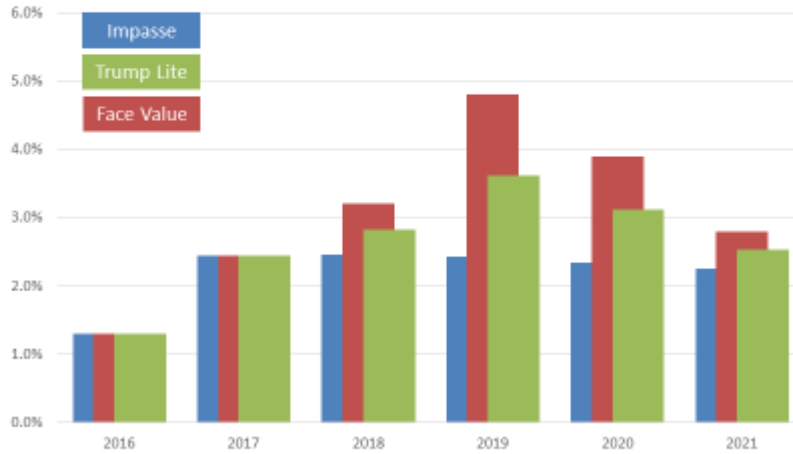
Wage Growth Scenarios

Annual % Change, Employment Cost



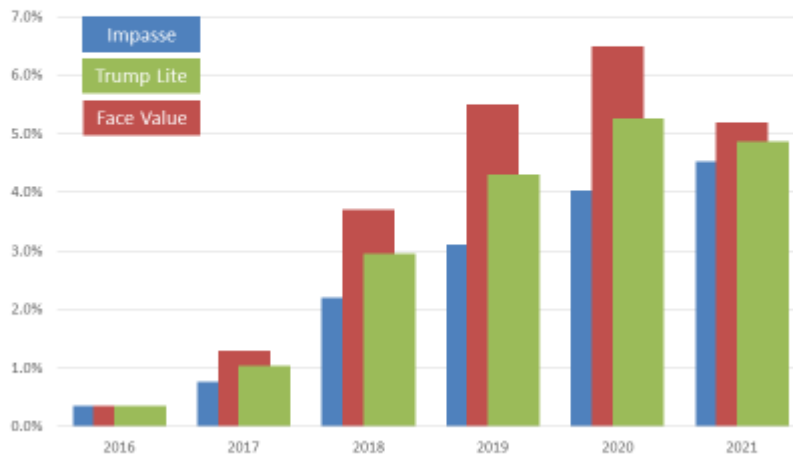
Inflation Scenarios

Annual % Change, CPIU



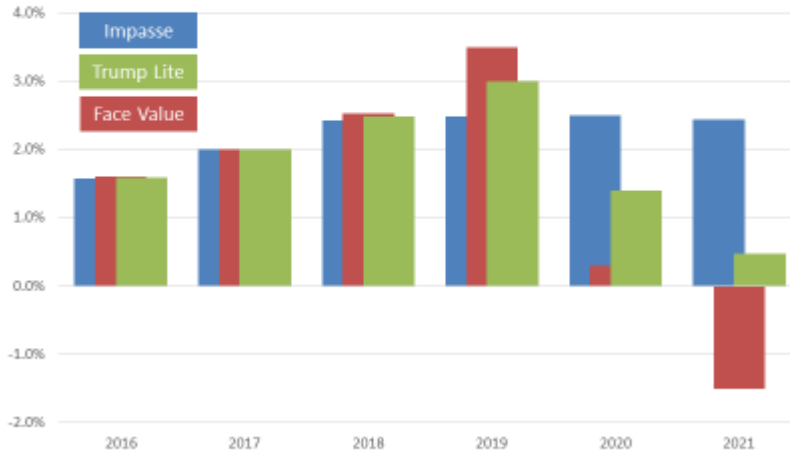
Interest Rate Scenarios

Annual % Change, Federal Funds



GDP Growth Scenarios

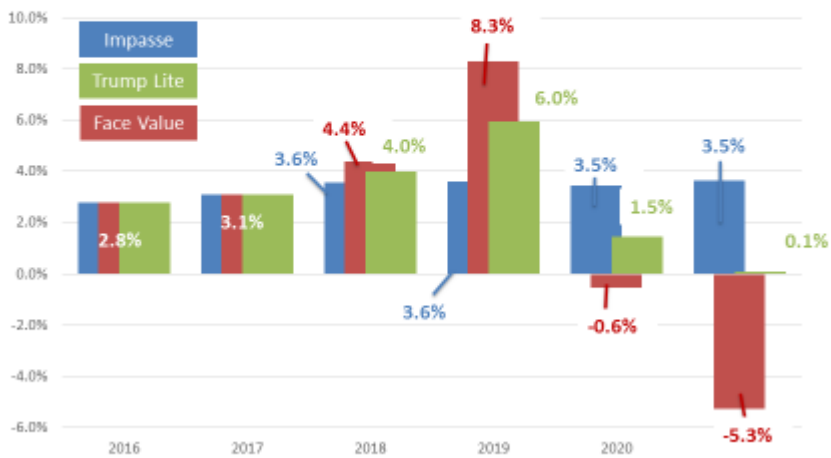
Annual % Change, Real GDP



In response, the Federal Reserve, already in a tightening mode, will accelerate its tightening in 2019 – eventually pushing the 2020 federal funds rate up to 6%. These interest rate increases will be compounded by inflation premiums, higher risk premiums, and increased demand for capital originating from public sector debt. According to this scenario, market and policy responses to aggressive fiscal spending initiatives force a reduction in the rate of economic growth in 2020, and potentially a reduction (recession) in actual economic activity by 2020-2021.

Cement Consumption Scenarios

Annual % Change



Conclusion

Trump's policy initiatives are not expected to take effect until 2018 and beyond. Prior to this, PCA believes that the baseline projections presented in the summer forecast are adjusted down for the remainder of 2016 and through 2017 and reflect increased uncertainty, slower growth, and a slowdown in construction activity. The impact of uncertainty is expected to be compounded by increased inflationary expectations which will eventually get imbedded into long-term bonds and loans, such as mortgages. The increase in interest rates is expected to push single family sales and, as a result, starts activity down – to the detriment on cement consumption. For 2016, PCA expects cement consumption will grow 2.8%. For 2017, the mixture of uncertainty and inflation expectations pushes the annual growth rate down to 3.1%, compared to 4.2% previously forecast.

