

Welcome



# **Advancing Building Estimation**

## **Forecasting Costs**

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# Forecasting Overview

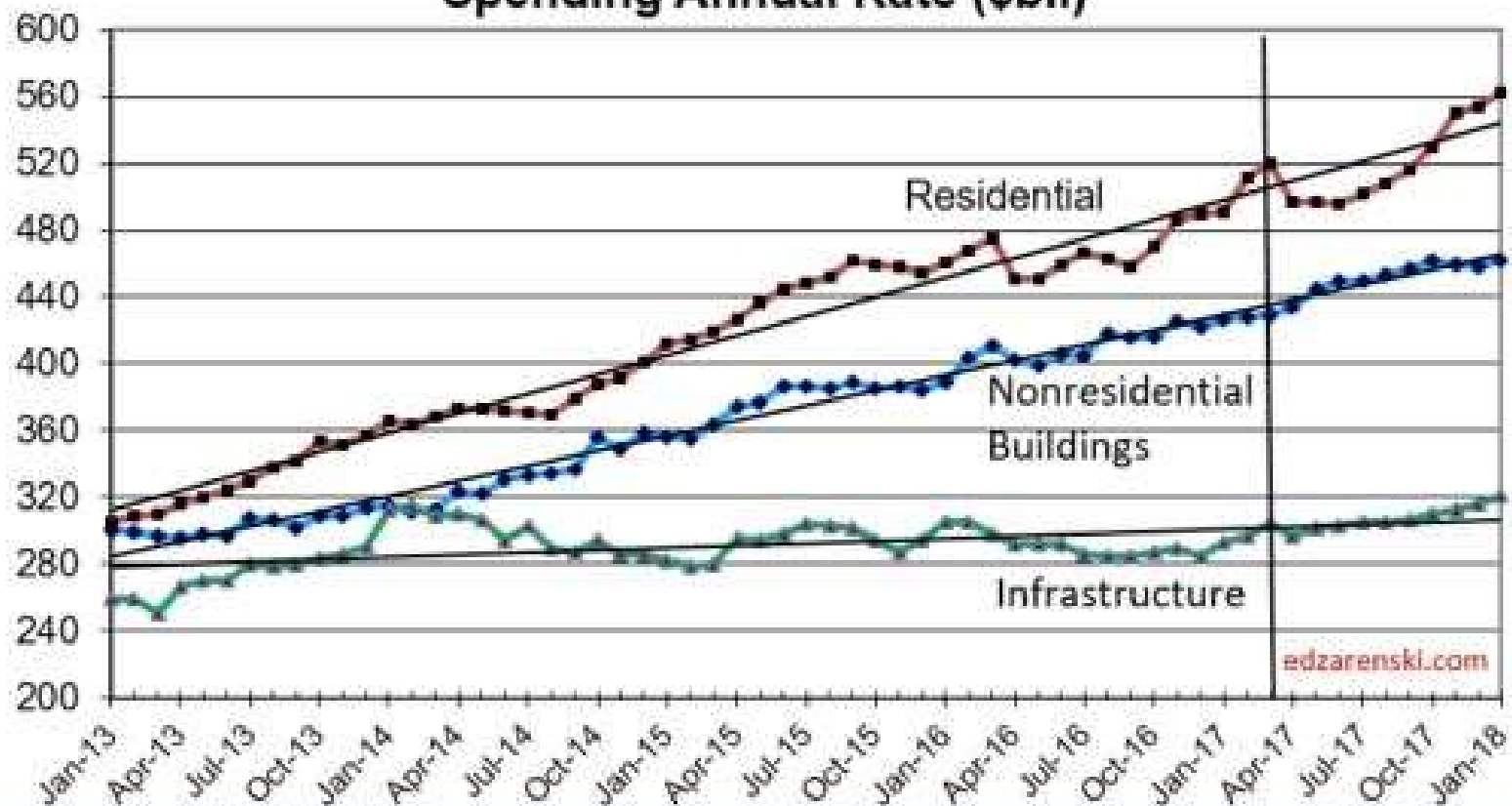


- Labor - wages, availability and productivity
- Material cost and availability
- Inputs / Bid price / Final price
- Industry workload
- Contractor workload
- Inflation
- Project Cost

