

**TUESDAY MAY 15TH
EVENING PRESENTATIONS - HALL D**

TOPIC	PRESENTER	TIME
REGISTRATION		5:00 - 7:15
RECEPTION & NETWORKING <i>- buffet dinner</i>		5:30 - 7:15
WELCOME & CONFERENCE ROADMAP COAA DON CURRIE AWARD COAA AWARDS	Mike Horner – <i>President, COAA Project Director, Enbridge Pipelines</i>	7:30 - 8:00
A WORD WITH ALBERTA'S HEAVY INDUSTRIAL CONSTRUCTION LEADERS <i>General Rick Hillier's views on leadership evolved over his three decades as a soldier, from emergency rescue operations in Canada to international task forces in eastern Europe and Afghanistan. Many basic principles apply to "campaigns" to get major projects built. Leaders "speak" through their actions, think long, and make their own luck. For Hillier, leadership is all about people, earning their passion and their commitment.</i>	Rick Hillier, OC – <i>Canada's top soldier through the mid 2000's, retired in 2008, now Chancellor of Memorial University of Newfoundland, a senior advisor to corporate Canada, and active in community affairs.</i>	8:00 - 8:40
EVENING WRAP UP	Mike Horner	8:40 - 8:45
SOCIAL TIME & NETWORKING <i>- hors-d'oeuvres</i>		8:45 - 10:00

WEDNESDAY MAY 16TH MORNING PLENARY - HALL D		
TOPIC	PRESENTER	TIME
REGISTRATION & LIGHT REFRESHMENTS		7:15 – 8:00
WELCOME	Mike Horner – <i>President, COAA Project Director, Enbridge Pipelines</i>	8:00 – 8:05
COAA MISSION BEST PRACTICES XX ROADMAP TRAINING MINUTE: A.R.T.	John Brogly – <i>Chair, COAA Best Practices Committee Manager, Engineering Support Canadian Natural Resources Ltd.</i>	8:05 – 8:20
SAFETY	Hal Middlemiss – <i>Co-Chair, COAA Safety Committee Manager, Health, Safety and Environment North West Redwater Partnership</i>	8:20 – 8:40
WORKFORCE DEVELOPMENT <ul style="list-style-type: none"> • Supervisor Training and Qualifications • Workplace Respect • Workforce Forecasting • Opportunities for Women in Construction • Enhancing Skills 	Charles LeRougetel – <i>Co-Chair, COAA Workforce Development Committee Senior Project Director AltaLink</i>	8:40 – 9:00
CONSTRUCTION INDUSTRY PERFORMANCE <ul style="list-style-type: none"> • WorkFace Planning • Benchmarking • Productivity 	Glen Warren – <i>Co-Chair, COAA WorkFace Planning Committee</i> Stephen Revay – <i>Co-Chair, COAA Benchmarking Committee Vice President, Western Region Revay and Associates Limited</i>	9:00 – 9:20
CONTRACTS	Dan Mowat – <i>Co-Chair, COAA Contracts Committee Business Manager, Oil Sands Projects AMEC Natural Resources</i>	9:20 – 9:35
BREAK		9:35 – 10:05



WEDNESDAY MAY 16 TH MORNING PLENARY - HALL D		
TOPIC	PRESENTER	TIME
WORKFORCE DEMAND FORECAST	Herb Holmes – Chair, COAA Forecasting Committee <i>Northern Manager Construction Labour Relations – Alberta</i>	10:05 – 10:30
PANEL DISCUSSION <ul style="list-style-type: none"> • Byron Neiles, Senior Vice President, Major Projects Enbridge Pipelines • Lynn Zeidler, Vice President - Operations & Project Services - Horizon Oil Sands Canadian Natural Resources Limited • Peter Madden, President AMEC Oil Sands • Roger Keglowsch, Vice President Industrial PCL Constructors 	<i>Round table discussion – senior executives from owner, engineer and contractor organizations will address the questions “When will the wave of work hit?”, “What are you doing to prepare?” and “What do we as an industry need to be doing?”</i>	10:30 – 11:20
PRESENTATIONS WRAP UP	John Brogly	11:20 – 11:30
LUNCH		11:30 – 12:30

WEDNESDAY MAY 16 TH AFTERNOON WORKSHOPS - MEETING LEVEL			
WORKSHOP TOPICS	Room	WORKSHOPS	
		SESSION I (12:45 - 2:00)	SESSION II (2:15 - 3:30)
1. Canadian Model for Providing a Safe Workplace Drug and alcohol testing is an important part of risk management efforts in many organizations. The Drug and Alcohol Guidelines contained in the COAA “Canadian Model” Best Practice were revised in October of 2010, incorporating several important changes. A panel of subject matter experts will review the current Best Practice, with a focus on recent changes and upcoming issues. This workshop will be valuable for anyone who has implemented or is considering implementing the “Canadian Model” within their company or work site, including project management, labour relations, human resources and safety professionals.	Salon 4	✓	

WEDNESDAY MAY 16 TH AFTERNOON			
WORKSHOPS - MEETING LEVEL			
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<p>2. DARRPPCo Rollout</p> <p>The Drug and Alcohol Risk Reduction Pilot Project is beginning implementation within selected oil sands operations plus heavy industrial construction and maintenance companies in Alberta. This pilot program consists of a best practices program, including random testing, to manage worksite risks related to drug and alcohol. The program administrator will provide an overview of the program including background on the impetus for change, details on program design and expected outcomes.</p>	Salon 6		✓
<p>3. Fitness for Work: Emerging Issues</p> <p>A fitness-for-work assessment program can be used to confirm that a worker possesses the necessary medical and physical capabilities to safely and productively perform tasks required for their job. A job demands analysis determines the physical requirements of the job and a fitness-for-work assessment matches the individual's medical integrity and physical condition to those specific needs. This workshop will discuss the benefits of implementing a fitness-for-work program, the specifics of the testing protocol and the process for interpreting the results.</p>	Salon 4		✓
<p>4. Supervisor Competency Standards and Tools</p> <p>The Supervisor Training and Qualifications Committee has developed four industry Best Practices:</p> <ul style="list-style-type: none"> • Supervisor Job Descriptions • Industrial Construction Crew Supervisor Certification • Supervisor Coaching/Mentoring Guidelines • Supervisor Evaluation/Skill Development Tool <p>Please join us for a Peer Panel Review to co-create the path forward – our Roadmap. Share your experiences and contribute to making the Roadmap better. This is a rare opportunity to speak and align with peers across our industry, about common industry challenges and future trends regarding supervisor development. Space for each session is limited to 30 participants to ensure adequate time for feedback.</p>	Salon 5	✓	✓
<p>5. Building Respect Works! - Who's taking the lead?</p> <p>Does your senior management team support, practice and participate in workplace respect? Do your front line supervisors know what it takes? In this session, the organizational effects and benefits of creating a respectful workplace will be outlined. Discussion will include how disrespectful behavior contributes to absenteeism, productivity and turnover in our industry – and how this can be turned around.</p>	Salon 2	✓	✓