Beyond 2017, the forecast risk increases dramatically. The lack of policy specifics forces significant and strong assumptions to be made in lieu of details. Given all this, the spectrum of outcomes that could arise under the Trump presidency is widened. The projections presented in this forecast, therefore, contain a much greater amount of forecast risk – on the up and downside.

Due to the heightened risk, PCA has offered three political scenarios that shape policy priorities, scope, timing, and details of each of the three initiatives. Consider the following:

- According to the ***Trump Face Value scenario***, cement consumption accelerates and reaches 4.4% in 2018 (partial infrastructure program), and 8.3% in 2019 (acceleration in infrastructure and introduction of tax reform impacts). Wage pressures accelerate pushing inflation well above Federal Reserve target rates. Aggressive increases in the federal funds rates are supplemented by larger risk and inflation premiums. The higher interest rates choke off economic activity by mid-2020 and force a reduction in economic growth. Cement consumption records a small negative (-0.6%) and a more significant decline in 2021 (-5.7%).
- Each of the dynamics laid out in the Trump Face Value scenario occurs in the ***Trump Lite scenario***, but is reflective of a much less boom-bust pattern. Cement consumption accelerates and reaches 4.0% in 2018 (partial infrastructure program), and 6.0% in 2019 (acceleration in infrastructure and introduction of tax reform impacts). Growth slows to 1.5% in 2020 with even more modest gains in 2021. Under this scenario, a recession is avoided.
- Under the ***Impasse scenario***, none of Trump's programs materialize. The Impasse scenario simulates the summer forecast projections. Under this scenario, the economy proceeds at a more modest pace, unemployment rates remain low, and wages accelerate only to a 3% growth rate. Inflation is kept in check but with a steady, sustained, and modest tightening in monetary policy. Cement consumption averages 3.5% during 2017-2021.

