PUBLIC CONSTRUCTION PROJECTS:
NOT ALWAYS A HOLLYWOOD ENDING

Plenary 1: Back to the Future: Economic Outlook & Challenges in Construction

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Julian Anderson, Rider Levett Bucknall | Phoenix, AZ
The Economic Outlook

Will the real economy please stand up?

January 2019

Christopher Thornberg, PhD
Founding Partner, Beacon Economics
Director, UCR SoBA Center for Economic Forecasting and Development
Thank goodness that is behind us…
With a stock market crash chaser...

Market plunge reveals growing investor pessimism in US economy

Dow falls 350 points, bringing decline for the wild week to more than

U.S. Economy Will Slow in 2019, May Enter Recession in 2020, Economists Forecast. Trump Administration Disagrees

The US economy is strong. Three signs it won't last

For the U.S. Economy, Storm Clouds on the Horizon

Treasury Market Flashing A Warning For U.S. Economy
NBER says U.S. recession began December 2007

Mon Dec 1, 12:20 pm ET

WASHINGTON (Reuters) - The U.S. economy slipped into recession in December 2007, the National Bureau of Economic Research's business cycle dating committee announced on Monday.

A look back

Public Opinion Meter

Reality

Denial

Hysteria

What’s on? 

- Two positions out there: cash, mortgage
- 'California', its 'what if'
- So far the numbers are in line (if proportionate to the panic, and the consumer

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Current Headlines

SEP. 22, 2014, AT 6:01 AM

The American Middle Class Hasn’t Gotten A Raise In 15 Years

We’re Measuring the Economy All Wron The Age of Secular Stagnation

Millennials poorer than previous generations, data show

The official statistics say that the financial crisis is behind us. It's not.

Why many Americans aren’t benefiting from robust U.S. economy
Word of the Day

Miserabilism

The philosophy of pessimism – or – Trying really hard to convince everyone that things are really bad when, in reality, they aren’t.
Will the Real Economy Please Stand Up?

Why so glum?

- 2018 Growth: 3.2% with .75% fiscal stimulus after-burner
- Labor markets, consumer spending, business investment, wages, exports, energy, debt levels still all on steady sustainable paths
- Interest rates, inflation still constrained
- 2019: back to a solid pace of 2.5% growth
- Still a low chance of recession in next 24 months

It isn’t the ‘when’, it’s the ‘why’
Will the Real Economy Please Stand Up?

Brakes and Imbalances

- Labor shortages impacting employers
- Local Housing Shortages
- Recent market volatility / rising long term rates
- Aggressive Fed, flattening yield curves
- Sharp growth in government deficits
- The Federal government shutdown
- Global trade / security worries

Political Dysfunction

- Little effort to deal with underinvestment in infrastructure, rising wealth inequality, healthcare cost inflation, pension and entitlement issues, etc etc etc
- The great disconnect between economic realities and political discourse
A Wall Problem

✓ Federal Budget: $3.8 trillion
✓ Discretionary Spending: $1.1 trillion
✓ Cost of 1 aircraft carrier: $14 billion
✓ Cost of full border wall: $60 billion+
✓ Cause of shut down: $5.7 billion
✓ Cost of shutdown: $3-$9 billion+
GDP: Q3 3.5%, Q4 tracking 2.7%

Real GDP Growth (yoy)