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<p>6. Benchmarking Phase II Update Phase II of the Benchmarking project is now well underway, bringing a significant increase in the ability to data mine, coupled with a much larger database. Further synergies, notably increased local expertise and assistance to project participants, are being generated through collaboration with the University of Calgary. This workshop will outline these increased benefits and the lead researcher from the Construction Industry Institute will demonstrate the new capabilities of the software tools. Workshop attendees will leave with an understanding of the power of the COAA benchmarking tools and how they can add value to Alberta projects.</p>	Salon 9		✓
<p>7. Construction Productivity Productivity is the most significant variable on any construction site, and more often than not it dictates whether a project will be successful. This workshop will deal with recent findings that have helped to increase field productivity. It will include learnings from the University of Calgary “Construction Productivity Improvement” group that has been conducting state-of-the-art research to enhance productivity and efficiency of construction operations. For example: the development of data-driven productivity improvement strategies through time and motion studies using on site camera imaging remotely analyzed by research assistants.</p>	Salon 8	✓	
<p>8. WorkFace Planning (WFP) - Going Global COAA and the Construction Industry Institute (CII) of the University of Texas, Austin have initiated a joint project to combine and extend their prior research in WorkFace Planning (WFP) best practices. Come participate in this interactive workshop to find out about the latest developments in this co-operative effort to establish a North American (and perhaps a global) best practice. CII and COAA resources available to guide project teams in adopting and implementing this WFP Best Practice will be reviewed. Learn about current directions that will shape the way top-tier projects are managed.</p>	Salon 3	✓	
<p>9. WorkFace Planning (WFP) Committee The COAA WFP Committee has redesigned and updated the WFP flow charts to better illustrate Project Planning as a critical prerequisite to WFP during construction and commissioning. Project Planning guides project development through the conceptual phase, front end loading, and then the design phase. Additionally, the flow charts can be used to identify “pinch points” in the process, so that the process itself or the implementation guide can be improved. Workshop participants will get a planning/implementation overview of the process, and will have the opportunity to make suggestions for improvement directly to the WFP Committee. This workshop will be of particular value for corporate leaders and project leaders who are responsible for implementing WFP Best Practices.</p>	Salon 3		✓

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WORKSHOPS - MEETING LEVEL			
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<p>10. Contract Strategy – Critical to your Project’s Success</p> <p>An optimum, well thought out contract strategy is a critical component in project planning, and an essential complement to excellence in project scope definition. Attendees will see the committee’s work to date, gain a fundamental understanding of key principles of project contract strategy, and contribute to the committee’s future direction via feedback and suggestions. Key content will include: contract strategy definitions, a draft work process flow chart, and an outline of the scope of the Best Practice to be developed. Workshop format will be a combination of presentation, participant work exercises and interactive feedback with the committee.</p>	Salon 9	✓	
<p>11. The Contractor’s Dilemma: Unreasonable Contractual Terms in Bid Documents</p> <p>Contractors generally receive a set of terms and conditions, terms of payment and other contract documents with each Request for Proposal. While industrial owners generally entertain reasonable requests for limitations, exceptions and alternatives to certain terms, the review of these contract documents can be complex, and requests for limitations to achieve a balanced allocation of risk can be delicate. Some risks are “bet-the-company” whereas others can be covered in the project markup. This is a unique opportunity to listen to a panel of lawyers experienced in both sides of these decisions review best practices for identifying these risks, to determine which can be priced in and which cannot, and how to best negotiate to change the unreasonable terms.</p> <p>Panelists currently scheduled to participate include:</p> <ul style="list-style-type: none"> • Dale Bercov, Syncrude Canada • Jennifer Brusse, Kiewit Energy Company • Chris Hustwick, Suncor Energy Services Inc. • Sean James, Flint Energy Services • Evan Johnston, The Churchill Corporation • Steve Richards, PCL Constructors Inc. • Jan Derdiger, Capital Power Corporation <p>The discussion will be moderated by William Kenny, Q.C., Miller Thomson, a longtime supporter and contributor to COAA’s Contracts Committee and the COAA’s Standard Form of Contracts.</p>	Salon 8		✓



Benchmarking

Government / Industry / Academia Partnership

Patricia Armitage, M.Eng., P.Eng.
Director, Architecture/Engineering/Construction
Industry Development Branch
Alberta Finance and Enterprise

Larry Sondrol
Stephen Revay
COAA Co-Chairs
Benchmarking Committee

CII – University of Texas – University of Calgary

AGENDA

- Benchmarking Phase 2
- University of Calgary Involvement
 - Workshop 2:15 – 3:30
- Productivity Committee
 - Workshop 12:45 -2:00



PHASE 2

- Benchmarking Training Yesterday
- New questionnaires on web site
- Ready to collect data



PHASE 2

Performance Assessment System (PAS)

- 24/7 Data mining
- Access to much more information
- Expanded and refined Key Report



PHASE 2

ALSO NEW

- Adding Metrics for Pipelines
- Support from the University of Calgary



Question 1

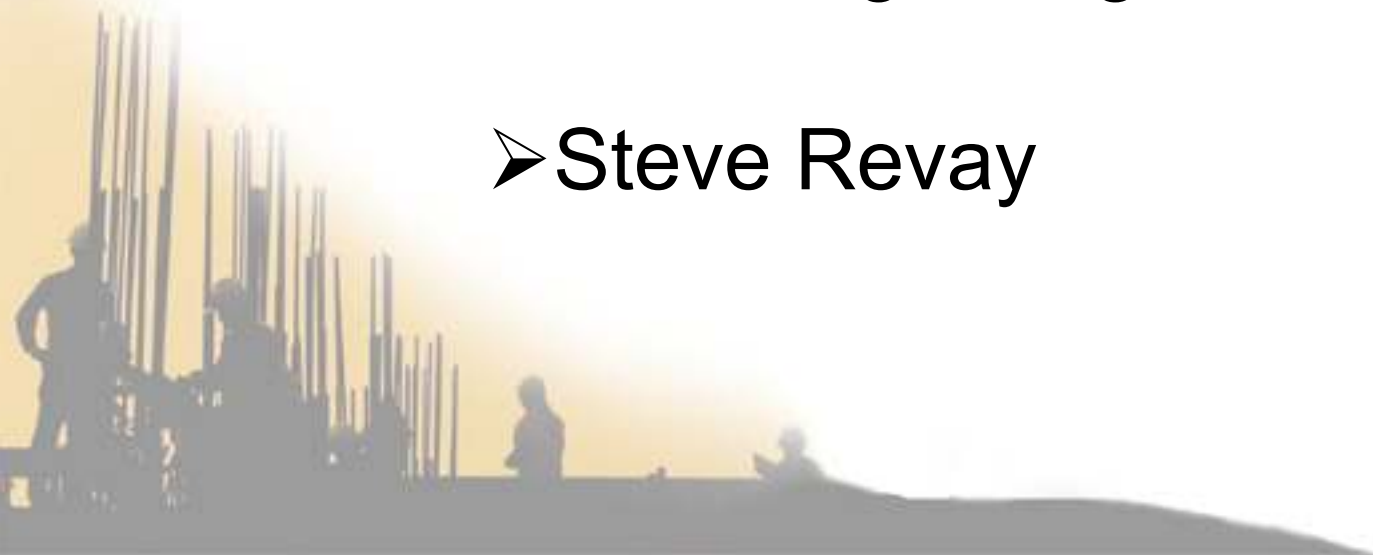
What are the most important benchmarking benefits to your firm?