# Forecasting the Future



**Construction Spending by Sector**  
**Spending Annual Rate (\$bil)**



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# Forecasting the Future



## Common Errors in Forecasting

- Misusing Starts Data
- Not Adjusting History for Inflation
- Using Inappropriate Indices
- Ignoring Productivity
- Considering Revenue = Volume
- Staffing to meet Revenue

# Forecasting the Future



## Project Perspective

- Resources
- Inflation
- Budget / Cost

## Corporate Perspective

- Market Share
- Growth = Work Volume
- Size = Revenue and Staff

# Project Inflation Impact



- Labor = 30% to 40% of project
- A 3% increase = 0.9% to 1.2% inflation
  
- Material = 40% to 50% of project
- Increase 3% = 1.2% to 1.5% inflation
  
- Margins = applied to 100% of project
- Increase 3% = 3% to inflation

# Project Inflation Impact



Project Cost Inflation Impact of  
+10% increase in cost of material



• +0.06% Gypsum Board



• +0.40% Concrete



• +0.40% Copper



• +1.00% Steel

# Additional Causes of Inflation



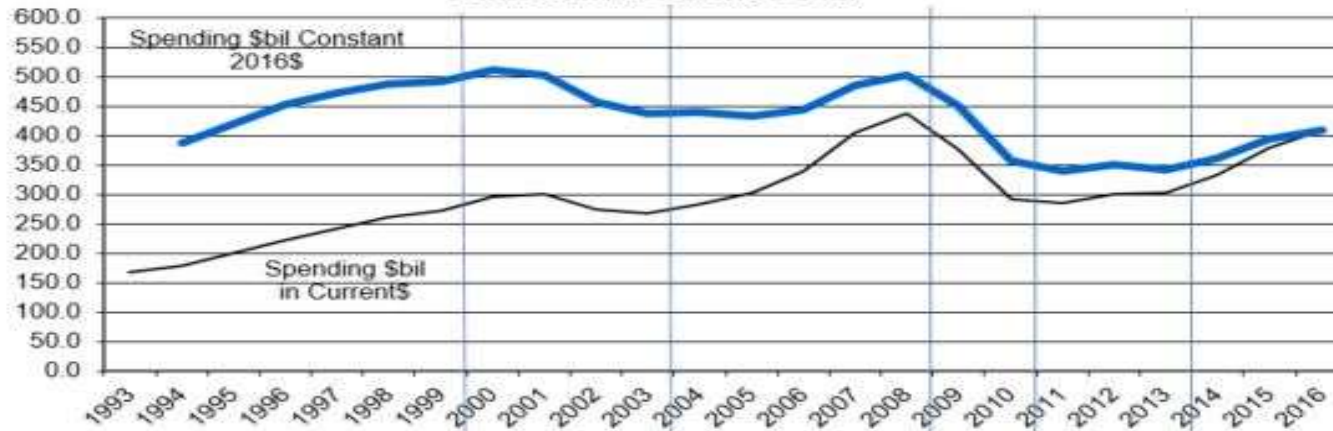
- Labor Availability
- Productivity
- Schedule Extension
- Spending / Work Volume