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
<th>2016</th>
<th>2017</th>
<th>Q2</th>
<th>Q3</th>
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<tbody>
<tr>
<td>GDP</td>
<td>1.88</td>
<td>2.48</td>
<td>4.20</td>
<td>3.50</td>
<td></td>
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<tr>
<td>Final Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumption</td>
<td>1.87</td>
<td>1.83</td>
<td>2.57</td>
<td>2.69</td>
<td></td>
</tr>
<tr>
<td>Goods</td>
<td>0.75</td>
<td>0.96</td>
<td>1.16</td>
<td>1.20</td>
<td></td>
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<tr>
<td>Services</td>
<td>1.11</td>
<td>0.87</td>
<td>1.42</td>
<td>1.49</td>
<td></td>
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<tr>
<td>Fixed investment</td>
<td>0.39</td>
<td>0.95</td>
<td>1.10</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>Structures</td>
<td>0.07</td>
<td>0.08</td>
<td>0.43</td>
<td>-0.26</td>
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<tr>
<td>Equipment</td>
<td>-0.08</td>
<td>0.54</td>
<td>0.27</td>
<td>0.03</td>
<td></td>
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<tr>
<td>Intellectual prop</td>
<td>0.24</td>
<td>0.18</td>
<td>0.45</td>
<td>0.35</td>
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<tr>
<td>Residential</td>
<td>0.16</td>
<td>0.15</td>
<td>-0.05</td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td>Change inventories</td>
<td>-0.20</td>
<td>-0.11</td>
<td>-1.17</td>
<td>2.07</td>
<td></td>
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<tr>
<td>Net exports</td>
<td>-0.34</td>
<td>-0.23</td>
<td>1.22</td>
<td>-1.78</td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td>0.09</td>
<td>0.56</td>
<td>1.12</td>
<td>-0.45</td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>-0.43</td>
<td>-0.79</td>
<td>0.10</td>
<td>-1.34</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>0.16</td>
<td>0.03</td>
<td>0.43</td>
<td>0.56</td>
<td></td>
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<tr>
<td>Federal</td>
<td>0.02</td>
<td>0.09</td>
<td>0.24</td>
<td>0.21</td>
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<tr>
<td>State and local</td>
<td>0.15</td>
<td>-0.06</td>
<td>0.20</td>
<td>0.35</td>
<td></td>
</tr>
</tbody>
</table>
**Consumer Spending**

**Real Consumer Spending Growth (Y-o-Y)**

**Personal Savings Rate**
Consumer Debt Loads

Household Debt / DPI Ratio

Loan Delinquencies: All Commercial Banks

- Residential
- Commercial
- Consumer
Housing Markets: Slight Slowing

Housing market is showing signs of cracking: 'Anything-goes list-price strategy is no longer working'.

- Even in the hottest markets, there is an affordability limit, and that limit is clearly now being hit.
Ownership and Credit Availability

Ownership Rates

Mortgage Origination by Credit Score

- Median
- 25th percentile
- 10th percentile
Construction Spending – National

Value of Nonresidential Construction
Oct. 2003 to Oct. 2018

<table>
<thead>
<tr>
<th>Value by Type (Nonresidential)</th>
<th>October 2018 Value (Millions)</th>
<th>Year over Year % Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>459,733</td>
<td>6.4%</td>
</tr>
<tr>
<td>Commercial</td>
<td>84,714</td>
<td>0.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>66,768</td>
<td>3.1%</td>
</tr>
<tr>
<td>Office</td>
<td>66,436</td>
<td>16.3%</td>
</tr>
<tr>
<td>Health Care</td>
<td>32,885</td>
<td>-0.7%</td>
</tr>
<tr>
<td>Communication</td>
<td>23,650</td>
<td>-5.0%</td>
</tr>
</tbody>
</table>

Source: Census
Lending Markets?

Senior Loan Officer Survey: Net Percent of Respondents saying yes
# National Trends in Real Estate

<table>
<thead>
<tr>
<th>US Capital Trends Oct 2018</th>
<th>Transaction Volume (Billions)</th>
<th>Year over Year % Change</th>
<th>Cap Rate</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Volume</td>
<td>Prices</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$42.0</td>
<td>-2.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Industrial</td>
<td>$12.2</td>
<td>136.0%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Apartment</td>
<td>$11.9</td>
<td>-16.0%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Office</td>
<td>$9.6</td>
<td>-24.0%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Retail</td>
<td>$4.0</td>
<td>-32.0%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Hotel</td>
<td>$2.3</td>
<td>10.0%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

![Commercial Real Estate Loans Annual Growth Q3-2007 to Q3-2018](chart.png)

Source: Real Capital Analytics
Industrial Production

Industrial Production YoY Growth

Exports of goods, Real
Twin Deficits

US Trade Balance (BOP_)

Net Surplus Federal Go
Trump Just Ripped Up Nafta. Here’s What’s in the New Deal.