1. A reality check on internal estimating
2. Compare performance against others and internally
3. Access to world wide data
4. Ability to use tool to improve performance

Productivity Initiative

Co Chairs

- Dr George Jergeas
- Steve Revay





Productivity Initiative

Mandate

Disseminate Information





Productivity Initiative

Workshop Agenda

- Introductory comments
- U of C and Laricina Energy
- CII Productivity Initiative
- Key articles disseminated

Question 2 Information

How does your firm acquire information to improve productivity?

1. Field Observations
2. Internet Research
3. Benchmarking
4. Seminar / Courses
5. Consultants

Question 3 Responsibility

Whose behavior/culture do we need to change to have the greatest improvement on productivity?

1. Owner
2. Engineer
3. Construction Manager / GC
4. Trade Contractor
5. Crafts



WORKFACE PLANNING

BEST PRACTICES 2012
GLEN WARREN



SUB COMMITTEES

1. CII / COAA JV
2. Training
3. Website Update
4. Library Management
5. Communications
6. WFP Conference

THE JOURNEY

1. Build Processes and Tools
2. Flowchart, Rules, Scorecard
3. FIWP's and Templates
4. Implement on Projects
5. Evaluate
6. Improve

WHAT ISN'T IMPROVING

1. Construction Productivity
2. Front End Integrated Planning
3. Front End Deliverables



PATH FORWARD

1. Guidelines for Front End
2. CII Enhanced Work Packaging
– IR 272-2
3. Update Rules & Guidelines for
WFP

ADVANCED WORK PACKAGING

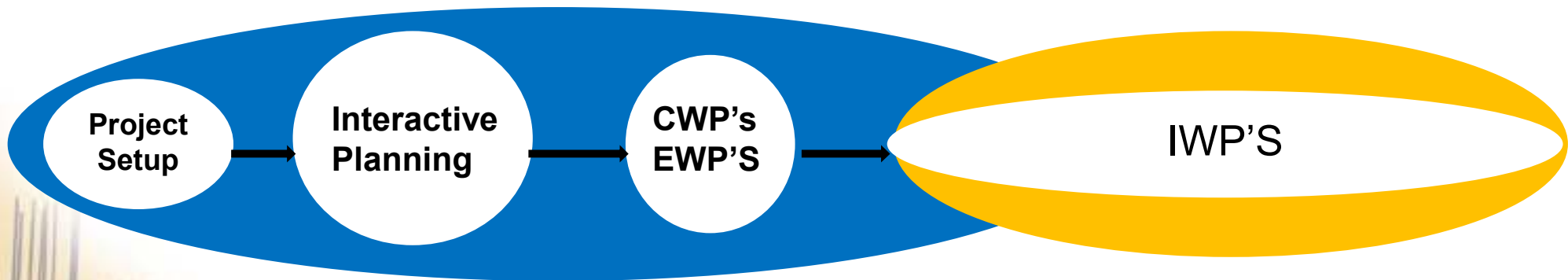
1. COAA and CII Joint Venture
2. Integrate Processes and Tools
3. Goal to provide implementation resource for project life cycle.



ADVANCED WORK PACKAGING



WorkFace Planning



Front End

Construction
Commissioning
Start Up

WORKSHOP 1

1. Provide update of JV progress
2. Primary Areas of Development
 - Procedures and Information Flow
 - Contracts
 - Functional Capabilities
3. Survey to provide input

WORKSHOP 2

1. ADVANCED WORK PACKAGING FLOWCHART
2. IWP LIFECYCLE FLOWCHART
3. GOING FORWARD



SUMMARY

SUCCESS – 3 SIMPLE PRINCIPLES

- Start with End in Mind
- Develop Complete Execution Plan
- Work the Plan

**IMPROVE TRANSITION FROM
FRONT END TO CONSTRUCTION**



THANK YOU





COAA Safety Committee

May 16, 2012





COAA Safety Committee Update

May 16, 2012





COAA Safety Committee Update

COAA Vision Statement for Safety:

No one gets hurt in heavy industrial construction

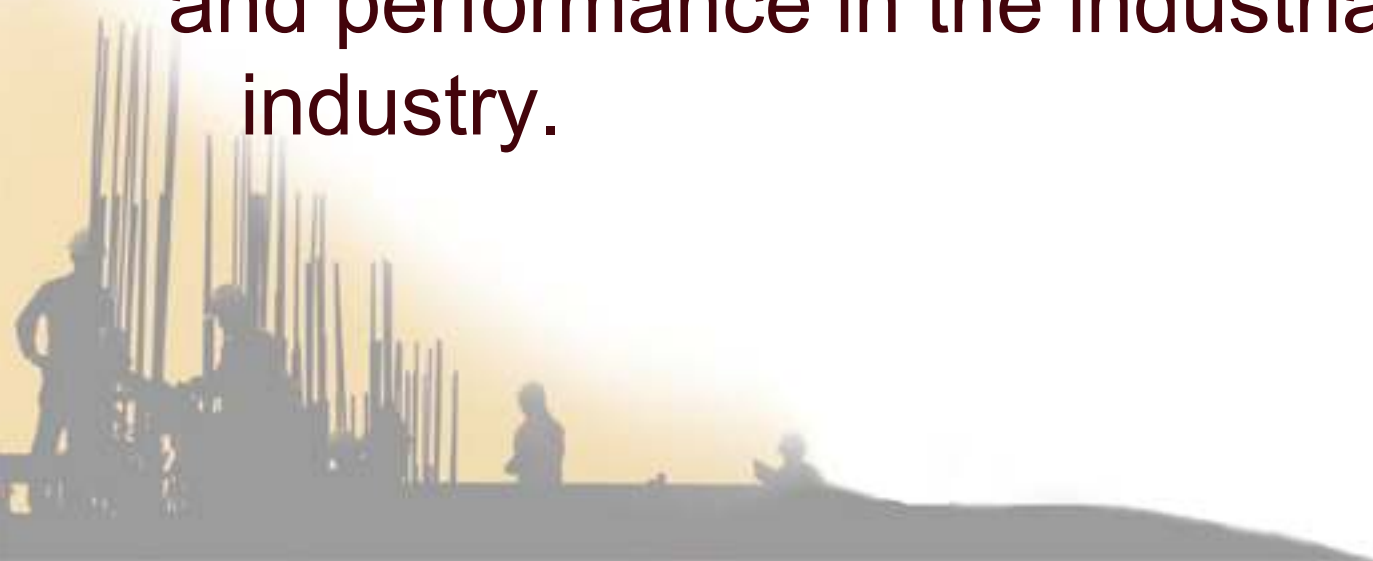




COAA Safety Committee Update

COAA Safety Committee mandate:

The Safety Committee members will work collaboratively to improve overall safety culture and performance in the industrial construction industry.





Co-Chairs

Winston Fynn – Shell Canada

Dave Hagen – Chemco Electrical

Hal Middlemiss – NorthWest Redwater
Partnership





COAA Safety Committee Members

- Owner reps
- Contractor reps
- Labour provider
- Industry associations
- Workplace health and safety
- Workers Compensation Board





A Definition of Best Practice

A superior method or innovative practice that contributes to the improved performance of an organization under a given context, usually recognized as 'best' by other peer organizations





Accomplishments in 2011

- Worker Competency Verification
- Performance Improvement





Activities in 2012

- COAA A&D Model revision
- ACSA Board Members (2)
- Crane and Rigging Professionals of Alberta
- DARRPP Implementation Committee
- Prequalification Committee
- Silica





Focus Areas in 2012

- Safety Culture in Alberta
- Prequalification
- Alignment of Owners
- Emerging Workforce Demographics



Question # 1

Alberta's safety culture is among the best in the world.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree



Question # 2

Safety prequalification processes make
Alberta Industrial Construction worksites safer:

- 1.Strongly Disagree
- 2.Disagree
- 3.Neutral
- 4.Agree
- 5.Strongly Agree



Question #3

Laboratory based alcohol and drug testing is the gold standard with respect to accuracy and defensibility, and is aligned to the Canadian Model. However the use of point-of-collection drug testing devices ("express tests") (POCT) has become prevalent. If next morning turn-around time on laboratory confirmed negative tests were a reality would you:

1. use the laboratory analysis and minimize or eliminate the use of POCT?
2. continue to use POCT but have lab confirmation of positive tests?
3. continue to use POCT but have lab confirmation of all results?
4. doesn't matter ... will continue to rely on POCT anyway?

Question # 4

All owner HSE program requirements are aligned and consistent.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree



Question # 5

All owners are prepared for emerging workforce issues such as, demographics, foreign workers, travel cards, diversity, etc.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree



Workshops Today

- Best Practice: Fitness for Work
- COAA A&D Model Update
- Drug and Alcohol Risk Reduction Pilot Project (DARRPP)





Thanks to our volunteers!





Questions ?





Best Practices Conference XX

Contracts Committee



Contracts Committee

History of committee:

- formed in early 1990s
- response to increasing complexity, poorly allocated risk, ambiguity
- mandate from COAA Board
“develop a ‘best practice’ for heavy industrial contracting in Alberta”



Contracts Committee

Development of Contracts:

- Stipulated Price (1997 & 2003)
- EPC (2005)
- EPCM (2008)



Contracts Committee

Committee initiatives:

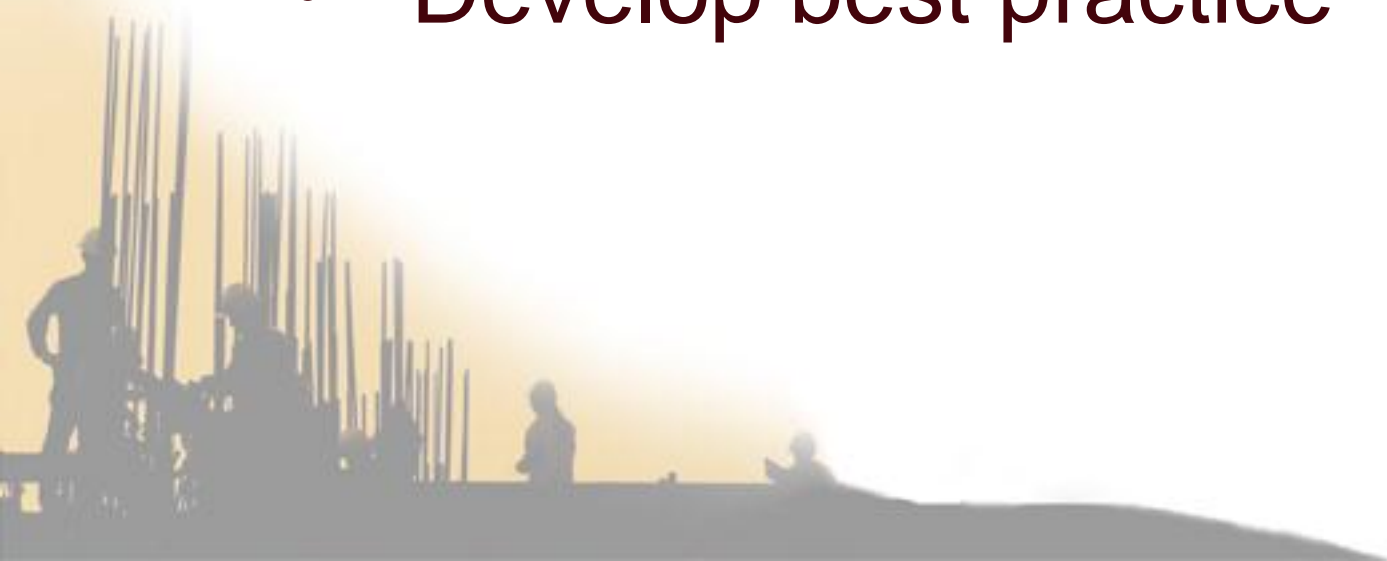
- Prequalification
- Contract strategy
- Non-disclosure agreement
- Promotion of contracts
- COAA – CCA collaboration



Prequalification

Prequalification initiative:

- Identify concerns & causes
- Research cost to industry
- Develop standard approach for defining the criteria
- Develop best practice



Contract Strategy

Contract Strategy Initiative:

- Findings: widely misunderstood & poorly applied
- Define “contract strategy”
- Develop structured approach
- Test & implement





Non-Disclosure Agreement

Initiative completed ...

