

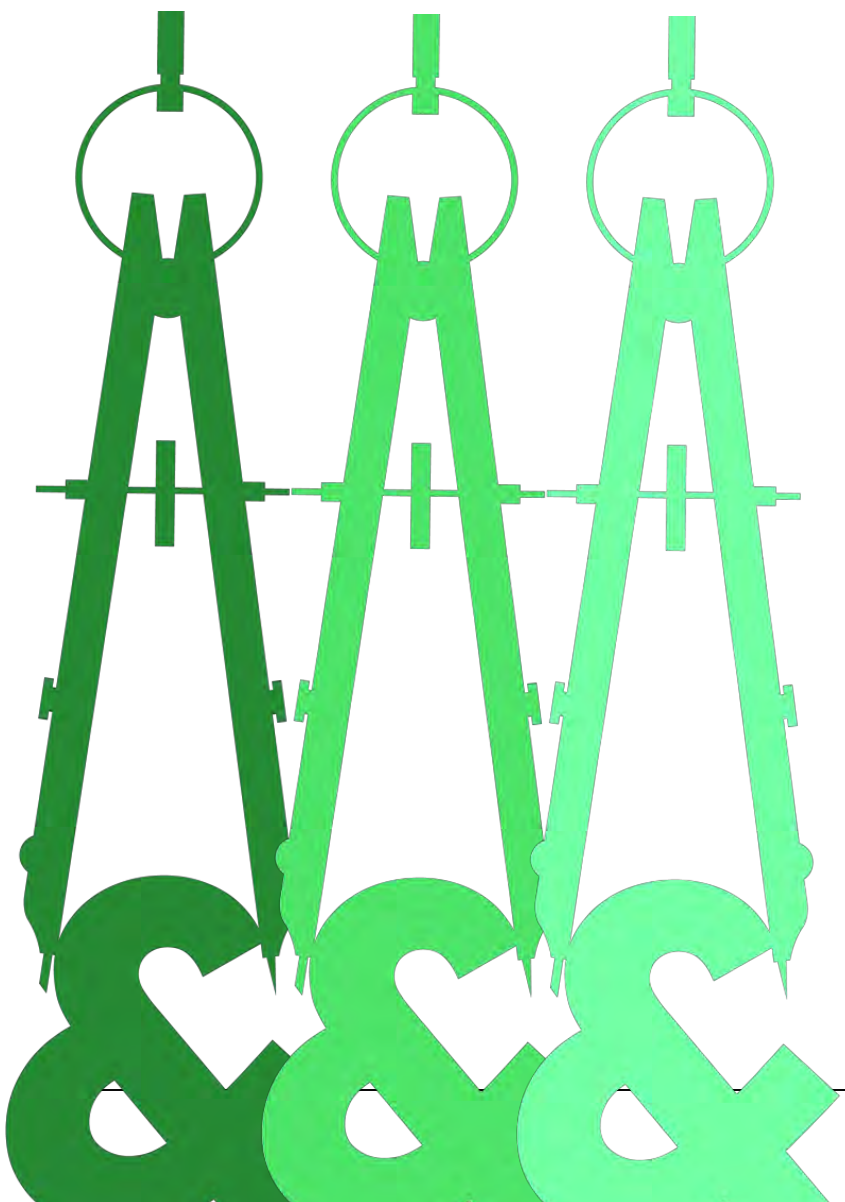


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Industry Update

May 9, 2018

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Learning Objectives



- Identify key trends in the design and construction indexes.
- Identify risk trends in the construction design Industry.
- Identify risk management approaches to minimize risk

Executive Summary



- Economy is generally good
- Areas of uncertainty exist (Administration / Spending / Infrastructure)
- Design Firms reporting opportunities for growth and increased profits
- Design firm challenges include staffing, technology and evolving construction landscape.
- Claims involving technical errors are increasing
- Quality Control / Assurance continues to be very important.

Generally, the US economic picture remains encouraging



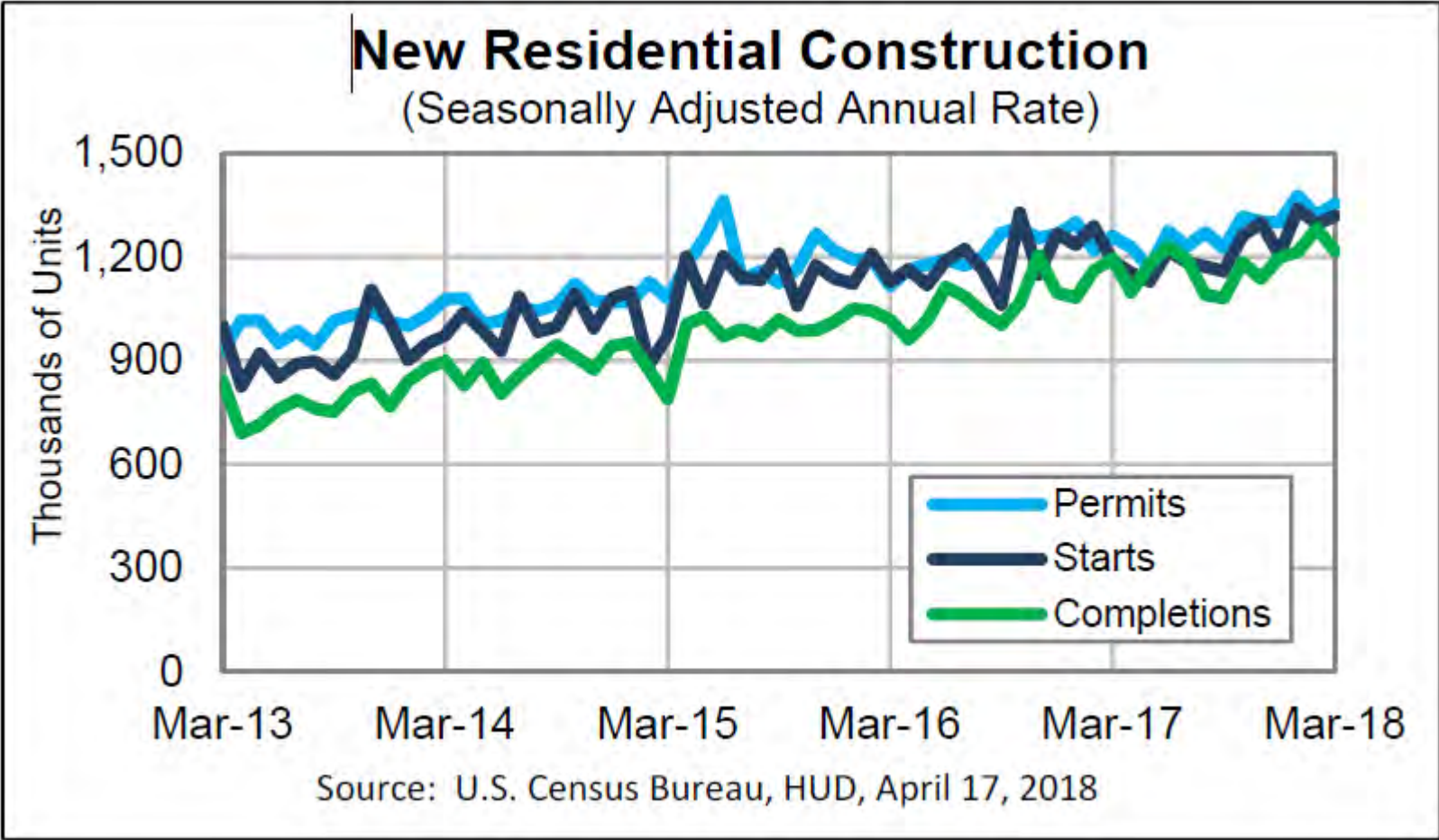
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US GDP GROWTH RATE