Changes for automakers, dairy farmers, labor unions and large corporations headline the renegotiated U.S.M.C.A., which is poised to replace Nafta.
## The China Syndrome

United States goods trade with China, $bn

<table>
<thead>
<tr>
<th>Country</th>
<th>Exports</th>
<th>Imports</th>
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<tbody>
<tr>
<td>Total,</td>
<td>829.8</td>
<td>1233.9</td>
</tr>
<tr>
<td>China</td>
<td>64.0</td>
<td>249.7</td>
</tr>
<tr>
<td>Canada</td>
<td>151.9</td>
<td>109.2</td>
</tr>
<tr>
<td>Mexico</td>
<td>131.3</td>
<td>169.3</td>
</tr>
<tr>
<td>Japan</td>
<td>35.7</td>
<td>70.3</td>
</tr>
<tr>
<td>Germany</td>
<td>29.4</td>
<td>62.3</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>33.9</td>
<td>29.3</td>
</tr>
<tr>
<td>Korea, South</td>
<td>27.1</td>
<td>35.4</td>
</tr>
<tr>
<td>France</td>
<td>18.1</td>
<td>25.7</td>
</tr>
<tr>
<td>India</td>
<td>15.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Italy</td>
<td>11.9</td>
<td>26.8</td>
</tr>
<tr>
<td>Taiwan</td>
<td>13.6</td>
<td>21.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>24.2</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Value US Exports to China as % of GDP: 0.75%

Value China Exports to US as % of GDP: 4.0%
The Yuan response

China Purchasing Managers' Indices
Index, Seasonally Adjusted

- Chinese Manufacturing PMI: Dec @ 49.4
- Chinese Non-Manufacturing PMI: Dec @ 53.8

Yuan / Dollar Exchange Rate

Average Hourly Earnings
Year-over-Year Percent Change
Average Hourly Earnings: Dec @ 2.0%

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Labor Markets

Change Non Farm Payrolls (Smoothed)

Unemployment and Job Openings

-50
0
50
100
150
200
250
300
350

Jan-10
Sep-10
May-11
Jan-12
Sep-12
May-13
Jan-14
Sep-14
May-15
Jan-16
Sep-16
May-17
Jan-18
Sep-18

0
1
2
3
4
5
6
7
8
9
10

Jan-01
Apr-02
Jul-03
Oct-04
Jan-06
Apr-07
Jul-08
Oct-09
Jan-11
Apr-12
Jul-13
Oct-14
Jan-16
Apr-17
Jul-18

Job Opening Rate
Unemployment Rate

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Real Wage Gains for Continuously Employed FT Workers

Real Median Income - Males

Consequences
Quality of Life

Life Expectancy

<table>
<thead>
<tr>
<th>Year</th>
<th>1973</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>66.0</td>
<td>78.0</td>
</tr>
</tbody>
</table>

Infant Mortality

<table>
<thead>
<tr>
<th>Year</th>
<th>1973</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.6%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Total Crime Rate in the U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>1973</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.15%</td>
<td>2.85%</td>
</tr>
</tbody>
</table>

Source: Countryeconomy.com, Statista.
Quality of Life

Workforce Growth

US Labor Force Growth (Smoothed)

US Participation Rate
Looking Ahead

2016 Population by Age (Millions)

US Population Forecast

<table>
<thead>
<tr>
<th></th>
<th>0-24</th>
<th>25-64</th>
<th>65+</th>
</tr>
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<tbody>
<tr>
<td>Current</td>
<td>104.5</td>
<td>169.4</td>
<td>49.2</td>
</tr>
<tr>
<td>2016-26</td>
<td>0.9</td>
<td>4.7</td>
<td>17.8</td>
</tr>
<tr>
<td>2026-36</td>
<td>2.0</td>
<td>6.2</td>
<td>11.9</td>
</tr>
<tr>
<td>2036-46</td>
<td>2.3</td>
<td>9.4</td>
<td>4.8</td>
</tr>
<tr>
<td>Total</td>
<td>5.3</td>
<td>20.3</td>
<td>34.5</td>
</tr>
</tbody>
</table>
The Markets

S&P 500 2017-Current

S&P 500 2009-Current

5 Year Annual % 7.7%
10 Year Annual % 12.2%
The Markets

Market Selloffs Current Expansion

A Rising Rate Trigger?

Mortgage Rates (30 Year Fixed)
Inflation Risks?