How spending is moving has more impact on inflation than labor & mtrl

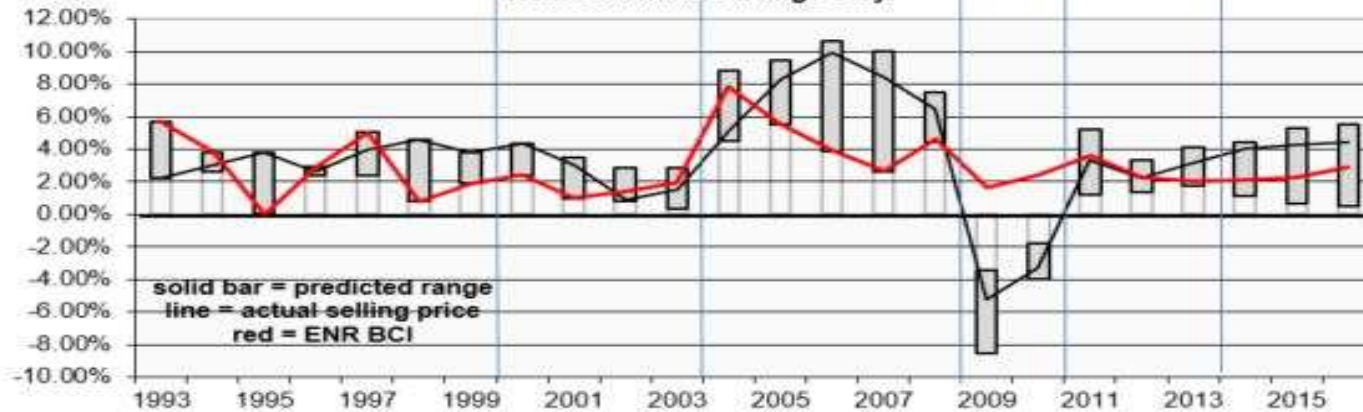


# Inflation vs Spending/Volume

**Construction Spending \$Billion  
Current vs Constant 2016\$  
Nonresidential Buildings Only**



**Construction Inflation  
Nonresidential Buildings Only**



# Sources of Forecasting Data



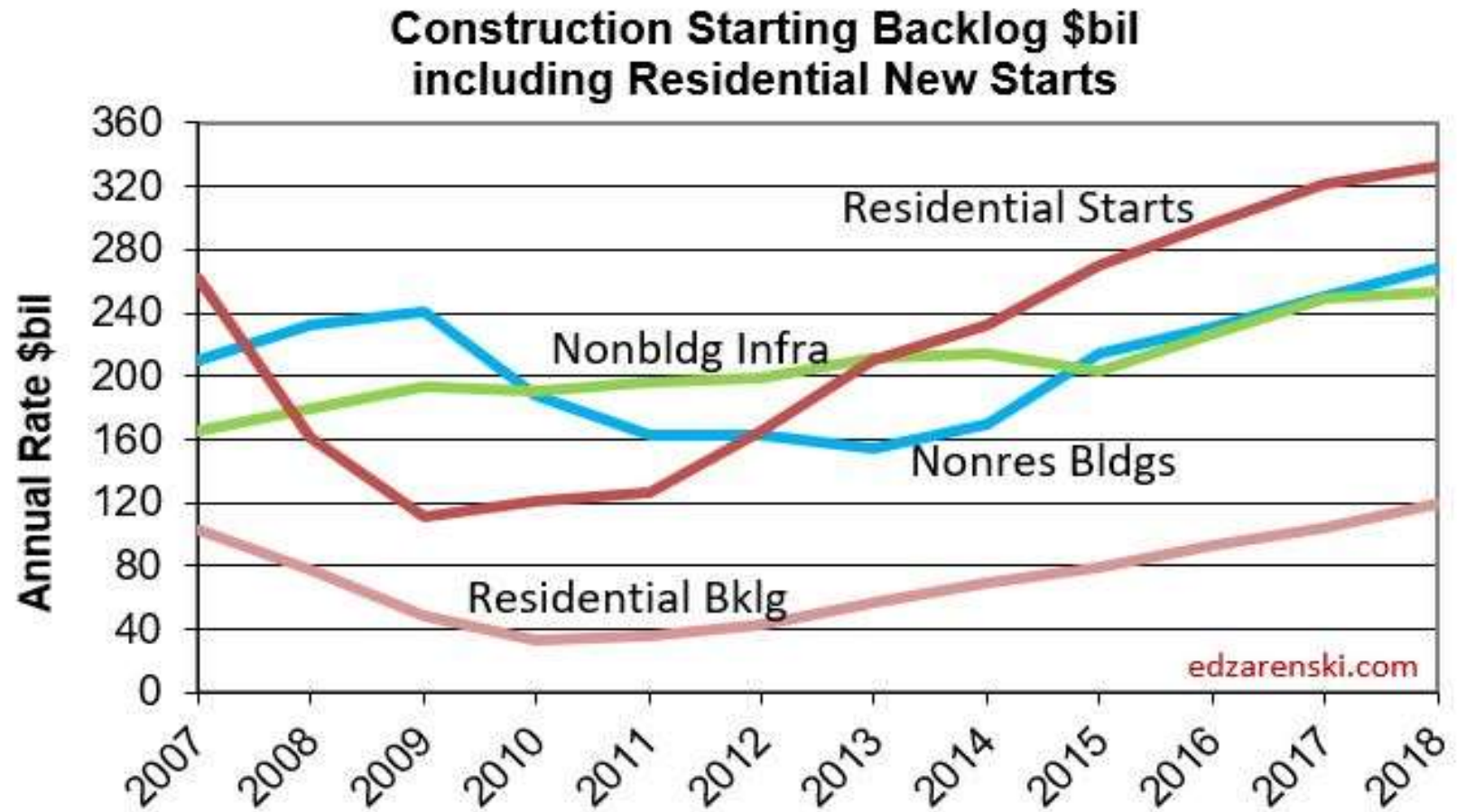
## Starting Backlog + New Starts creates Cash Flow