Best practise approved by COAA Board
& available on website





COAA – CCA Collaboration

Initiative commenced

- COAA Contracts Committee
- Canadian Construction Association
- Teams to review EPC contract
- Goal: broaden applicability





Contracts Committee

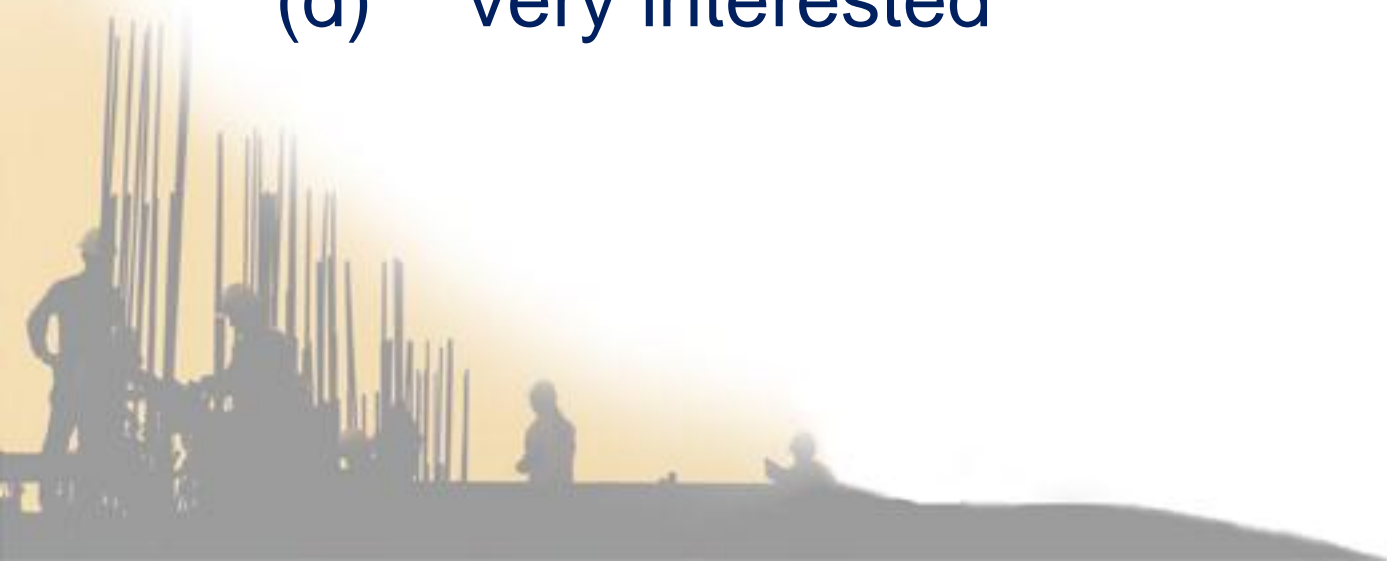
Voting Button Questions



Prequalification

Rate your level of interest in having an industry standard for evaluating prequalification criteria/data:

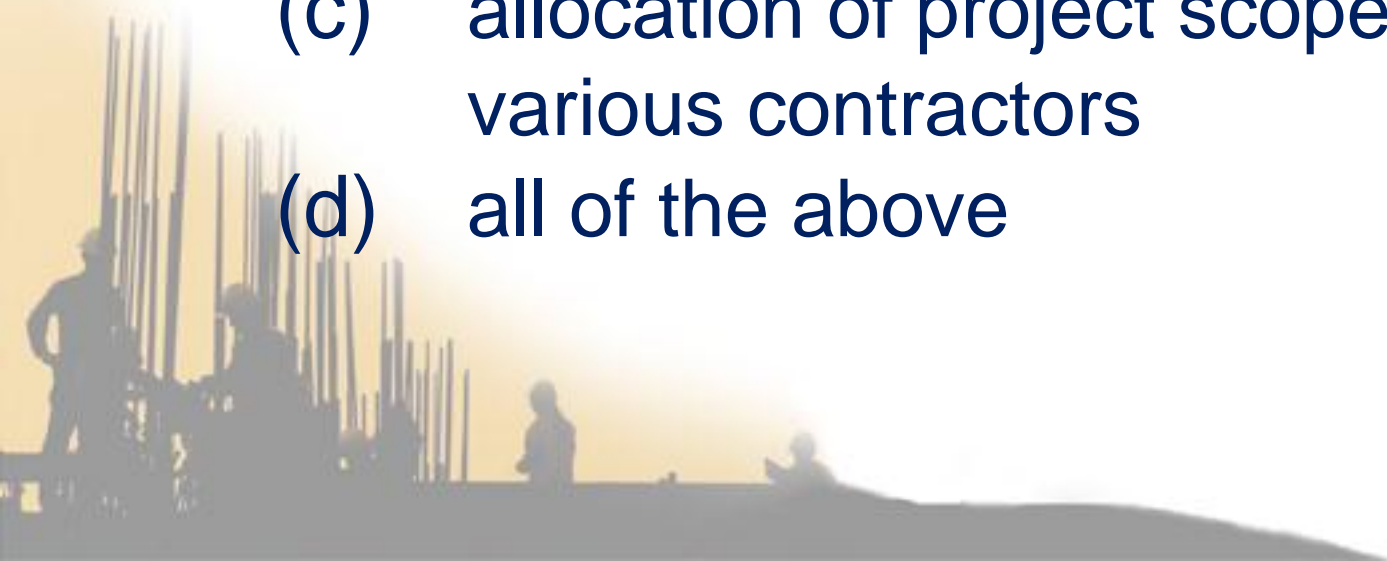
- (a) not interested
- (b) somewhat interested
- (c) interested
- (d) very interested



Contract Strategy

Which statement best describes Contract Strategy?

- (a) Unit Rate and/or Lump Sum and/or Cost Reimbursable and/or Time & Materials
- (b) formal tendering, multi-contractor or sole source negotiations
- (c) allocation of project scopes of work to various contractors
- (d) all of the above



Contract Strategy

What are some key elements of a Contract Strategy?