Core Inflation

M2 Growth (Y-o-Y)
Fed's Williams says rate hikes 'over next year or so' still make sense
Another Bubble?

The Fed just proposed a plan to make life easier for banks by loosening the ‘Volcker Rule’

- The Federal Reserve proposed Wednesday to revise the Volcker Rule to apply to financial firms based on their trading activity.
- The Volcker Rule was proposed during the financial crisis in an effort to prevent banks from speculating in markets.
- The rule went into effect four years ago and generally prevents banks from trading for their own profit or having stakes in a hedge fund or private equity fund.
State unemployment rates, August 2018, seasonally adjusted
NET DOMESTIC MIGRATION

NET DOMESTIC MIGRATION PER 1,000 RESIDENTS, JULY 1, 2016 – JULY 1, 2017

Source: Business Insider/Census Bureau
California fact versus fiction

2016 Best & Worst States For Business

50 California
49 New York
48 Illinois
47 New Jersey
46 Massachusetts
45 Connecticut
44 Hawaii
43 Michigan
42 Oregon
41 Vermont
40 Maryland
39 Mississippi
38 West Virginia
37 Rhode Island
Beacon Economics

Booms and Busts

Growth in Real Output

US Unemployment

United States  California

CA  US
California Economic Engine

<table>
<thead>
<tr>
<th>Q1 2018</th>
<th>1 Year</th>
<th>5 Year</th>
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<tbody>
<tr>
<td>Washington</td>
<td>4.3%</td>
<td>3.7%</td>
</tr>
<tr>
<td>California</td>
<td>3.5%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Utah</td>
<td>3.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Colorado</td>
<td>4.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Oregon</td>
<td>3.4%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Florida</td>
<td>2.3%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Texas</td>
<td>4.2%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Idaho</td>
<td>3.2%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Georgia</td>
<td>2.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Nevada</td>
<td>4.0%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
California Economic Engine

California Share National Personal Income

<table>
<thead>
<tr>
<th>Rk</th>
<th>State</th>
<th>#</th>
<th>Ann Gr</th>
<th>Share US</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nevada</td>
<td>211.2</td>
<td>3.4%</td>
<td>1.7%</td>
</tr>
<tr>
<td>2</td>
<td>Utah</td>
<td>218.3</td>
<td>3.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td>3</td>
<td>Florida</td>
<td>1238.2</td>
<td>3.1%</td>
<td>9.8%</td>
</tr>
<tr>
<td>4</td>
<td>Oregon</td>
<td>252.1</td>
<td>2.9%</td>
<td>2.0%</td>
</tr>
<tr>
<td>5</td>
<td>Idaho</td>
<td>92.1</td>
<td>2.8%</td>
<td>0.7%</td>
</tr>
<tr>
<td>6</td>
<td>Colorado</td>
<td>328.7</td>
<td>2.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>7</td>
<td>Washington</td>
<td>413.1</td>
<td>2.7%</td>
<td>3.3%</td>
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<tr>
<td>8</td>
<td>California</td>
<td>2051</td>
<td>2.6%</td>
<td>16.3%</td>
</tr>
<tr>
<td>9</td>
<td>Georgia</td>
<td>537.9</td>
<td>2.6%</td>
<td>4.3%</td>
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<tr>
<td>10</td>
<td>South Carolina</td>
<td>237.6</td>
<td>2.4%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Employment
## California Non Farm Payroll YoY Growth