- Nonres Bldgs Spending 70%-75 from Starting Backlog
- Residential Spending 70% from New Starts

## Cash Flow = Spending

- Backlog and New Starts is not Spending
- Cash Flow is Spending

# Sources of Forecasting Data



# Sources of Forecasting Data



**Spending = Revenue**

**Constant \$ Spending is Volume**

Constant \$ Spending = adjusted for inflation

**Volume dictates Staffing Needs**

# Sources of Forecasting Data



**Construction Jobs vs Construction Volume  
Growth Since January 2011**



# Types of Inflation Indices

## • LESS USEFUL

- Inputs
- PPI
- Labor & Material
- Market Basket
- Composite

## • MORE USEFUL

- Outputs
- Selling Price
- Final Cost
- Trade
- Building Type
- Market Sector

# Complete Cost Indices



## NONRESIDENTIAL BUILDINGS

- Construction Analytics Building Cost Index
- Turner Cost Index
- Rider Levett Bucknall Actual Cost Index

## INFRASTRUCTURE

- I H S Power Plant, Pipeline, Refine Costs
- National Highway Construction Cost Index
- Bureau of Reclamation Construction Cost Trends

## RESIDENTIAL

- U S Census Constant Quality Single Family House

# Construction Inflation Indices



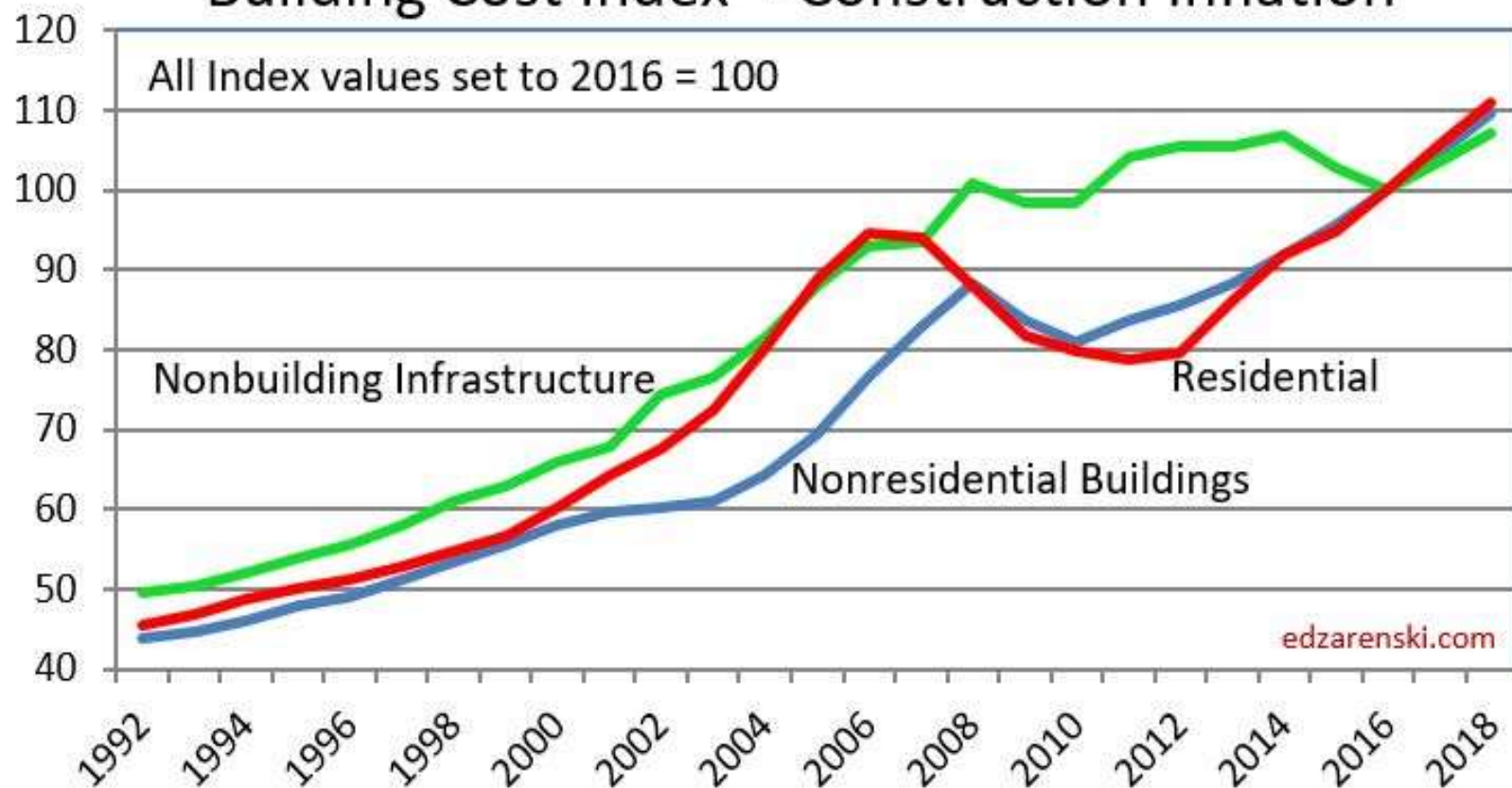
<b>CONSTRUCTION COST INDEX SET TO CURRENT YEAR = 100</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>NONRESIDENTIAL BLDGS</b>	<b>81.0</b>	<b>83.7</b>	<b>85.5</b>	<b>88.3</b>	<b>91.8</b>	<b>95.8</b>	<b>100.0</b>	<b>104.7</b>	<b>109.4</b>
Turner Index actual cost	80.8	82.1	83.9	87.4	91.2	95.4	100.0	105.0	110.3
Rider Levett Bucknall Index actual cst	81.3	82.2	83.7	86.4	90.0	94.8	100.0	105.5	110.8