SOURCE: TRADINGECONOMICS.COM | U.S. BUREAU OF ECONOMIC ANALYSIS

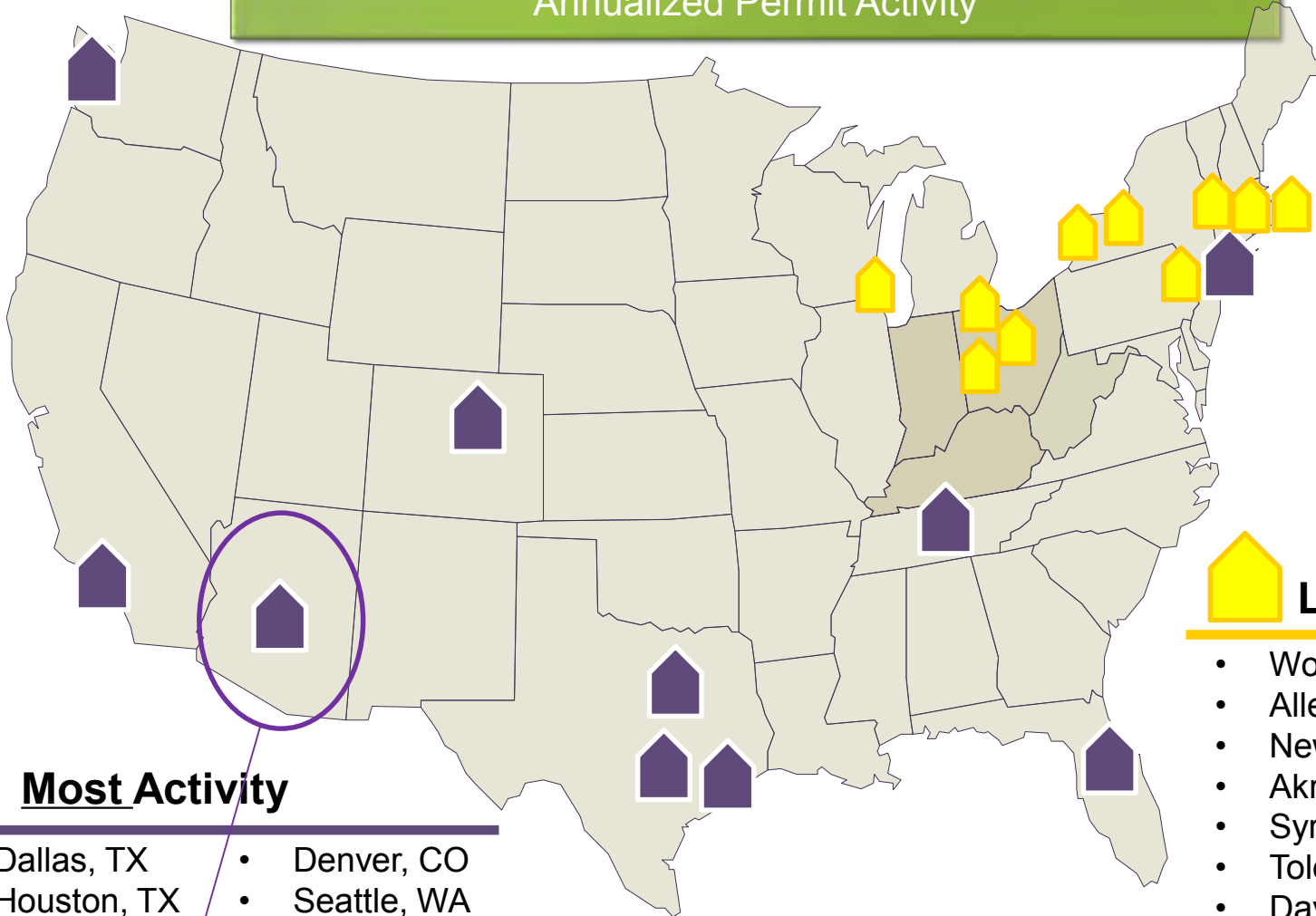
March 2018 residential permits & starts



Starts 10.9% above March 2017

AZ Homebuilding 2017

Annualized Permit Activity



Most Activity

- Dallas, TX
- Houston, TX
- New York, NY
- **Phoenix, AZ**
- Austin, TX
- Denver, CO
- Seattle, WA
- Los Angeles, CA
- Orlando, FL
- Nashville, TN



Least Activity

- Worcester, MA
- Allentown, PA
- New Haven, CT
- Akron, OH
- Syracuse, NY
- Toledo, OH
- Dayton, OH
- Hartford, CT
- Buffalo, NY
- Kenosha, IL-WI

Non-residential Construction Spending

Jan 2017 - Jan 2018

\$730 Billion Dollars Spending

Sector	12-Month % Change		
Public Safety		34	
Transportation		20	
Health Care		12	
Lodging		11	
Sewage & Waste Disposal		8	
Commercial		6	
Water Supply		5	
Education		5	
Manufacturing			-10
Power			-9
Religious	-9		

Source: US Census Bureau, Associated Builders and Contractors, Inc. Jan., 2018

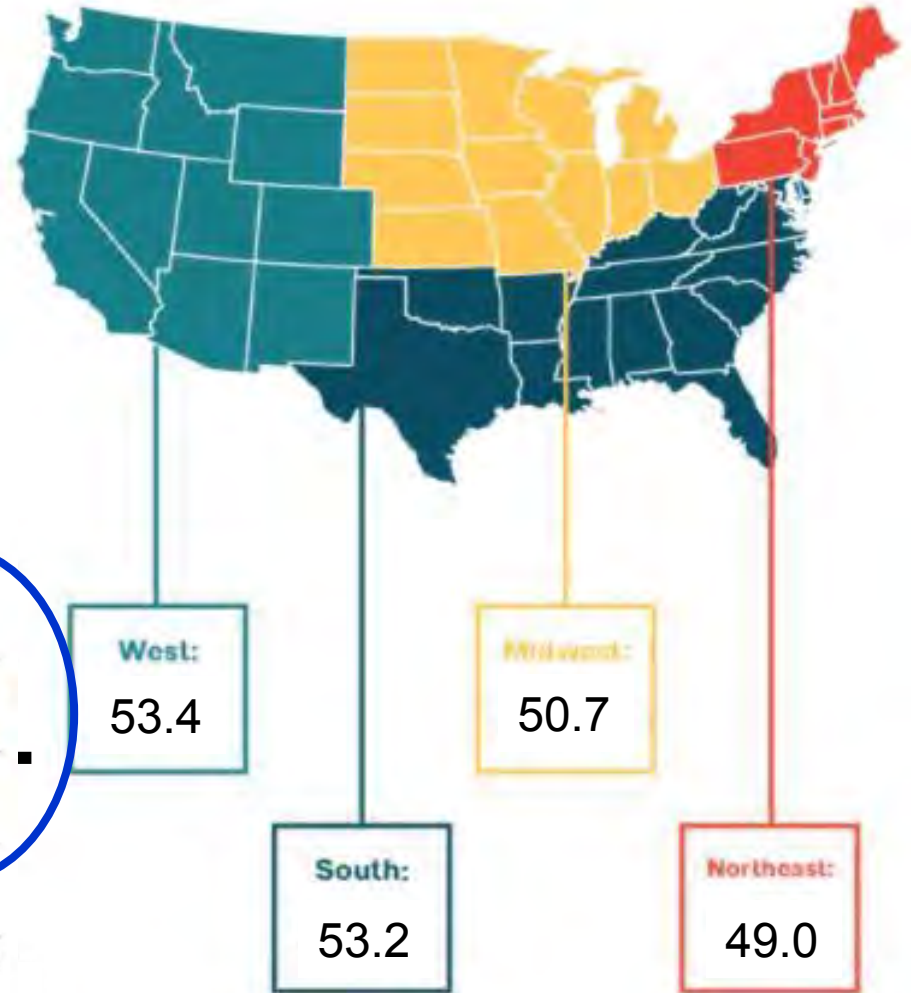
Leading Indicator - AIA's Architecture Billings Index (ABI)

Regional

Scores above 50 = increase in billings from the previous month

Non-residential construction

Graph Data: Mar 2017- Mar 2018



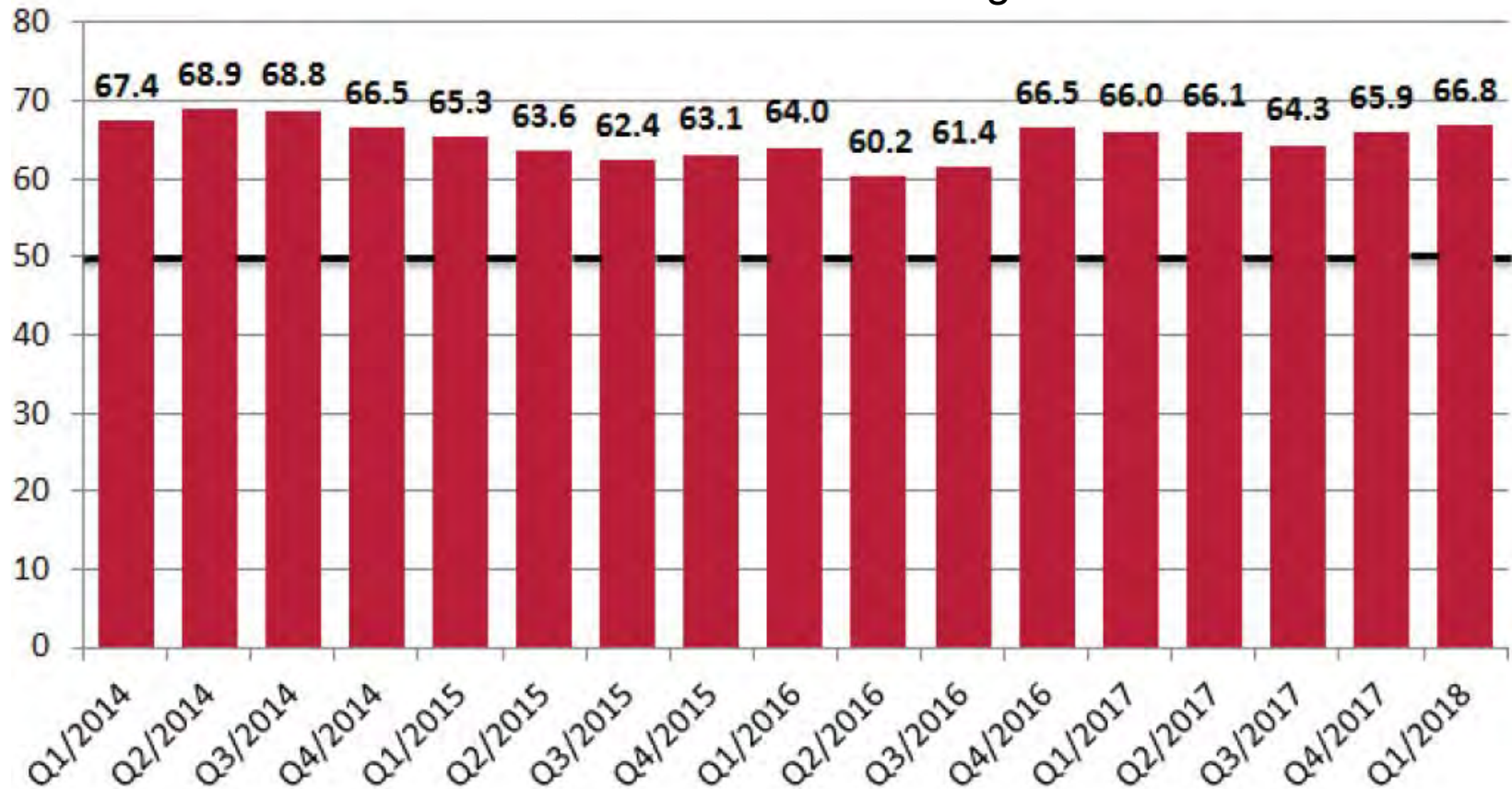
Source: AIA, American Institute of Architecture Feb 2018

Leading Indicator – ACEC’s Engineering Business Index (EBI)