### Nov-18

<table>
<thead>
<tr>
<th>City</th>
<th>January 05</th>
<th>January 06</th>
<th>January 07</th>
<th>January 08</th>
<th>January 09</th>
<th>January 10</th>
<th>January 11</th>
<th>January 12</th>
<th>January 13</th>
<th>January 14</th>
<th>January 15</th>
<th>January 16</th>
<th>January 17</th>
<th>January 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose</td>
<td>1,147,800</td>
<td>2.6%</td>
<td>3.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockton</td>
<td>246,000</td>
<td>3.8%</td>
<td>3.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Rosa</td>
<td>211,500</td>
<td>2.0%</td>
<td>2.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Riverside</td>
<td>1,509,100</td>
<td>4.2%</td>
<td>2.3%</td>
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</tr>
<tr>
<td>Fresno</td>
<td>357,600</td>
<td>3.1%</td>
<td>2.1%</td>
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</tr>
<tr>
<td>Oakland</td>
<td>1,194,800</td>
<td>2.0%</td>
<td>1.9%</td>
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<td></td>
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<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td>1,146,000</td>
<td>1.9%</td>
<td>1.9%</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Bakersfield</td>
<td>264,800</td>
<td>1.5%</td>
<td>1.8%</td>
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<td></td>
</tr>
<tr>
<td>San Diego</td>
<td>1,490,500</td>
<td>1.8%</td>
<td>1.8%</td>
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<tr>
<td>Oxnard</td>
<td>309,400</td>
<td>1.1%</td>
<td>1.6%</td>
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<td></td>
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<tr>
<td>Sacramento</td>
<td>993,500</td>
<td>2.6%</td>
<td>1.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Los Angeles</td>
<td>4,523,400</td>
<td>1.4%</td>
<td>1.3%</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Orange</td>
<td>1,635,300</td>
<td>1.7%</td>
<td>0.4%</td>
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<td></td>
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</table>
New Housing Supply

New Home Permits

How Much Housing Needed?
Housing Needed to maintain 2% State Job Growth

<table>
<thead>
<tr>
<th>Method 1</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>722,022</td>
</tr>
<tr>
<td></td>
<td>Per Year</td>
<td>206,674</td>
</tr>
<tr>
<td></td>
<td>Current</td>
<td>111,185</td>
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<tr>
<td></td>
<td>Shortfall</td>
<td>100,489</td>
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<table>
<thead>
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<th>Method 2</th>
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<td></td>
<td>Total</td>
<td>911,001</td>
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<td></td>
<td>Per Year</td>
<td>263,667</td>
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<td></td>
<td>Current</td>
<td>111,185</td>
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<td>Shortfall</td>
<td>157,482</td>
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Source: CIRB
## The Upside of Labor Shortages

<table>
<thead>
<tr>
<th>County</th>
<th>Pop w Earn</th>
<th>Median Earn</th>
<th>&lt; HS</th>
<th>HS</th>
<th>SC</th>
<th>Bach</th>
<th>Grad</th>
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<tbody>
<tr>
<td></td>
<td>County</td>
<td>Gr 15-17</td>
<td>City</td>
<td>Gr 15-17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,364</td>
<td>2.7%</td>
<td>2,218</td>
<td>4.3%</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>32,169</td>
<td>5.1%</td>
<td>31,191</td>
<td>12.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21,901</td>
<td>7.2%</td>
<td>21,372</td>
<td>15.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28,882</td>
<td>6.7%</td>
<td>26,656</td>
<td>5.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36,535</td>
<td>3.4%</td>
<td>35,392</td>
<td>9.6%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>54,442</td>
<td>4.8%</td>
<td>51,896</td>
<td>1.9%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>77,200</td>
<td>7.6%</td>
<td>75,290</td>
<td>12.7%</td>
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</tbody>
</table>

**Median Rent as % of Income 2005 to 2017**
The Big Picture

- **Positives: It will be a good year**
  - GDP Growth Outlook for 2019: 2%+
  - Labor markets to remain tight
  - Rising wages to put pressure on profits
  - Exports, business investment continue to grow
  - Inflation to remain constrained
  - Interest Rates Still Low
  - Lending constrained, but commercial markets steady
  - Debt Levels still safe
  - California: Still a top performer

- **Negatives: Problems Growing**
  - Labor shortages will be an issue
  - Local housing supply tightening
  - Will the Fed continue to tighten, invert the yield curve?
  - Equity markets behaving oddly
  - Federal deficit widening sharply
  - Bank lending still constrained
  - Political uncertainty to dominate headlines
  - Critical Policy Issues Remain Undiscussed
  - Miserabilism warping our sense of reality
The Great Disconnect

- What we are worried about
- What we should be worried about

The Number of Jobs
The Number of Workers
Who pays for Healthcare
What are we paying for?
Tax Levels
Tax Structure
Income Inequality
Wealth Inequality
Funded Govt. Liabilities
Unfunded Govt. Liabilities
Business Investment
A Lack of Public Investment
Inflation
Slowing Lending
The Cost of CA Housing
The Supply of CA Housing
Thank You
INTRODUCTION