Some suggest a fourth scenario is more likely. According to this scenario, the Trump Administration foresees the potential market and monetary policy response to its initiatives. As a result, Trump pursues much more moderate policies regarding infrastructure, tax reform, and immigration reform. This scenario represents pushing the economy to its potential labor market limits without incurring a monetary policy response so harsh that a recession ensues. ***This scenario marks PCA's new baseline.***



America's Cement Manufacturers™

MARKET INTELLIGENCE

U.S. Forecast Tables

November 2016

Source: Portland Cement Association's Market Intelligence Group based on publicly available sources believed to be reliable; however, accuracy cannot be guaranteed. The Portland Cement Association assumes no legal responsibility for the outcome of decisions or commitments made on the basis of this information.

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Economic Forecast

	2014	2015	2016	2017	2018	2019	2020	2021
General Economic Factors								
- Real GDP Growth (%)	2.4%	2.4%	1.6%	2.2%	2.7%	3.2%	1.3%	2.1%
- Unemployment Rate (%)	6.2%	5.3%	4.9%	4.9%	4.4%	4.1%	4.5%	4.6%
- Employment	140,592	143,137	145,249	147,246	149,391	151,696	152,990	154,746
- Change in Employment	3,116	2,545	2,112	1,997	2,145	2,305	1,294	1,756
- Inflation Rate (%)	1.6%	0.1%	1.3%	2.5%	2.7%	3.1%	2.5%	2.4%
- Consumer Sentiment Index (Year End)	86.9	97.9	95.9	88.5	90.0	92.5	80.2	87.3
- Total Housing Starts (000)	1,002	1,106	1,155	1,199	1,244	1,327	1,308	1,355
- Oil Price, WTI Per Barrel	\$93.17	\$48.67	\$42.78	\$49.99	\$55.00	\$64.31	\$71.31	\$75.36
- Note: Oil Rig Count	1,861.0	976.0	450.0	539.9	772.6	1,027.0	1,184.0	1,321.0
Key Interest Rates								
- Mortgage Rate - 30 Yr Fixed (%)	4.17	3.85	3.92	4.67	6.04	7.46	7.33	7.00
- Federal Funds Rate (%)	0.13	0.12	0.35	1.27	2.69	4.61	6.03	5.03
- Three Year Treasury (%)	0.90	1.01	0.98	1.37	2.29	3.71	5.13	5.38
- BAA Bond (%)	4.85	4.98	4.77	4.74	6.08	7.40	8.84	8.79
- Implied Corporate Risk Premium	3.95	3.97	3.79	3.37	3.79	3.69	3.71	3.41
Key Single Family Factors								
- Single Family Starts (000)	646	712	763	809	845	918	918	961
- Average New Home Sq Footage	2,542	2,581	2,581	2,541	2,501	2,441	2,371	2,301
- Total Single Family Sq Footage (Million)	1,642	1,837	1,969	2,055	2,113	2,241	2,176	2,211
- Average Cement Tons Per Start	21.2	21.4	21.5	21.5	21.4	21.2	20.6	20.0
- Mortgage Rate - 30 Yr Fixed	4.17	3.85	3.92	4.67	6.04	7.46	7.33	7.00
- Median Home Price (000)	\$283.9	\$296.0	\$310.5	\$321.5	\$332.2	\$340.7	\$342.2	\$347.0
- Home Appreciation Rate	8.4%	4.2%	4.9%	3.5%	3.3%	2.5%	0.4%	1.4%
- Average Monthly Payment	\$1,384	\$1,388	\$1,468	\$1,661	\$2,001	\$2,373	\$2,352	\$2,308
Key Multi-Family Factors								
- Multi-Family Starts (000)	356	394	392	390	399	409	390	394
- Average New Home Sq Footage	1,226	1,226	1,226	1,226	1,226	1,226	1,224	1,222
- Total Multi-Family Sq Footage (Million)	437	483	481	478	489	502	478	482
- Average Cement Tons Per Start	8.3	8.5	8.5	8.5	8.5	8.5	8.5	8.5
- Vacancy Rate (%)	7.0	6.8	6.5	6.3	6.3	6.3	6.3	6.3
- Mortgage to Rent Ratio	1.2	1.2	1.1	1.2	1.3	1.5	1.5	1.5
- Target Rental Population (20-29) Index	128	130	131	133	135	137	140	142
Key Nonresidential Factors								
- Capacity Utilization (%)	76.0	76.5	75.0	75.1	75.3	76.0	74.8	75.9
- Office Vacancy Rate (%)	14.5	14.4	13.0	12.8	12.6	12.6	13.2	13.3
- Office Worker Employment	30,149	30,820	31,466	32,019	32,597	33,212	33,608	34,158
General Cement Ratios								
- Cement Consumption (Per 000 Capita)	269.5	277.0	281.8	287.6	296.1	310.6	313.0	320.8
- Cement Tons Per Mil Construction	96.3	92.0	92.0	92.9	94.1	96.1	97.4	98.9