Q1 2018 score = 66.8

>50 indicates growth



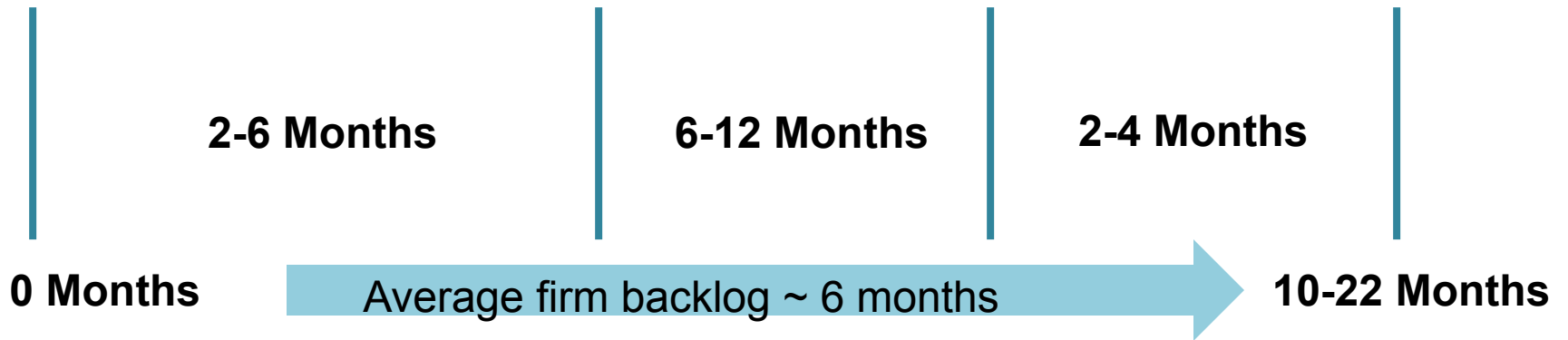
ACEC.ORG – ACEC Business Index

Market trends & planning for the future



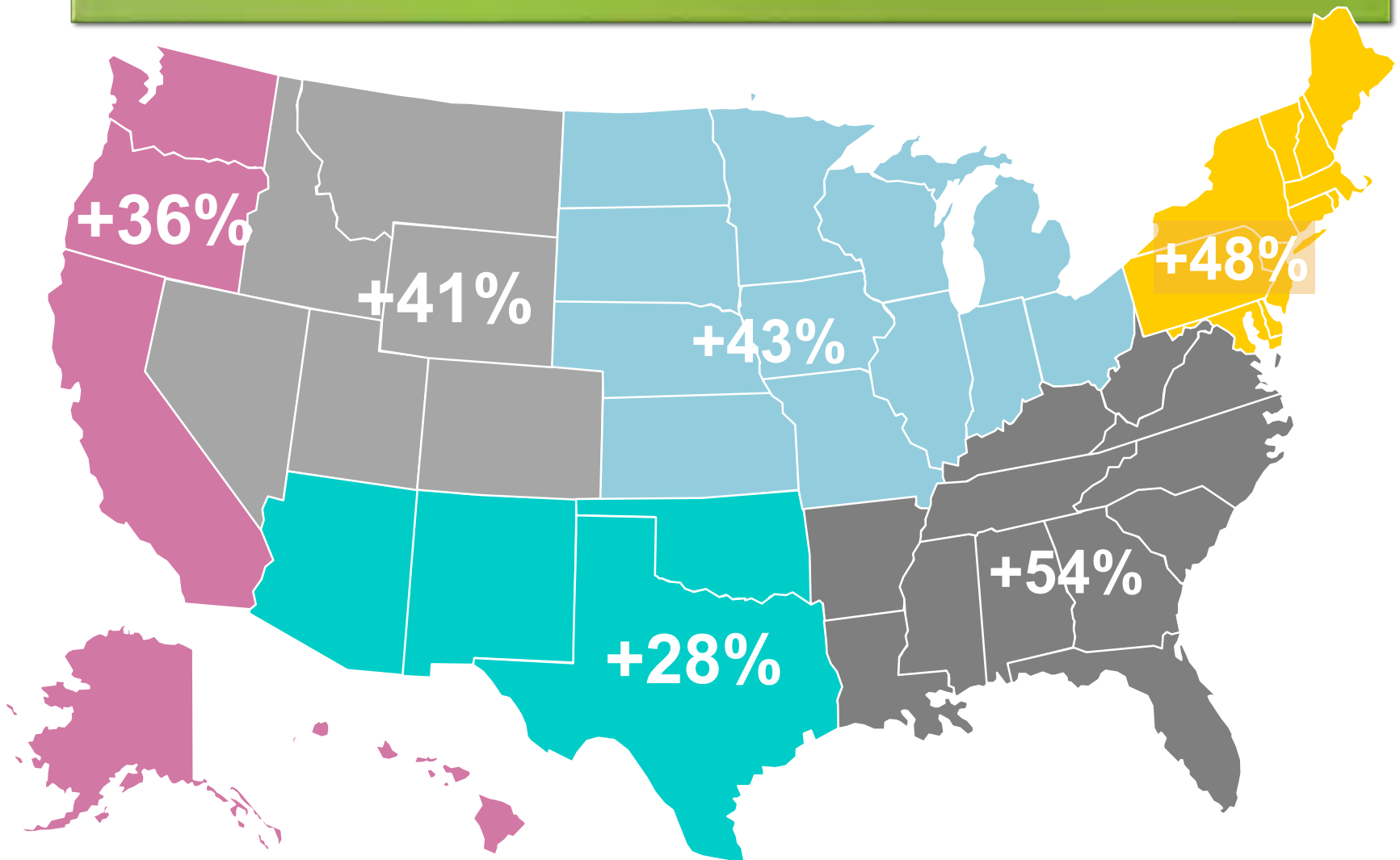
Track the number of available proposal opportunities:
Quarterly Basis

Track billings with "Work-on-Boards" survey:
Monthly Basis



Source: PSMJ Resources, Inc & Deltek, State of the AE Industry Jan 2018

All regions show positive proposal activity



Source: PSMJ Resources, Inc & Deltek, State of the AE Industry Jan 2018

Arizona unemployment trending Q1 2018



Unemployment Rate - Arizona - Labor Force and Employment, SA



AZ 4.9%
(US 4.1%)

Powered by dataZoo

US Department of Labor. April 20, 2018. State of Arizona Employment Data

Arizona construction employment trending Q1 2018



Construction
(all employees
In thous)

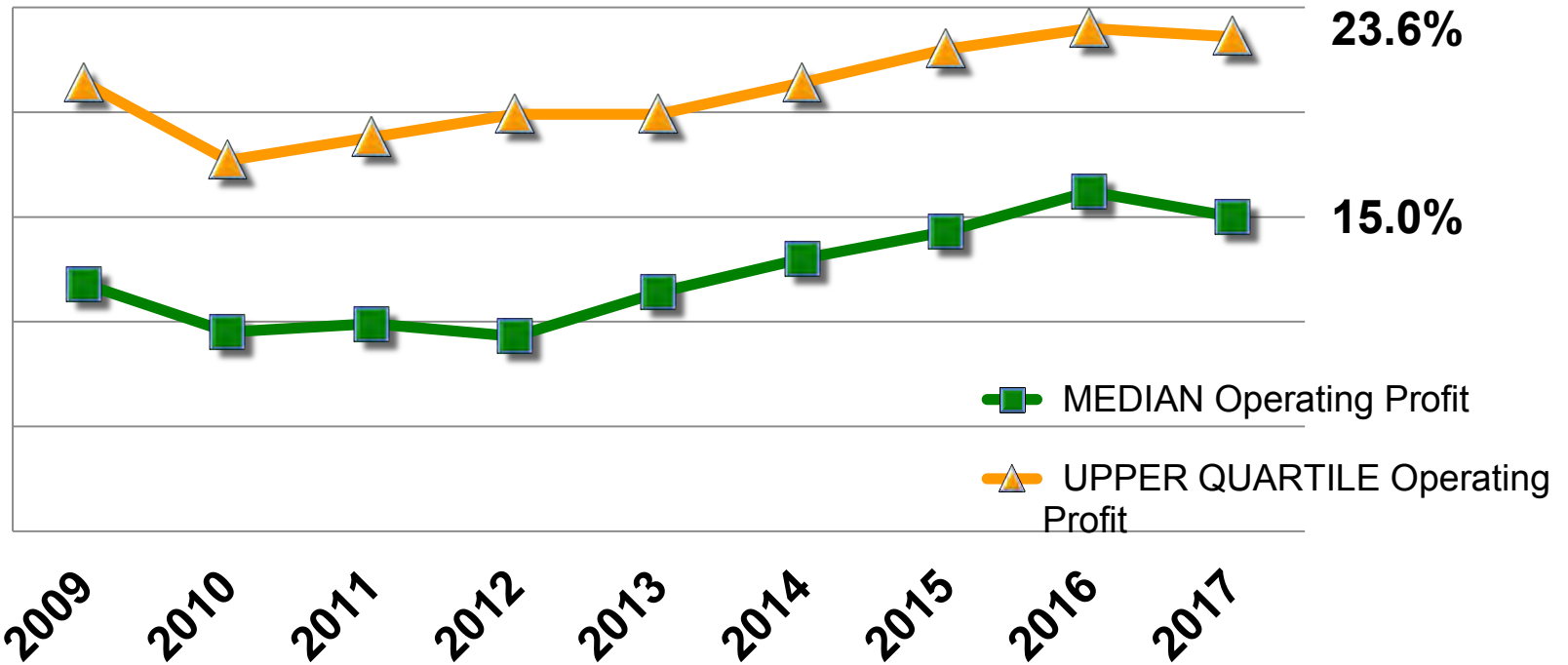
Powered by dataZoa

Employment of architecture and engineering occupations is projected to grow 7 percent from 2016 to 2026

Employment of construction occupations is expected to grow 11 percent from 2016 to 2026

US Department of Labor. April 20, 2018. State of Arizona Employment Data

A/E Firm operating profits over time



Source: PSMJ Resources, Inc. (June 2009 - June 2017)