- A Strong Economy
- Construction Activity
- RLB Crane Index
- Economics 101
- About Construction Costs
- China, China, China!
- A Word About Trade Wars
- The Future
A STRONG ECONOMY, VARYING REGIONALLY

U. S. Gross Domestic Product, Percent Change by State 2018: Q1-Q2
A STRONG ECONOMY, ROBUST CONSTRUCTION INDUSTRY

Construction Unemployment Rate

Source: U.S. Bureau of Labor Statistics
Note: Shaded area represents NBER defined recession period.
CONSTRUCTION ACTIVITY

U.S. Construction Put in Place, Seasonally Adjusted (Millions)

Source: U.S. Census Bureau

*Estimated
CONSTRUCTION ACTIVITY

U.S. Construction Put in Place, Seasonally Adjusted (Millions)

Source: U.S. Census Bureau

*Estimated
CONSTRUCTION ACTIVITY

Architectural Billings Index

Source: The American Institute of Architects
Key ABI highlights for December include:

- Regional averages:
  - Midwest (56.3);
  - Northeast (51.6);
  - South (49.4); and
  - West (49.2).

- Sector index breakdown:
  - institutional (53.1);
  - commercial/industrial (51.2);
  - mixed practice (50.2); and
  - multi-family residential (49.8).

- Project inquiries index: 55.6
- Design contracts index: 52.1
The North American crane count has reached a new peak with eight of the 13 cities surveyed experiencing an increase in their respective crane counts. Three cities show a decrease in counts while the remaining two hold steady.

- In Toronto, 46% of cranes are dedicated to residential projects.
- New York experienced a 40% increase in cranes.
- Los Angeles experienced a 22% increase in cranes.

Top three crane count rankings:
- Toronto – 104
- Seattle – 59
- Los Angeles – 44
ECONOMICS 101

Diagram showing supply (S) and demand (D1, D2) curves. The equilibrium is at Q1, Q2 with price P2 higher than P1.
TOTAL CONSTRUCTION COST INPUTS

- Labor
- Materials
- Equipment
  - Including operations and maintenance costs
- Subcontractors
- Bonds
- Insurance
- Taxes
- General Contractor Overhead and Profit
And…

*The Most Overlooked Factor…*

- What the Market Will Bear: *Supply vs. Demand*
ABOUT CONSTRUCTION COSTS – TYPES OF INDEXES

CONSTRUCTION MATERIALS PRICE MOVEMENT IN 2018

<table>
<thead>
<tr>
<th>Description</th>
<th>Jan 17</th>
<th>Feb 17</th>
<th>Mar 17</th>
<th>Apr 17</th>
<th>May 17</th>
<th>Jun 17</th>
<th>Jul 17</th>
<th>Aug 17</th>
<th>Sep 17</th>
<th>Oct 17</th>
<th>Nov 17</th>
<th>Dec 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregates M305% ORE</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Aluminum Sheet</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
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<td>+6.3</td>
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</tr>
<tr>
<td>Asphalt Paving</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Cement</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Concrete Pipe</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Copper Pipe</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Fabricated Steel</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Foam Insulation</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Insulating Glass</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Lumber, Softwood</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
<tr>
<td>Plywood</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
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<tr>
<td>PVC Products</td>
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<td>+6.3</td>
<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
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<td>Sixth-Mix Concrete</td>
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<td>+6.3</td>
<td>+6.3</td>
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<tr>
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<td>+6.3</td>
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<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
<td>+6.3</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics, data as of March 1, 2018, due to the price of some materials is provided monthly by the U.S. Bureau of Labor Statistics.

LABOR & MATERIAL (ENR)

Buy / Sell (RLB)
ABOUT CONSTRUCTION COSTS – TYPES OF INDEXES

RLB Construction Cost Index

Seattle 5.99%
Portland 6.62%
San Francisco 6.19%
Las Vegas 5.27%
Los Angeles 4.77%
Phoenix 6.63%
Denver 4.18%
Chicago 7.22%
Boston 4.30%
New York 4.30%
DC 4.65%
Honolulu 1.92%
ABOUT CONSTRUCTION COSTS – PREDICTING ESCALATION