Contact: Ed Sullivan, Chief Economist, PCA, (847) 972-9006

Construction Put-in-Place
(Billions 2009\$)

United States
Fall 2016

	2014	2015	2016	2017	2018	2019	2020	2021
Total	898.7	975.0	1,001.7	1,021.1	1,047.0	1,085.7	1,088.6	1,108.9
Residential Buildings	326.6	373.6	380.6	389.3	396.4	410.4	400.8	399.9
New Housing Units	207.7	245.7	254.9	262.9	268.9	282.0	274.1	273.1
Single Family	171.0	200.8	204.7	210.9	214.9	226.2	218.7	216.1
Multi Family	36.7	44.9	50.2	52.0	54.0	55.8	55.4	57.0
Improvements	118.9	127.9	125.7	126.4	127.5	128.4	126.7	126.8
Nonresidential Buildings	196.9	229.3	246.6	251.5	259.5	267.3	260.6	262.2
Industrial	53.8	70.4	68.3	68.9	70.7	72.1	69.6	70.2
Office	43.1	50.5	59.8	62.9	67.0	71.1	70.8	71.1
Hotels, Motels	15.1	18.9	23.0	23.9	24.7	25.5	25.5	25.7
Hospitals, Institutions	21.1	23.3	23.9	22.8	21.6	21.6	21.6	21.6
Religious	3.1	3.3	3.3	3.3	3.3	3.4	3.4	3.4
Educational	14.9	14.9	16.2	16.9	17.4	17.9	18.1	18.2
Other Commercial	45.8	48.1	52.0	52.9	54.7	55.6	51.6	52.0
Public Utility & Other	110.0	98.6	101.5	103.6	106.8	109.5	113.0	117.5
Farm Nonresidential	10.2	9.8	9.2	9.2	9.2	9.2	9.3	9.4
Miscellaneous	45.4	47.0	45.6	45.7	46.8	49.4	52.2	54.5
Public Construction	209.6	216.7	218.2	221.8	228.3	239.9	252.7	265.3
Buildings	88.4	91.9	93.6	95.1	97.3	100.7	104.9	109.9
Highways & Streets	74.7	77.9	80.2	82.3	85.4	90.9	96.2	99.9
Military/Public Security	8.3	7.6	6.9	6.8	6.9	7.1	7.2	7.4
Conservation	6.4	6.9	7.0	7.0	7.4	8.3	9.2	10.3
Sewer Systems	20.2	21.1	20.4	20.5	20.9	21.8	22.9	24.2
Water Supply Systems	11.6	11.4	10.2	10.0	10.4	11.1	12.2	13.5
Percent Change								
Total	6.2%	8.5%	2.7%	1.9%	2.5%	3.7%	0.3%	1.9%
Residential Buildings	6.5%	14.4%	1.9%	2.3%	1.8%	3.5%	-2.3%	-0.2%
New Housing Units	8.2%	18.3%	3.8%	3.1%	2.3%	4.9%	-2.8%	-0.4%
Single Family	5.5%	17.4%	2.0%	3.0%	1.9%	5.3%	-3.3%	-1.2%
Multi Family	22.8%	22.4%	11.7%	3.6%	3.8%	3.3%	-0.7%	2.9%
Improvements	3.5%	7.6%	-1.7%	0.5%	0.9%	0.7%	-1.4%	0.1%
Nonresidential Buildings	11.2%	16.5%	7.5%	2.0%	3.2%	3.0%	-2.5%	0.6%
Industrial	13.0%	30.8%	-3.0%	0.9%	2.7%	2.0%	-3.5%	0.9%
Office	20.5%	17.2%	18.5%	5.2%	6.5%	6.1%	-0.5%	0.4%
Hotels, Motels	18.1%	25.5%	22.0%	3.9%	3.3%	3.2%	-0.2%	1.0%
Hospitals, Institutions	-7.1%	10.0%	3.0%	-5.0%	-5.0%	0.0%	0.0%	0.0%
Religious	-10.5%	4.7%	0.0%	-0.5%	2.1%	2.8%	-0.2%	1.2%
Educational	-5.2%	0.1%	8.8%	4.2%	3.1%	2.9%	1.1%	0.6%
Other Commercial	17.3%	5.0%	8.0%	1.8%	3.4%	1.7%	-7.1%	0.6%
Public Utility & Other	14.4%	-10.4%	2.9%	2.1%	3.1%	2.6%	3.2%	4.0%
Farm Nonresidential	9.6%	-3.9%	-5.7%	0.3%	-0.6%	0.0%	1.1%	1.4%
Miscellaneous	1.6%	3.6%	-3.1%	0.2%	2.4%	5.7%	5.6%	4.5%
Public Construction	-1.3%	3.4%	0.7%	1.6%	3.0%	5.0%	5.3%	5.0%
Buildings	-4.4%	4.0%	1.8%	1.6%	2.4%	3.4%	4.2%	4.8%
Highways & Streets	0.9%	4.3%	3.0%	2.6%	3.8%	6.5%	5.8%	3.9%
Military/Public Security	-3.8%	-8.9%	-8.6%	-1.5%	1.5%	2.2%	2.4%	2.5%
Conservation	20.4%	8.8%	1.0%	0.8%	4.6%	12.6%	11.4%	11.2%
Sewer Systems	1.6%	4.4%	-3.3%	0.9%	1.7%	4.2%	5.3%	5.6%
Water Supply Systems	-3.3%	-2.4%	-10.6%	-2.0%	4.3%	7.1%	9.8%	10.6%