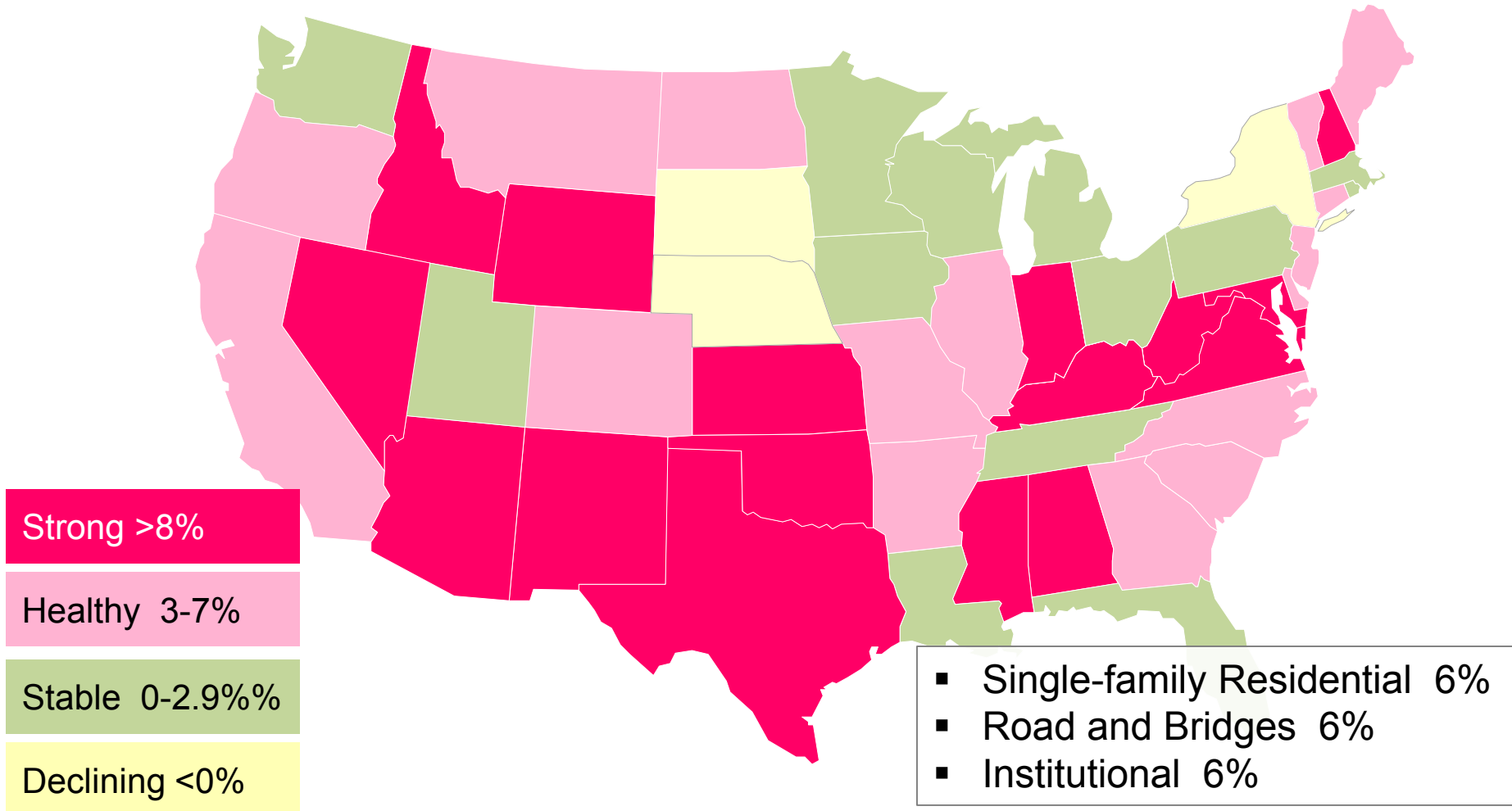
A/E Market Sector Profitability relative to the A/E Industry Median



Market Sector	2017 15.0%		2016 16.2%	
Commercial (Developer)	▲	9.4%	▲	8.2%
Government Buildings	▲	12.5%	▲	6.5%
Housing	▲	8.4%	▲	12.6%
Water/Wastewater	▲	0.8%	▼	-2.3%
Industrial	▼	-0.6%	▲	4.9%
Energy-Utilities	▼	-0.6%	▼	-2.5%
Commercial (Users)	▼	-0.1%	▲	7.9%
No Speciality	▼	-1.1%	▼	-1.3%
Transportaion	▼	-1.4%	▼	-2.2%
Healthcare	▼	-1.4%	▼	-4.2%

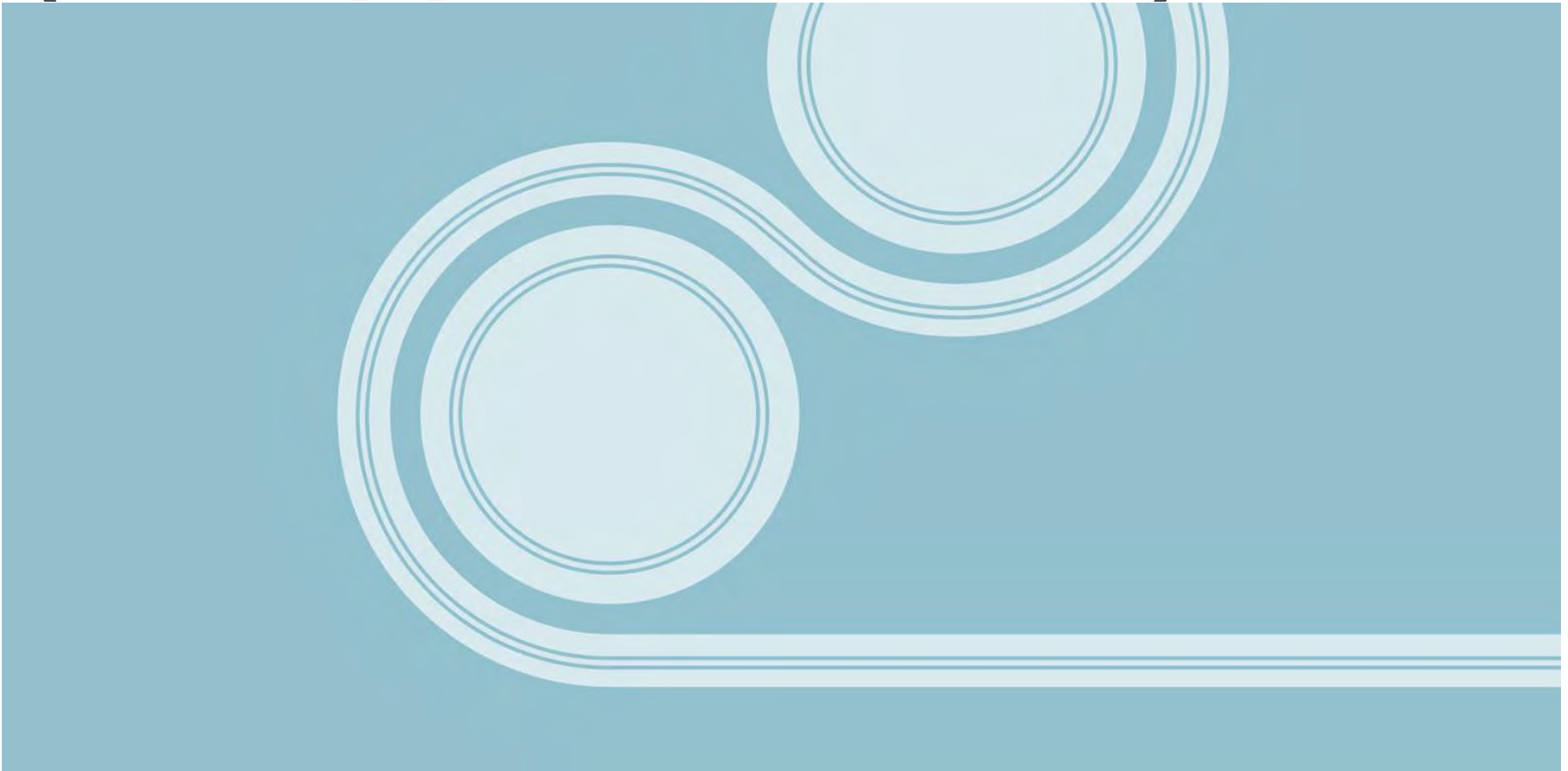
Source: PSMJ Resources, Inc., 2017 Financial Performance Survey (June 2017)

2018 North American Construction Forecast Report



Source: Oldcastle Business Intelligence | 2018 North American Construction Forecast Report

Concerns (Or Opportunities?)

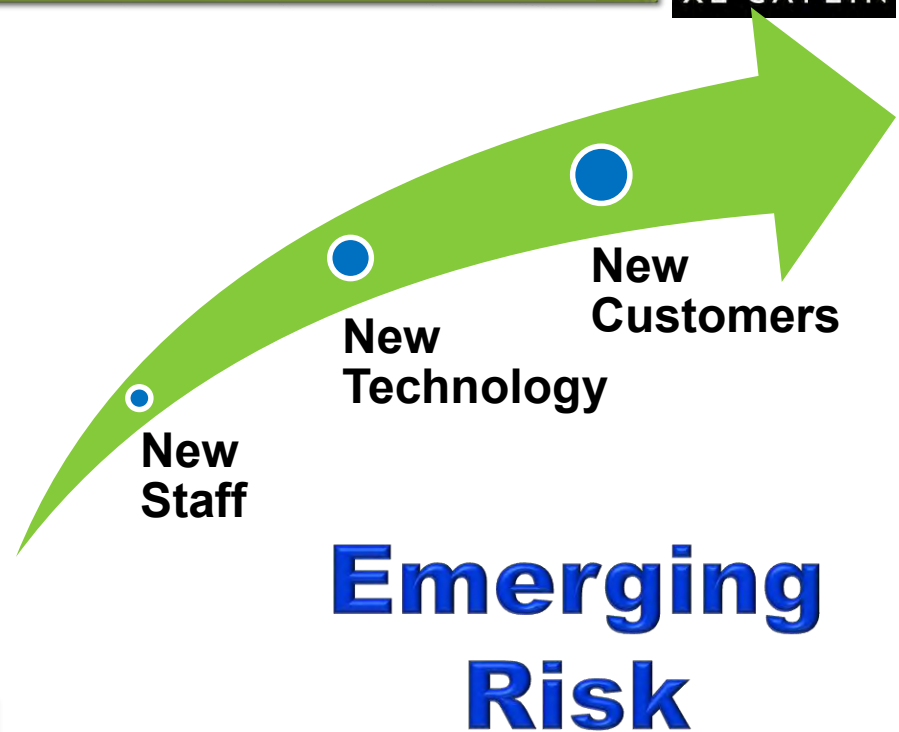


Challenges to A/E Sector

Interesting times



- Economic contraction/expansion
- Integration of new technologies
- Staff changes
- Claims