$ Construction Costs

CPI

Time
ABOUT CONSTRUCTION COSTS

Rates of Inflation

ABOUT CONSTRUCTION COSTS

Underlying inflation gauge

Source: Federal Reserve Bank of New York
ABOUT CONSTRUCTION COSTS
EXAMPLE: LUMBER

Source: U.S. Census Bureau
ABOUT CONSTRUCTION COSTS
EXAMPLE: LUMBER DEMAND

U.S. Lumber Demand

U.S. LUMBER DEMAND

44.4 million board feet 2015
48.4 2016
52.1 2017
56.0 2018

SOURCES: RBC Capital Markets, U.S. Census Bureau, Canfor, Interfor and West Fraser
ABOUT CONSTRUCTION COSTS
EXAMPLE: LUMBER DEMAND/USE

Monthly Supply to the US Market
and Domestic Demand, BBF
ABOUT CONSTRUCTION COSTS
EXAMPLE: LUMBER PRICE INDEX

Lumber Producer Price Index

Source: U.S. Bureau of Labor Statistics
U.S. Steel Shipments by End Use, 2017

- Automotive: 27%
- Container: 3%
- Appliances: 5%
- National Defence and Homeland Security: 3%
- Construction: 43%
- Machinery and Equipment: 10%
- Energy: 7%
- Other: 2%
- Energy: 7%

About Construction Costs
Example: Steel End Use

Source: American Iron and Steel Institute
ABOUT CONSTRUCTION COSTS
EXAMPLE: STEEL PRODUCTION

World Crude Steel Production, 2016

- China: 49%
- Japan: 6%
- India: 6%
- United States: 5%
- Russia: 4%
- South Korea: 4%
- Germany: 3%
- Turkey: 2%
- Brazil: 2%
- Others: 19%

Source: World Steel Association
ABOUT CONSTRUCTION COSTS
EXAMPLE: STEEL PRODUCTION

Steel Capacity Utilization vs Producer Price Index

Iron and Steel Producer Price Index
- Steel Producer Price Index
- Steel Capacity Utilization

Source: Bureau of Labor Statistics, Board of Governors of Federal Reserve System
### ABOUT CONSTRUCTION COSTS

**EXAMPLE: STEEL IMPORT RELIANCE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Import Reliance</th>
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<tbody>
<tr>
<td>2013</td>
<td>12%</td>
</tr>
<tr>
<td>2014</td>
<td>30%</td>
</tr>
<tr>
<td>2015</td>
<td>22%</td>
</tr>
<tr>
<td>2016</td>
<td>17%</td>
</tr>
<tr>
<td>2017</td>
<td>18%</td>
</tr>
</tbody>
</table>

Source: U.S. Geological Survey
ABOUT CONSTRUCTION COSTS
EXAMPLE: STEEL

- Import Sources 2013-2016
  - Canada (15%), Brazil (13%), Republic of Korea (12%), Mexico (9%), Other (51%)
- Construction is an important factor for steel prices, but is not dominant.
- U.S. steel usage is dwarfed by China’s.
- Substitute
  - Perhaps concrete (for construction projects)
Construction Unemployment, 2008-2018

Source: U.S. Bureau of Labor Statistics
ABOUT CONSTRUCTION COSTS
LABOR COST TRENDS

Labor Cost Index

Source: Engineering News-Record
ABOUT CONSTRUCTION COSTS
OTHER FACTORS

The Inscrutable Price of Oil

West Texas Intermediate (WTI) - Cushing, Oklahoma

Source: U.S. Energy Information Administration
ABOUT CONSTRUCTION COSTS
THE FUTURE

Rates of Inflation

CHINA CONSUMES MIND-BOGGLING AMOUNTS OF RAW MATERIALS
...and that’s why slowing growth may continue to cause headaches for commodity producers.
The United States was forecast to consume approximately 104 million metric tons of steel in 2018. Imports will account for around 19 million metric tons broken down as:

- Flat products – 36%
- Pipe and tube products – 23%
- Semi-finished products – 21%
- Long products – 17%
- Stainless steel products – 3%

For construction, we are mostly concerned with ‘long products’.