Portland Cement Consumption
(000 Metric Tons)

United States
Fall 2016

	2014	2015	2016	2017	2018	2019	2020	2021
Total	86,519	89,737	92,135	94,879	98,567	104,322	106,055	109,687
Residential Buildings	22,521	24,718	26,059	26,999	27,831	29,400	28,333	28,669
New Housing Units	16,687	18,562	19,772	20,681	21,456	22,979	22,253	22,583
Single Family	13,717	15,226	16,431	17,357	18,055	19,493	18,934	19,235
Multi Family	2,970	3,336	3,341	3,324	3,401	3,486	3,319	3,347
Improvements	5,834	6,156	6,287	6,318	6,375	6,421	6,081	6,087
Nonresidential Buildings	13,776	14,249	15,805	16,453	17,133	17,722	16,993	17,165
Industrial	841	965	956	964	990	1,031	974	983
Office	1,599	1,658	2,004	2,219	2,372	2,526	2,574	2,640
Hotels, Motels	698	822	1,037	1,090	1,143	1,200	1,172	1,183
Hospitals, Institutions	1,433	1,296	1,365	1,297	1,232	1,232	1,232	1,232
Religious	118	95	98	99	102	104	102	100
Educational	2,262	2,269	2,514	2,653	2,805	2,911	2,936	2,972
Other Commercial	6,825	7,144	7,831	8,132	8,490	8,717	8,003	8,055
Public Utility & Other	3,745	4,514	4,709	4,868	5,072	5,258	5,483	5,701
Farm Nonresidential	3,106	2,951	2,792	2,800	2,784	2,784	2,814	2,854
Oil & Gas Wells	3,129	1,639	769	919	1,309	1,733	1,941	2,166
Miscellaneous	1,943	1,997	1,946	1,963	2,046	2,199	2,296	2,345
Public Construction	38,301	39,669	40,055	40,877	42,392	45,225	48,194	50,788
Buildings	2,063	2,110	2,181	2,244	2,327	2,436	2,559	2,704
Highways & Streets	25,640	27,158	27,956	28,678	29,754	31,644	33,476	34,774
Military/Public Security	155	171	161	160	160	160	160	160
Conservation	2,726	2,620	2,656	2,684	2,815	3,178	3,551	3,950
Sewer Systems	4,370	4,405	4,234	4,293	4,389	4,615	4,907	5,231
Water Supply Systems	3,347	3,205	2,866	2,818	2,948	3,192	3,541	3,970
Percent Change								
Total	8.8%	3.7%	2.7%	3.0%	3.9%	5.8%	1.7%	3.4%
Residential Buildings	-1.4%	9.8%	5.4%	3.6%	3.1%	5.6%	-3.6%	1.2%
New Housing Units	8.3%	11.2%	6.5%	4.6%	3.7%	7.1%	-3.2%	1.5%
Single Family	8.8%	11.0%	7.9%	5.6%	4.0%	8.0%	-2.9%	1.6%
Multi Family	6.0%	12.3%	0.2%	-0.5%	2.3%	2.5%	-4.8%	0.9%
Improvements	-21.5%	5.5%	2.1%	0.5%	0.9%	0.7%	-5.3%	0.1%