PPI School Bldg actual cost	87.2	89.6	92.7	94.1	97.2	99.1	100.0	102.5	105.1
PPI Office Bldg actual cost	87.8	89.6	92.1	93.4	96.1	98.4	100.0	102.5	105.1
PPI Concrete Contractor actual cost	88.8	89.2	90.0	91.5	93.0	95.9	100.0	104.0	107.1
PPI Electrical Contractor actual cost	88.1	90.6	92.7	93.5	94.7	97.9	100.0	102.5	105.1
BECK COST REPORT 5 cities	84.2	87.3	88.5	90.6	91.5	96.2	100.0	104.0	108.2
Mortenson avg 6 cities nonres bldg	81.4	85.6	88.1	90.7	94.1	96.6	100.0	103.5	107.1
RS Means Index Inputs	88.5	92.2	93.9	97.1	98.8	99.5	100.0	102.0	104.0
ENR BCI Index annual avg Inputs	86.1	89.2	91.3	93.1	95.0	97.2	100.0	102.5	105.1
PPI BNIS Industrial Structures Inputs	94.9	101.2	103.1	103.7	104.4	101.2	100.0	102.5	105.6
<b>INFRASTRUCTURE Composite</b>	<b>98.5</b>	<b>104.0</b>	<b>105.6</b>	<b>105.5</b>	<b>106.9</b>	<b>102.9</b>	<b>100.0</b>	<b>103.6</b>	<b>107.1</b>
FHWA Hiway Index NHCCI output	98.6	98.7	105.9	102.4	101.7	105.6	100.0	103.0	106.1
I H S UCCI Pipeline, LNG	111.1	117.8	122.2	128.9	129.4	111.1	100.0	104.0	108.2
I H S DCCI Refine, Petrochemical	93.5	100.5	104.9	107.6	108.1	108.1	100.0	104.0	108.2
<b>RESIDENTIAL</b>	<b>79.9</b>	<b>78.8</b>	<b>79.7</b>	<b>86.1</b>	<b>91.8</b>	<b>94.9</b>	<b>100.0</b>	<b>105.8</b>	<b>111.0</b>
US Cen Bur NEW Homes Lasperyes	79.9	80.8	81.6	86.9	92.7	94.8	100.0	106.0	111.3
S&P/Case Shiller HomePrice NATION	79.8	76.8	77.8	85.3	90.9	95.0	100.0	105.5	110.8
All data updated to Dec. 2016 where available							edzarenski.com		



# Construction Inflation Indices



## Building Cost Index - Construction Inflation



# Thank You



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