As at December 2017, the USA imported steel from 85 countries, the top five of which were:

- Canada (20% of all steel imported into the USA)
- Brazil (12% of all steel imported into the USA)
- Mexico (11% of all steel imported into the USA)
- South Korea (10% of all steel imported into the USA)
- Russia (8% of all steel imported into the USA).
A WORD ABOUT TRADE WARS
ALUMINUM

The Trump Administration has placed a 10% tariff on imported aluminum.

The United States produces only around 15% of the aluminum that it uses. In response to increased demand and the imposition of tariffs, the price of aluminum milled shapes has increased but the US dollar has strengthened during thereby decreasing the price of imports and therefore the cost impact of the tariffs.

Countries currently exempted from tariffs are:

- Argentina (steel and aluminum)
- Australia (steel and aluminum)
- Brazil (steel)
- South Korea (steel)
A WORD ABOUT TRADE WARS
CHINA

In 2018 so far there have been three rounds of tariff impositions on Chinese goods; June 20th, August 16th and September 21st. These are separate from the steel and aluminum tariffs discussed above. A summary of the tariffs on Chinese goods can be found at https://www.cbp.gov/trade/programs-administration/entry-summary/section-301-trade-remedies.

The tariffs are currently set at 10% but the Trump Administration has threatened to increase the rate from 10% to 25% come March 1st, 2019.

Unfortunately, the list of goods on which the tariffs applied is long and it is difficult to parse but some information is available.
Building Information Model (BIM)
THE FUTURE
THE FUTURE

- Labor increasingly hard to find and labor shortages bring issues with;
  - Skill levels
  - Productivity
  - Scheduling problems / project delays
- In some areas, such as Silicon Valley and Los Angeles, workers are moving further from the construction sites due to housing affordability
- Subcontractors frequently over committed
- Suppliers feel that the time is right for price bumps and making price rises stick
- A busy industry operating at maximum capacity, and likely at the peak of the cycle
- Construction escalation running at twice the pace of CPI (and has been for a number of years) and ahead of underlying rate of inflation
- Danger of a stall as construction costs continue to rise
- Owners looking to shed risk look towards Design/Build, IPD procurement
- Public sector owners looking at alternative ways of funding projects, such as P3
THE FUTURE

- CM@Risk failing to deliver for Owners and, in some cases, for contractors
- Sub-contractors and general contractors nervous about ability to contain prices and deliver projects (subcontractors frequently over committed)
- Potential for spike in claims as some contractors and sub-contractors caught with unprofitable or delayed projects
- Public sector owners in ‘blue’ states adding requirements for PLA and local-hiring preference … which do impact project budgets
- Some large clients offering project specific wage increases to attract labor
- Technology continues to evolve at fast pace and there is debate about just how much it affects AEC – but be prepared for change
  - Consultants can only perform functions that machines cannot
  - Shrinking design times (increasing risk of design errors)
  - Clients demand virtual reality for design review
  - The rise in importance of the major trade contractors may lead to a reduced role for general contracting firms as BIM morphs into ‘multi-prime’ (sub-trade) direct-procurement
  - Does BIM eventually lead to unit-price procurement and, if so, is this a new form of contract?
  - Increasing use of mobile devices improves collection of ‘real time’ data
  - Use of AI in analyzing construction claims
THE FUTURE

• Modularization back in vogue
• Prefabrication increasing
• General fear about effect of:
  • Rising interest rates
  • Tariffs (ours and ‘theirs’)
  • Trade war with China (and almost everyone else)
  • Political disruption / lack of policy predictability
  • Risk of political whiplash
  • Federal deficit (in the longer term)
• Infrastructure plan – DOA
  • Sometimes requires increased charges (tolls, etc.)
  • Sometimes requires increased taxes (on fuel, incomes, etc)
  • Always requires political will
  • P3 remains an option but not without risk or cost
• Dornbusch’s Law reapplied: Change takes a much longer time coming than you think, and then it happens much faster than you would have thought.
CONTRACT REMEDIES FOR CHANGED MARKET CONDITIONS

• Before Executing Contract
  • Price Escalation Provision

• After Executing Contract
  • Differing Site Condition?
  • “Change in Law” Provision?
  • Force Majeure
CONTRACT REMEDIES FOR CHANGED MARKET CONDITIONS

• When All Else Fails
  • Impossibility of Performance
  • Commercial Impracticability
  • Mutual Mistake