- (a) allocation of risk between contractors & owners
- (b) identification & allocation of responsibilities
- (c) key project area breakdown (WBS)
- (d) identification of project-wide contract scopes
- (e) identification of key E, P, C scopes across project phases
- (f) all of the above



Contracts Committee

**Thanks for
your time!**



Forecast 2012



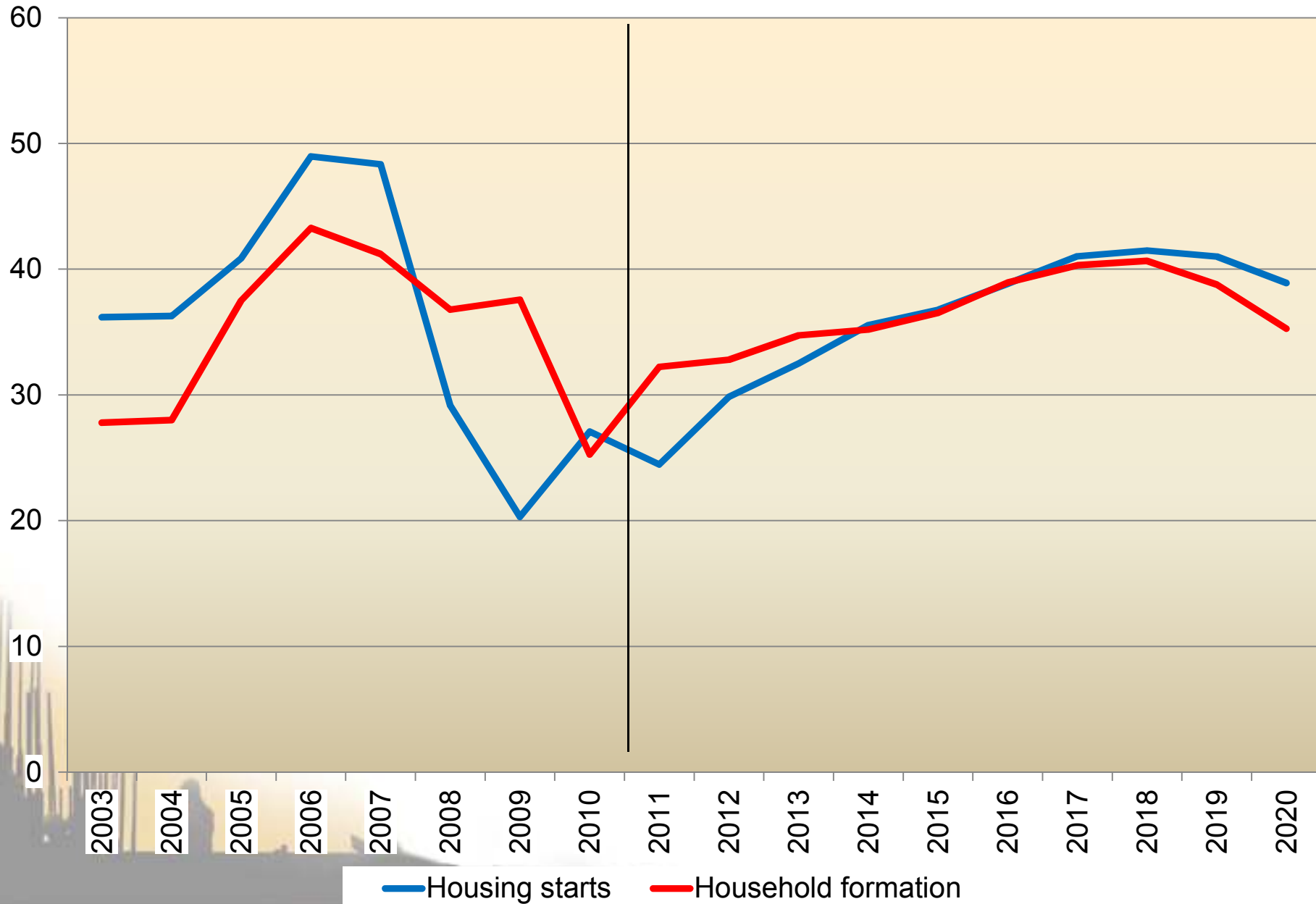
CONSTRUCTION LOOKING FORWARD

An Assessment of Construction Labour Markets from 2012 to 2020

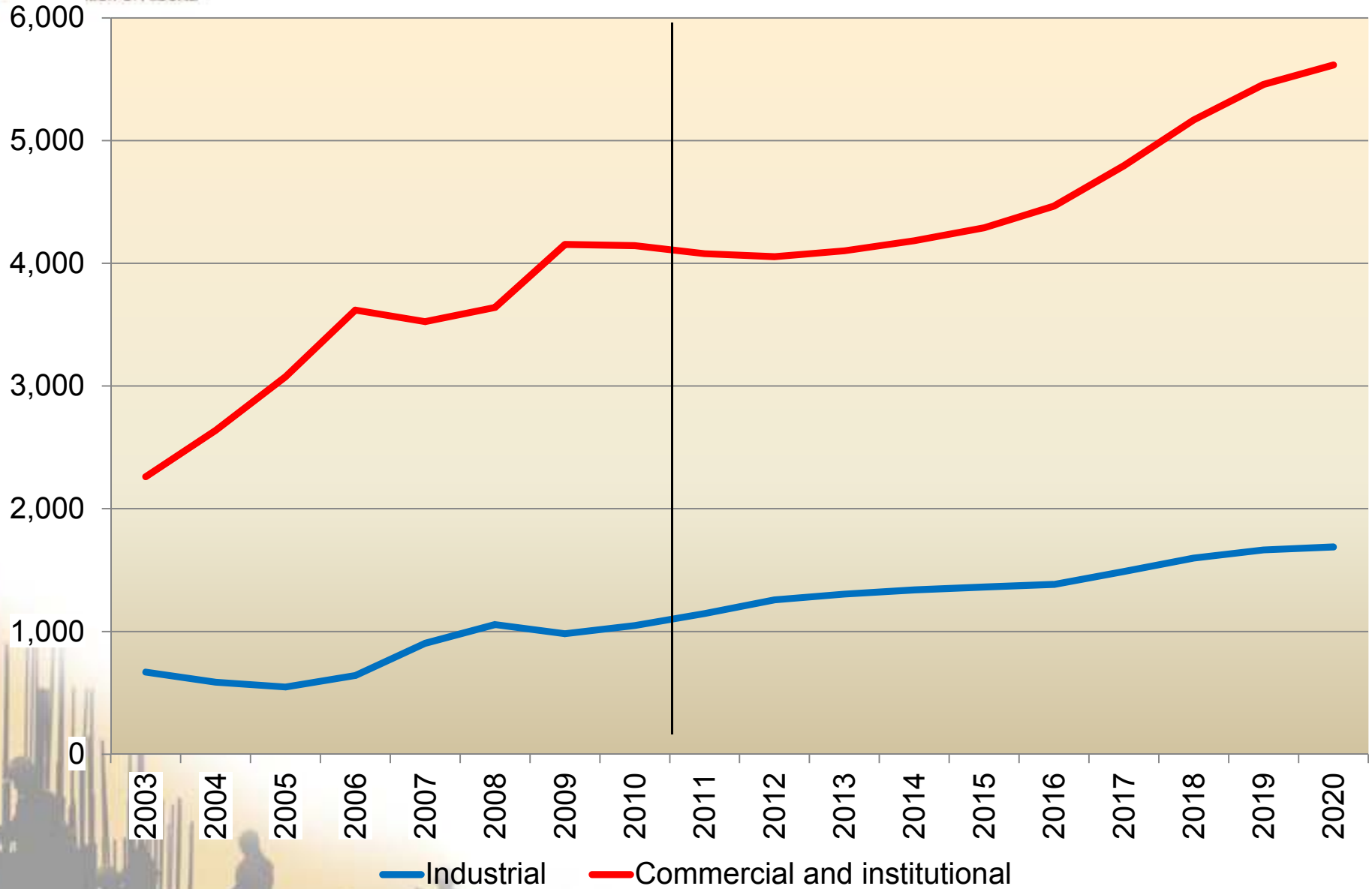


COAA
Construction Owners
Association of Alberta

Housing Starts and Household Formation (000s)



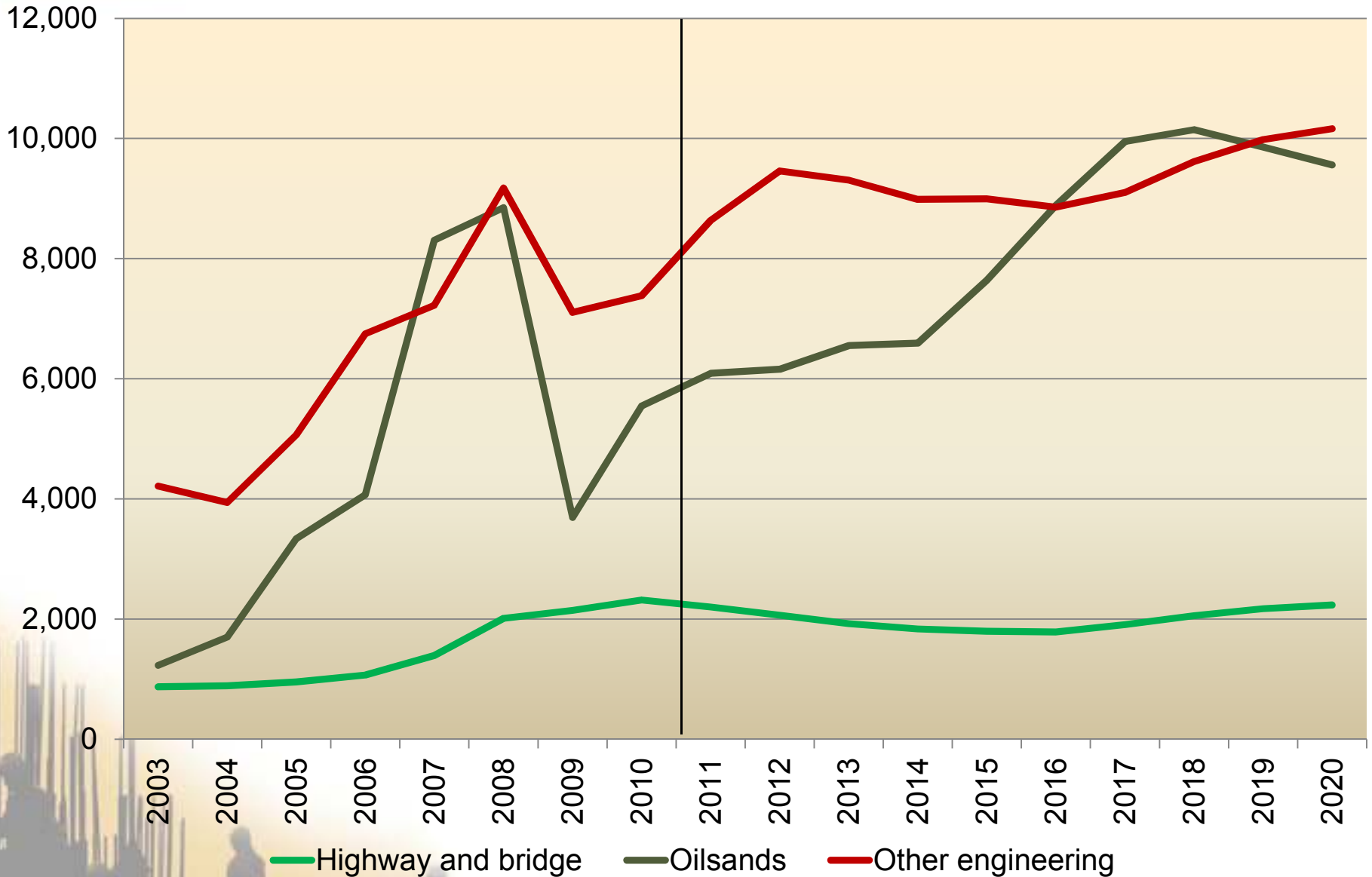
Building Construction (\$2002 millions)