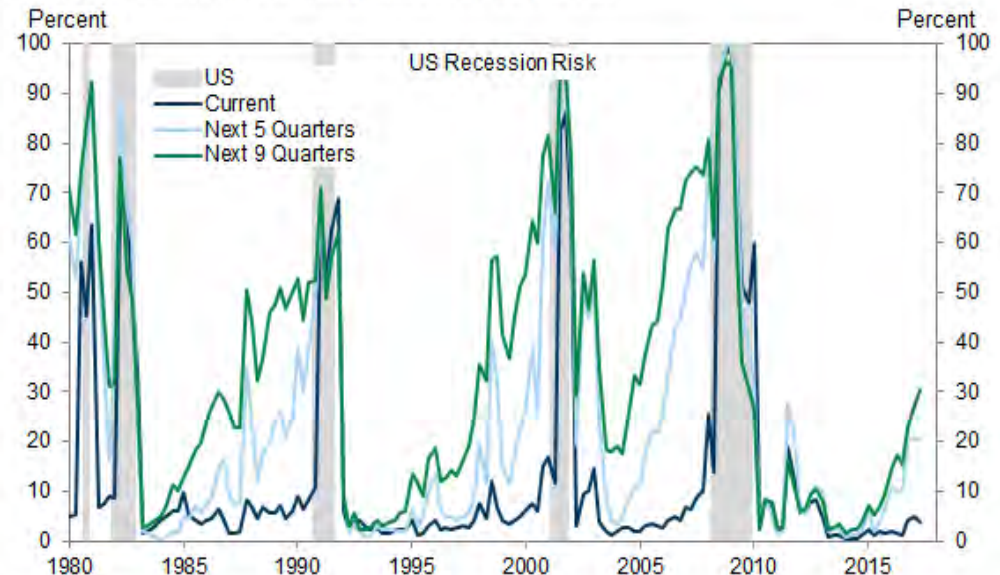


Second longest economic expansion in US history



- 105th month of expansion
- Economic Indicators are still strong

Exhibit 1: Recession Probability Rises from Low Levels



Source: Goldman Sachs Global Investment Research

Recession probability is down to 35% from 43% in Dec 2017. Past recessions have occurred with at least a 70% probability.

Source: RecessionProtect.com Jan 2018

Steel & Aluminum Tariffs



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- Construction prices up 0.2%
- Motor vehicle prices up 0.4%

Source: National Association of Realtors March 2018

25% Steel
10% Aluminum

Impacts to

- Infrastructure?
- Commercial building?
- Heavy Industry?

Less for

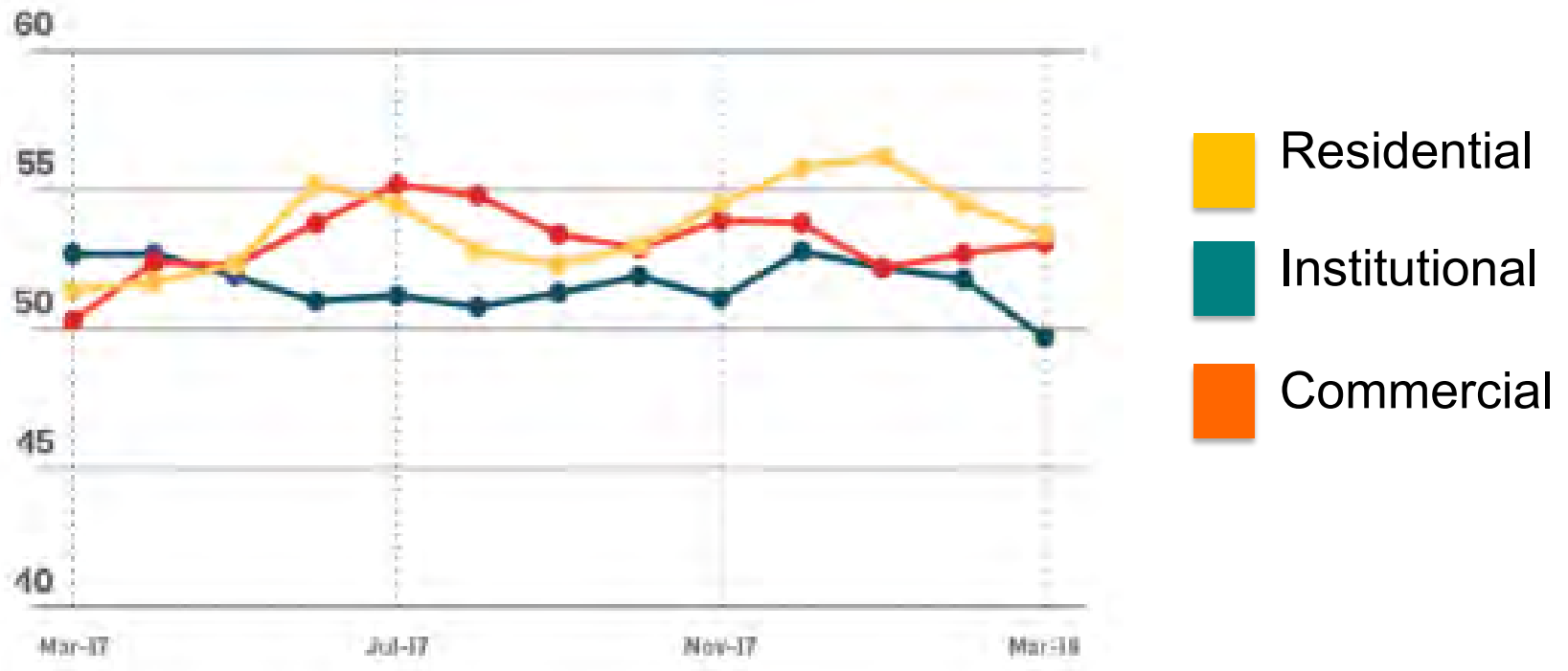
- Residential
- 6-packs

American Institute of Architects: Practice



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53% of Architecture firms predict rising construction costs for most projects. How will this impact growth?



•Sector ABIs are 3 month moving averages

AIA Business Survey



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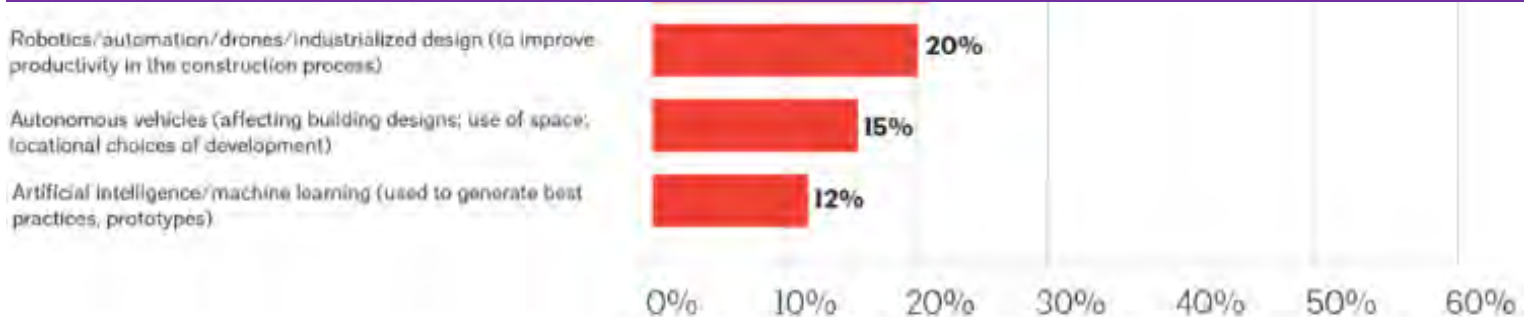
Practice

Technology related to construction/design processes and materials expected to have largest impact on AEC industry over the next decade

units: % of firms selecting given trend as one of the top three trends expected to have the greatest impact on the AEC industry over the next five to ten years



Offsite construction processes (e.g. prefabrication; modularization; preassembly; offsite multitrade fabrication)



Design Sector changing (even more) rapidly



- Change is constant.
 - Technology has increased the rate of change.
 - Alternative funding sources have changed project delivery.
 - Contractors are pursuing turnkey services.
 - Reinventing the company often means challenging the status quo
 - We can never return to prior states
-