Nonresidential Buildings	29.9%	3.4%	10.9%	4.1%	4.1%	3.4%	-4.1%	1.0%
Industrial	16.7%	14.7%	-0.9%	0.9%	2.7%	4.2%	-5.6%	0.9%
Office	49.4%	3.7%	20.9%	10.7%	6.9%	6.5%	1.9%	2.6%
Hotels, Motels	65.6%	17.8%	26.2%	5.0%	4.9%	5.0%	-2.3%	1.0%
Hospitals, Institutions	9.3%	-9.6%	5.3%	-5.0%	-5.0%	0.0%	0.0%	0.0%
Religious	3.6%	-19.3%	2.9%	0.5%	3.1%	2.8%	-2.2%	-2.2%
Educational	15.1%	0.3%	10.8%	5.5%	5.7%	3.8%	0.9%	1.2%
Other Commercial	36.5%	4.7%	9.6%	3.8%	4.4%	2.7%	-8.2%	0.6%
Public Utility & Other	-5.2%	20.5%	4.3%	3.4%	4.2%	3.7%	4.3%	4.0%
Farm Nonresidential	2.0%	-5.0%	-5.4%	0.3%	-0.6%	0.0%	1.1%	1.4%
Oil & Gas Wells	4.4%	-47.6%	-53.1%	19.5%	42.5%	32.4%	12.0%	11.6%
Miscellaneous	21.3%	2.8%	-2.5%	0.9%	4.2%	7.5%	4.4%	2.1%
Public Construction	11.0%	3.6%	1.0%	2.1%	3.7%	6.7%	6.6%	5.4%
Buildings	10.2%	2.3%	3.4%	2.9%	3.7%	4.7%	5.0%	5.7%
Highways & Streets	7.2%	5.9%	2.9%	2.6%	3.8%	6.4%	5.8%	3.9%
Military/Public Security	1.4%	10.2%	-5.7%	-0.9%	0.0%	0.0%	0.0%	0.0%
Conservation	18.8%	-3.9%	1.4%	1.0%	4.9%	12.9%	11.7%	11.2%
Sewer Systems	24.9%	0.8%	-3.9%	1.4%	2.2%	5.2%	6.3%	6.6%
Water Supply Systems	21.0%	-4.2%	-10.6%	-1.7%	4.6%	8.3%	11.0%	12.1%

Contact: Ed Sullivan, Chief Economist, PCA, (847) 972-9006



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

United States
Fall 2016

	2014	2015	2016	2017	2018	2019	2020	2021
Total Cement Consumption	88,835	92,105	94,556	97,374	101,160	107,065	108,950	112,718
Portland Cement	86,519	89,737	92,135	94,879	98,567	104,322	106,055	109,687
Masonry Cement	2,316	2,368	2,421	2,495	2,593	2,743	2,895	3,031
- Portland Share of Total, (%)	97.4%	97.4%	97.4%	97.4%	97.4%	97.4%	97.3%	97.3%
Cement and Clinker Imports	8,392	11,280	13,308	14,720	16,981	20,400	22,450	24,567
- Import Share, (%)	9.4%	12.2%	14.1%	15.1%	16.8%	19.1%	20.6%	21.8%
	Percent Change							
Total Cement Consumption	8.8%	3.7%	2.7%	3.0%	3.9%	5.8%	1.8%	3.5%
Portland Cement	8.8%	3.7%	2.7%	3.0%	3.9%	5.8%	1.7%	3.4%
Masonry Cement	9.0%	2.2%	2.3%	3.0%	3.9%	5.8%	5.5%	4.7%
Cement and Clinker Imports	15.9%	34.4%	18.0%	10.6%	15.4%	20.1%	10.0%	9.4%

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