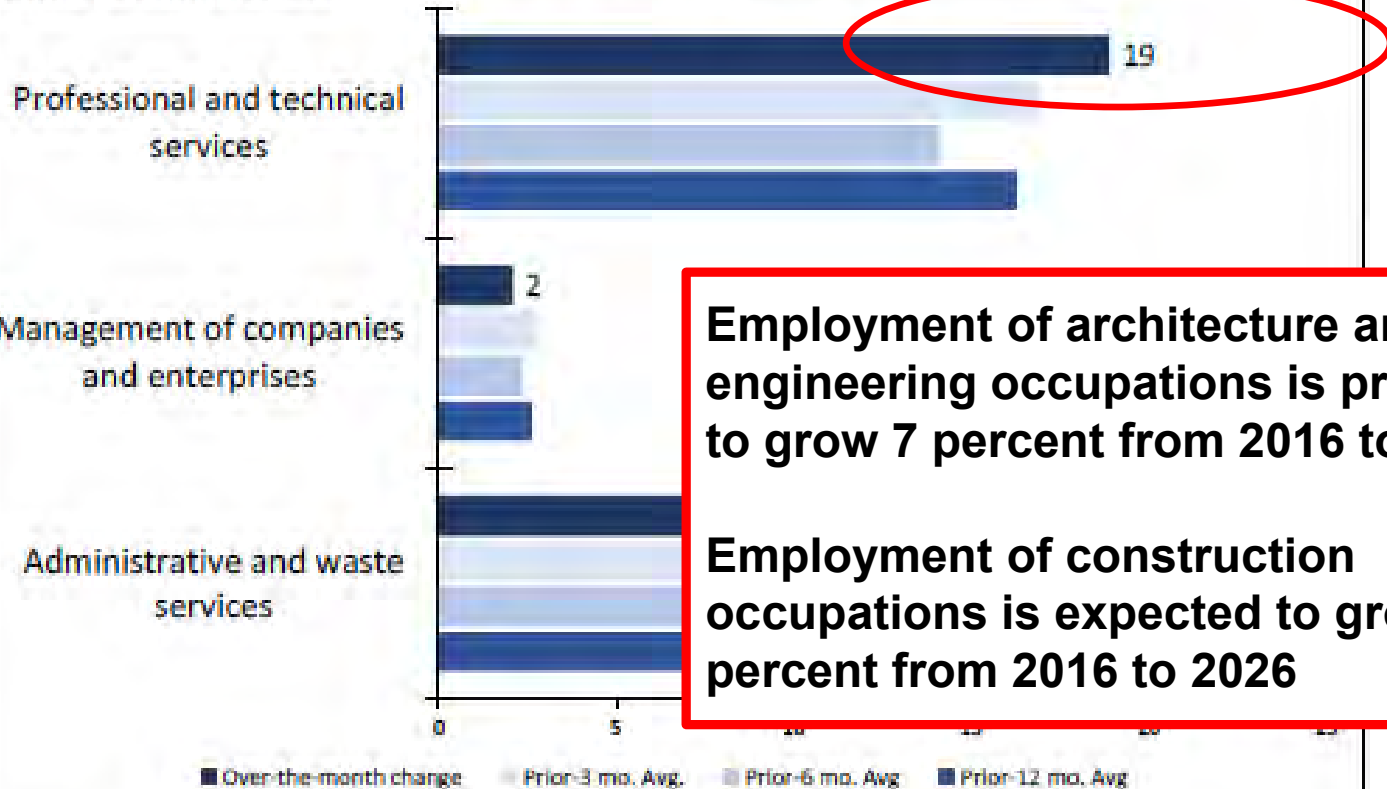
Professional staff employment



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Employment in Professional and business services component industries Over-the-month change and prior averages, March 2018

Seasonally adjusted, in thousands



Employment of architecture and engineering occupations is projected to grow 7 percent from 2016 to 2026

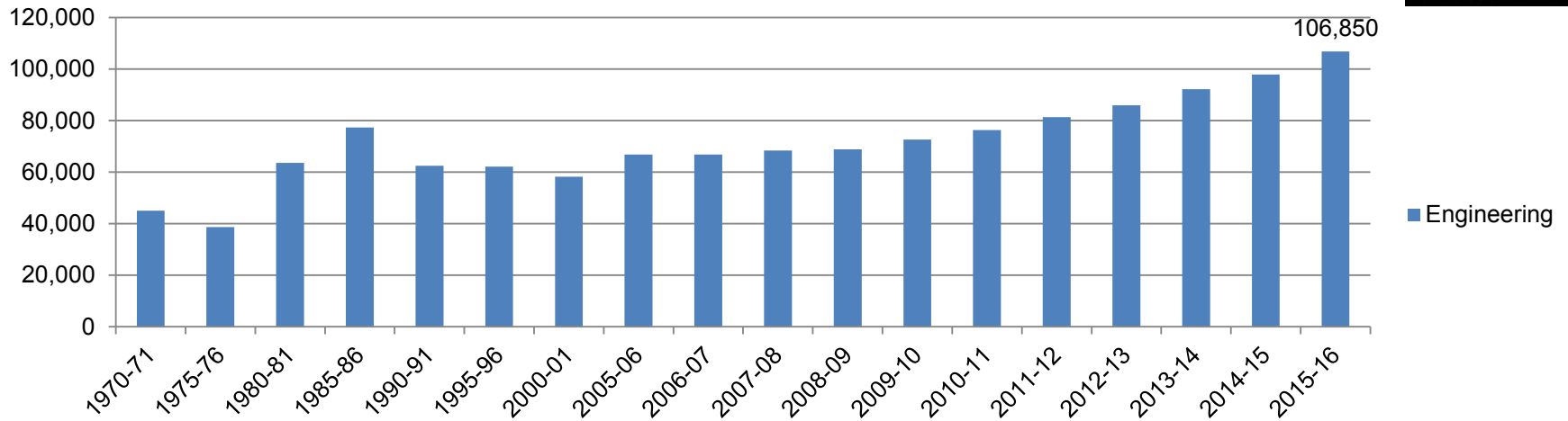
Employment of construction occupations is expected to grow 11 percent from 2016 to 2026

Bureau of Labor Statistics, Current Employment Statistics survey, April 06, 2018
Data are preliminary.
* denotes significance

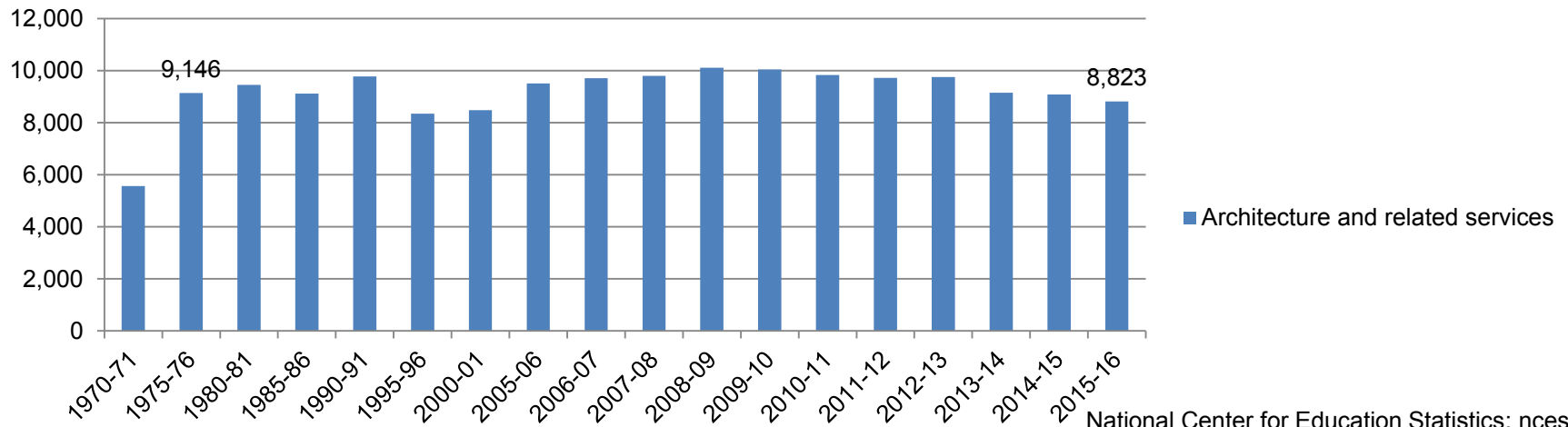
Professional staff graduation rates



“Engineering” graduation rates



Architecture and related services graduation rates



National Center for Education Statistics: nces.ed.gov

Staffing trends in A/E business risk



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Staffing- Perpetuation

- Retirees leaving sector, most of them senior designers
- New entrant rate not matching retirement rate = a struggle for talent
- Competition for new talent – hard to find, wage volatility

Staffing - Diversification

- Women and minorities are still underrepresented
- Lack of comprehensive benefits such as maternity leave

Staffing trends in E/P/C impacting A/E firms



- Labor shortages
 - Increased reliance on sub-contractors
 - Inexperienced Subs
 - Shifting project types (macro-economic)
 - Construction issues
 - Lack of qualified labor
-

Trends in A/E business risk



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M&A Activity Top 50 ENR

- 2014 -record year. An estimated \$25BB in gross A/E revenues were acquired
- 2015 - 2017 - slowing down; buyers are becoming more selective
- Mid Size Firm Acquisitions have increased
- New Small Firm Creation has increased

Challenges to A/E Firms

- Easy to acquire, hard to integrate
 - Where does the capital come from?
 - Level of diligence- never enough.
-

Downstream challenges

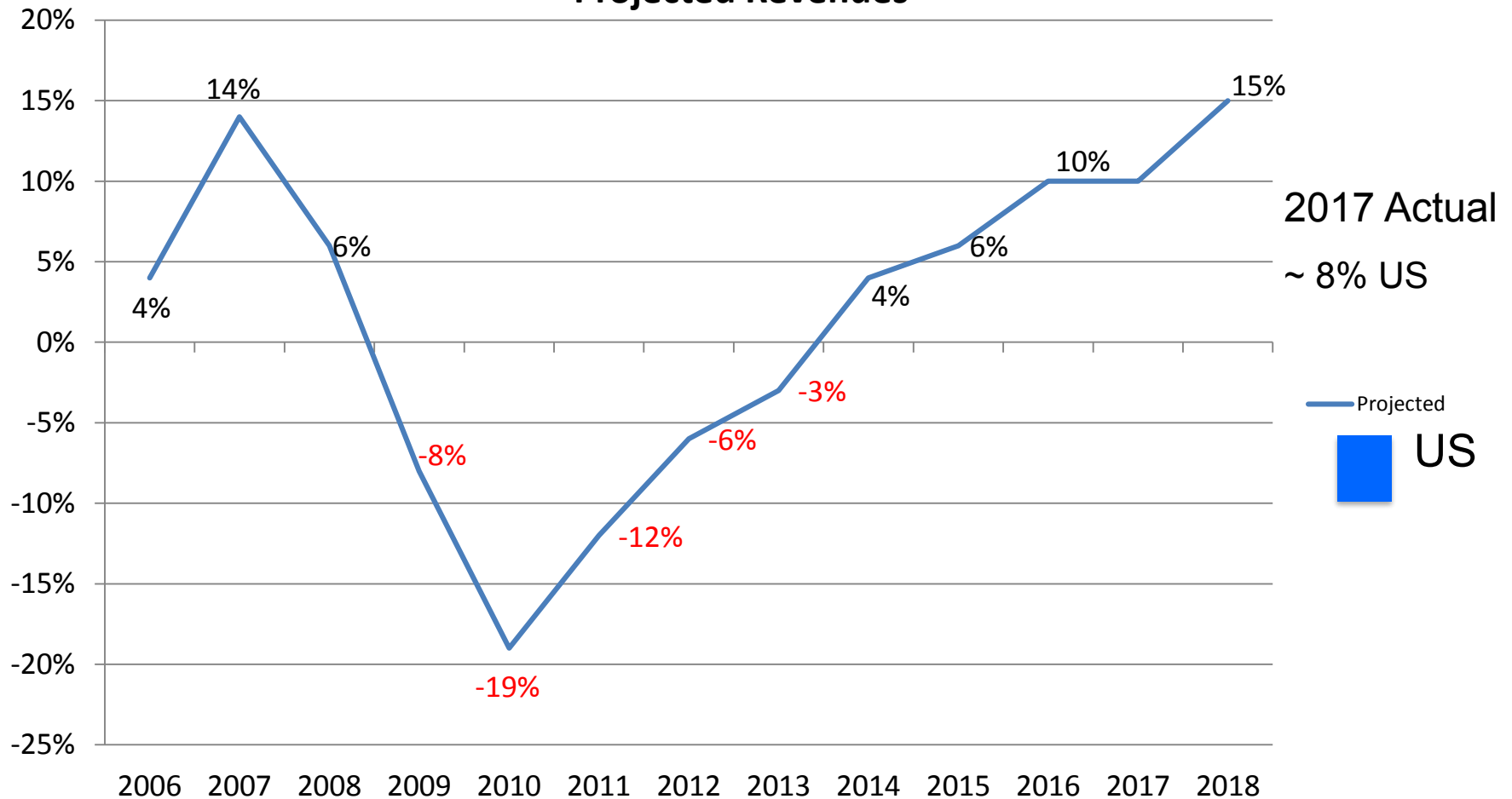


- M&A –
 - Risk management knowledge transfer
 - Culture continuity
 - Relationship management
 - Time commitment (on open projects)
 - Customer volatility
-

A/E Sector revenue projections

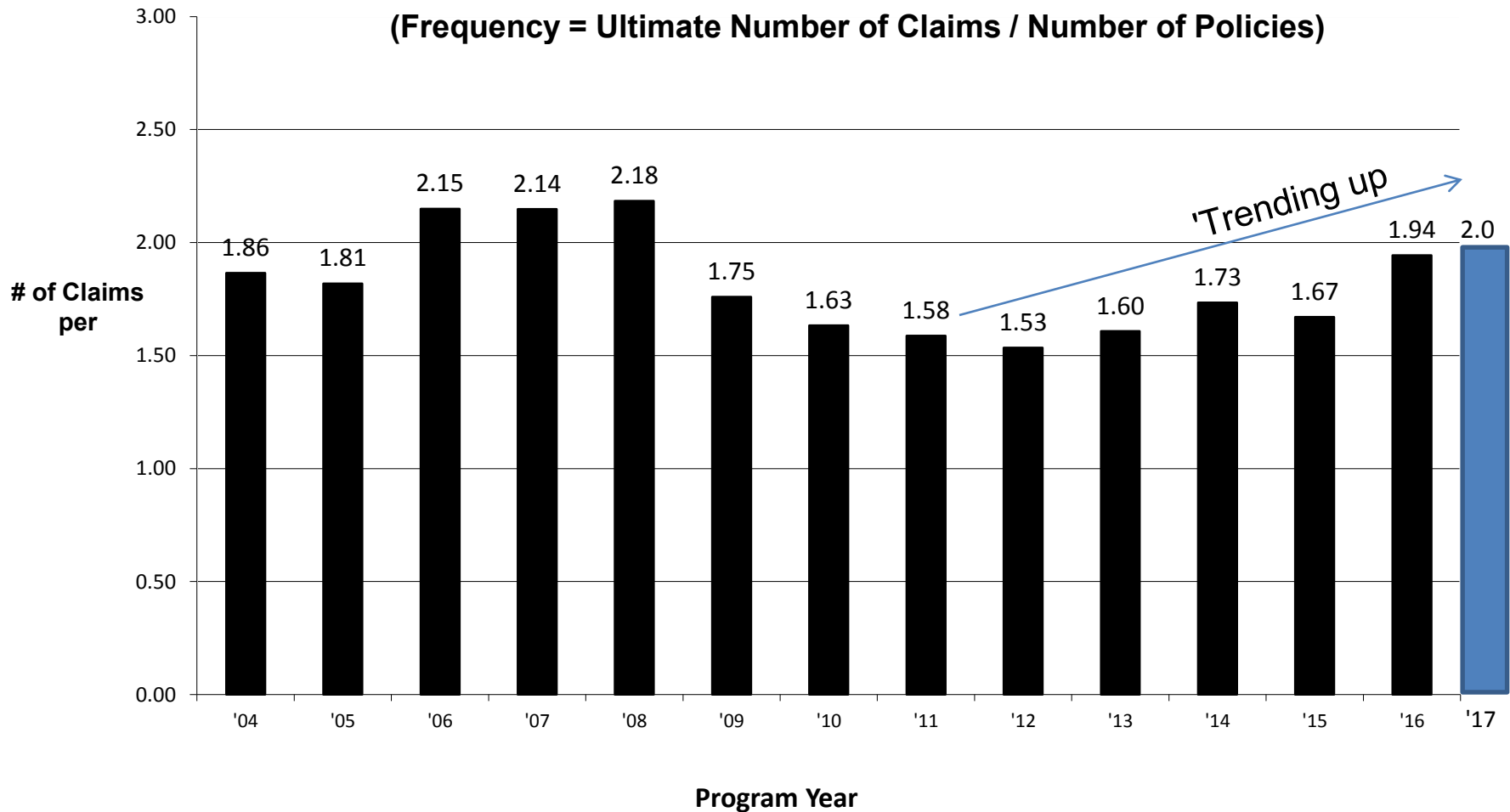


Projected Revenues



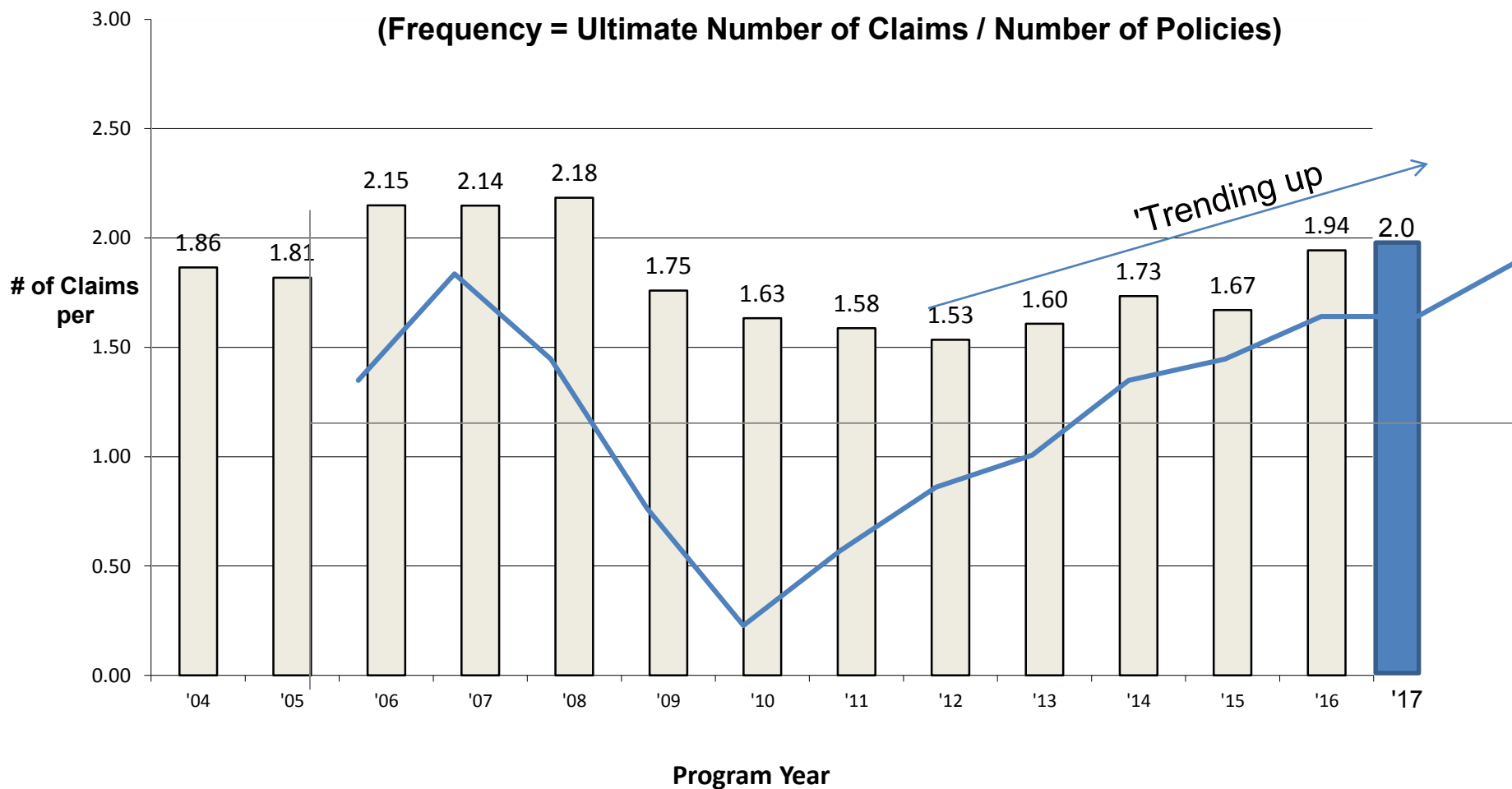
Source: XLCatlin PL Application data

Claim frequency- large firms



Large design firm segment

Frequency of claims with revenue projections



Large Claims Emergence

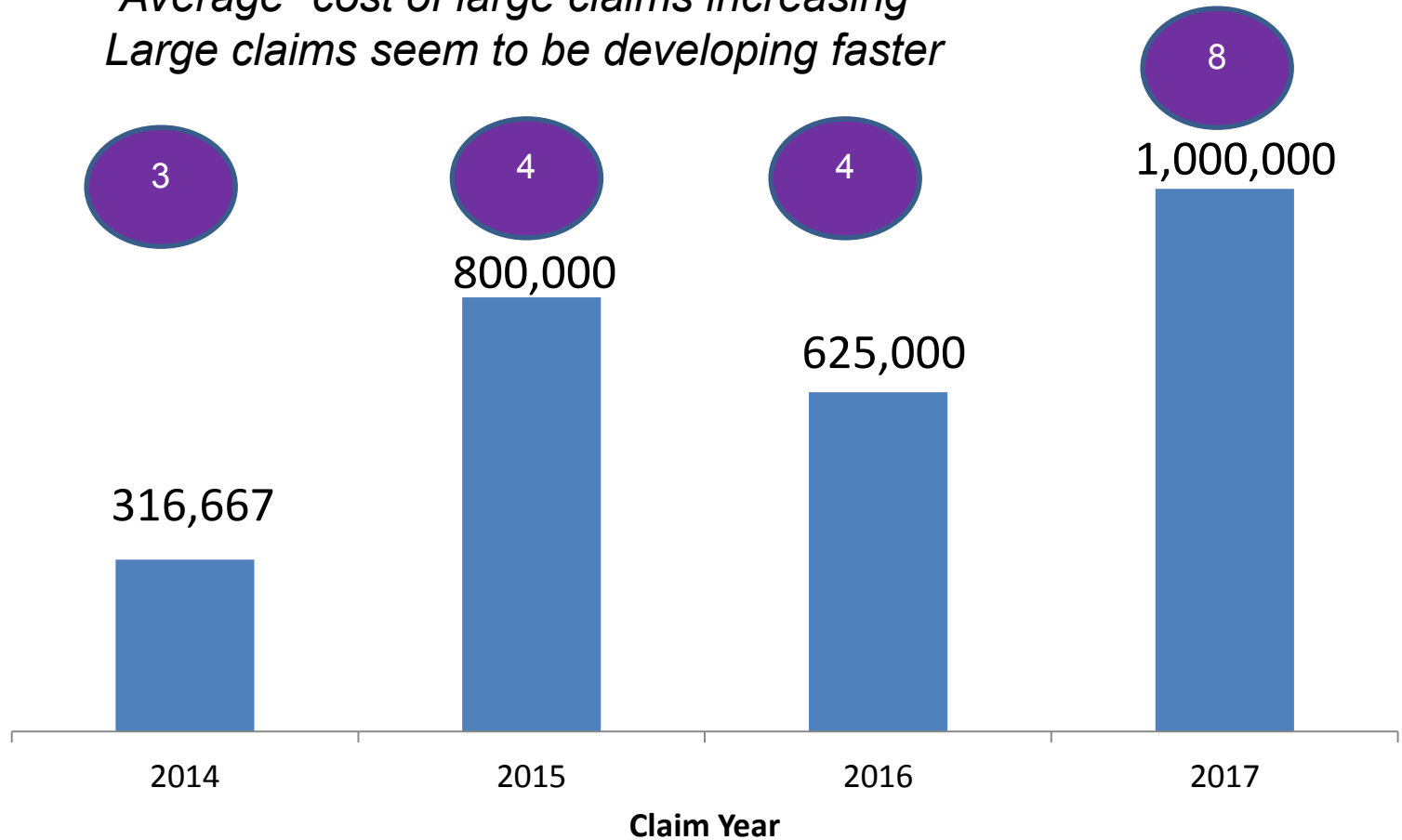
Reserve amount 15 Months after reporting



*“Average” cost of large claims increasing
Large claims seem to be developing faster*

Number of large claims

Average Large Claim Reserve



Trends -Project Loss exposure examples



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Large Firm 2004-2016

Project Group	Loss Relativity (>1 = higher risk)
Condos	8.50
Custom homes	3.99
Chemical Plants	2.98
Correctional Inst.	2.92
Sports Facilities	2.69
Process Manu Systems	2.37
Apartment	1.62
Single Fam Subdvs	1.56
Parking Garages	1.47
Airport Runways	1.35
High rise	1.17
Schools/Colleges	1.05

Firm Characteristics and Loss Activity



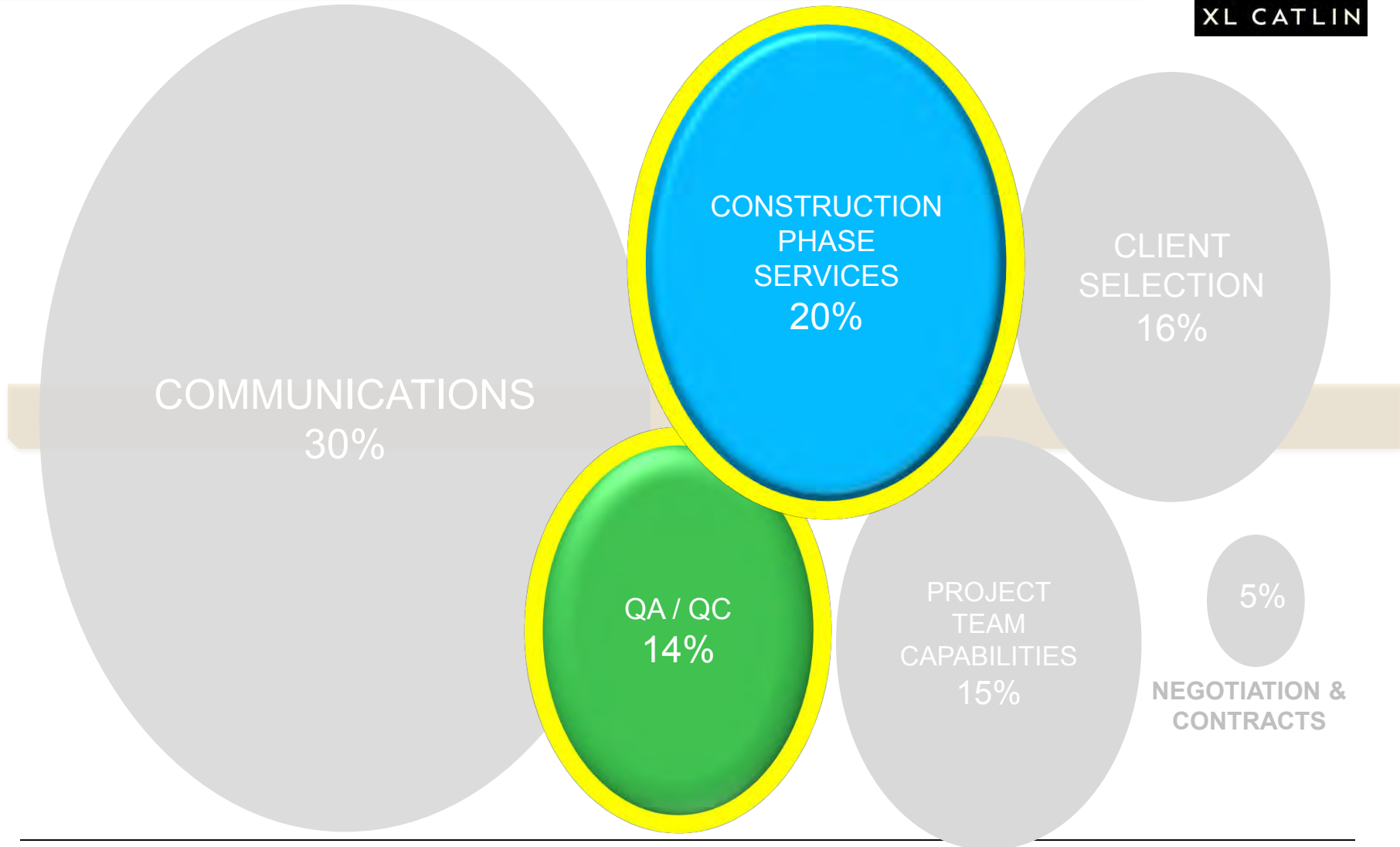
Lowest incidence of loss

- Firms specializing in just one discipline
- Firms with 1 to 2 branch offices
- Firms with < 5 Project types

Higher incidence of loss

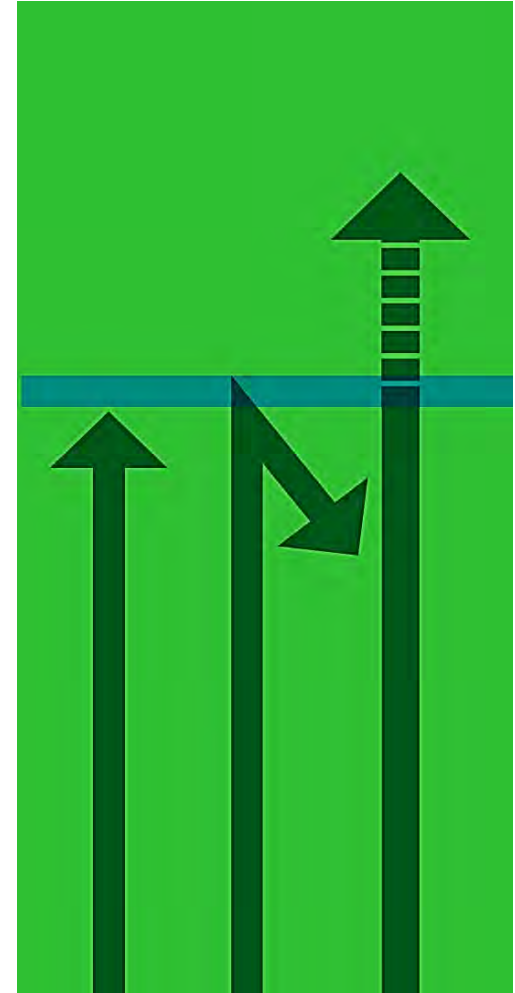
- Firms with > 5 disciplines
 - Firms >10 branch offices
 - Firms >10 project types
-

Two “Emerging” Risk Drivers were a factor in 34% of the claims



Continue Best Practices

- Claim Issues are a huge threat to profitability
- Claims resulting from missing details, and / or computational errors increasing
- Deterioration in project documentation and communication(s)
- Scope Creep continues to be an issue



Risk Management Considerations



- **Institute a culture of risk management**
 - Review all projects before proceeding (Go / No Go Process)
 - All projects are different
- **Revisit Quality Management and Controls**
 - Basic design issues – details missing, etc –
 - Step Back and look at business basics.
 - Are we consistent with procedures and symbol management?
 - As we add new staff and clients, are we handling things consistently?
- **Audit (continual improvement)**
 - Project close out review
 - Are we close to hitting the mark; where can we improve?
 - Is this a project or client we want to continue with?
 - Subs – don't take for granted that they don't have these issues.

A large blue rectangular area containing a grid of white human icons. Some icons have white speech bubbles above them. A green horizontal bar is overlaid in the center, containing the word 'Questions?' in white text.

Questions?