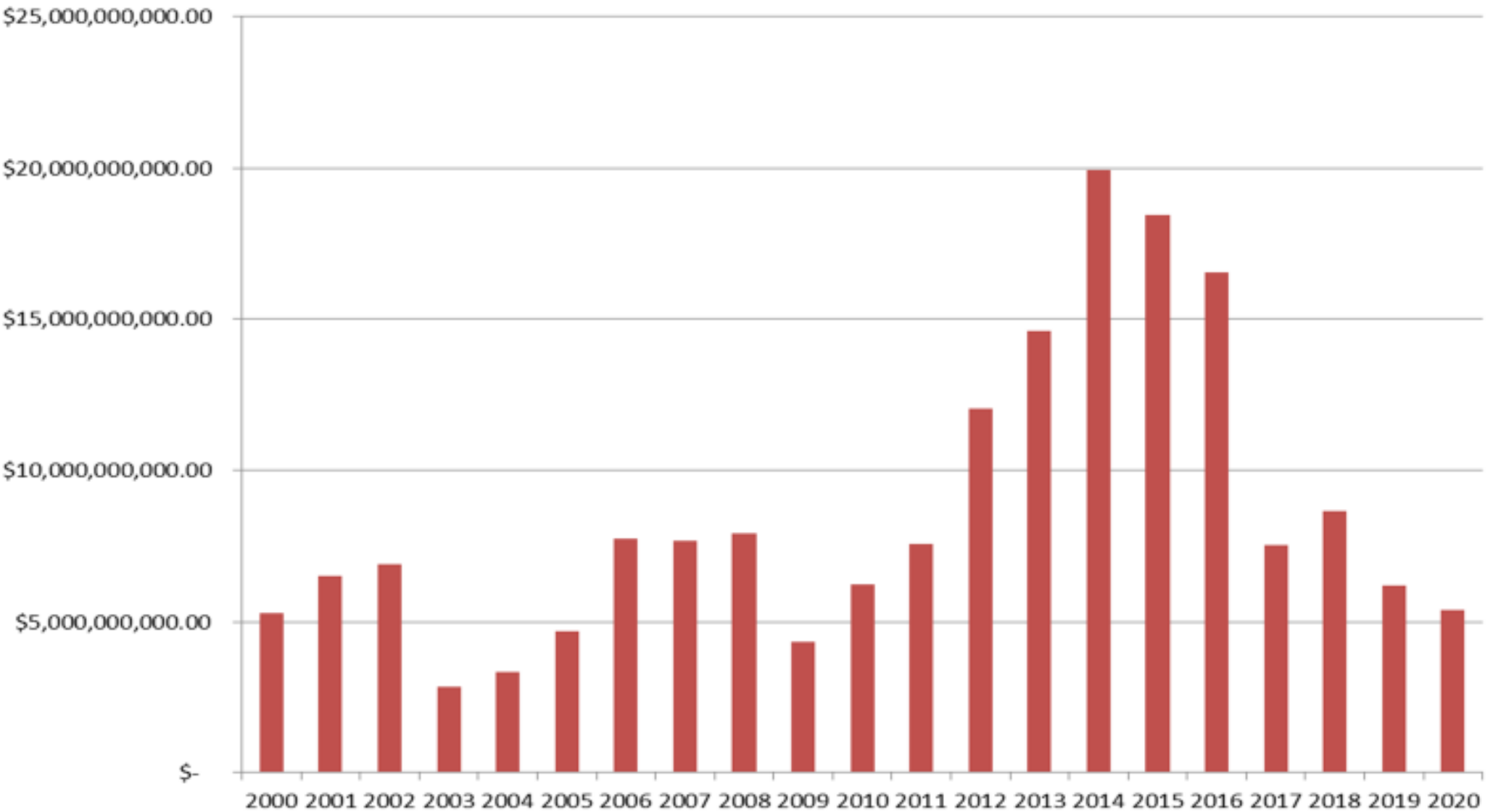
COAA
Construction Owners
Association of Alberta

Engineering Construction (\$2002 millions)



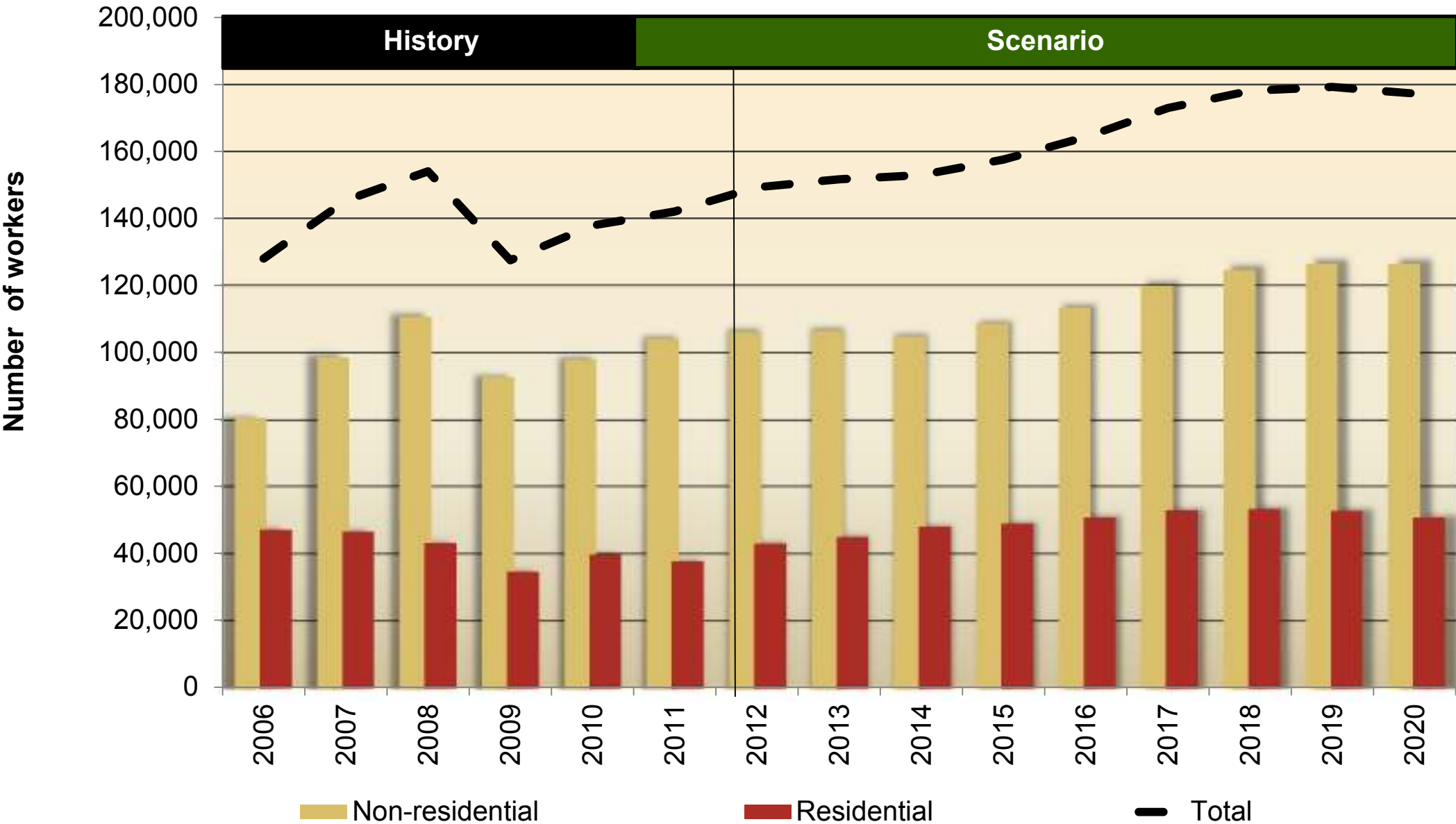


Major Engineering Projects Alberta > \$100 Million Capital Value (2012 Dollars)





Construction Employment in Alberta





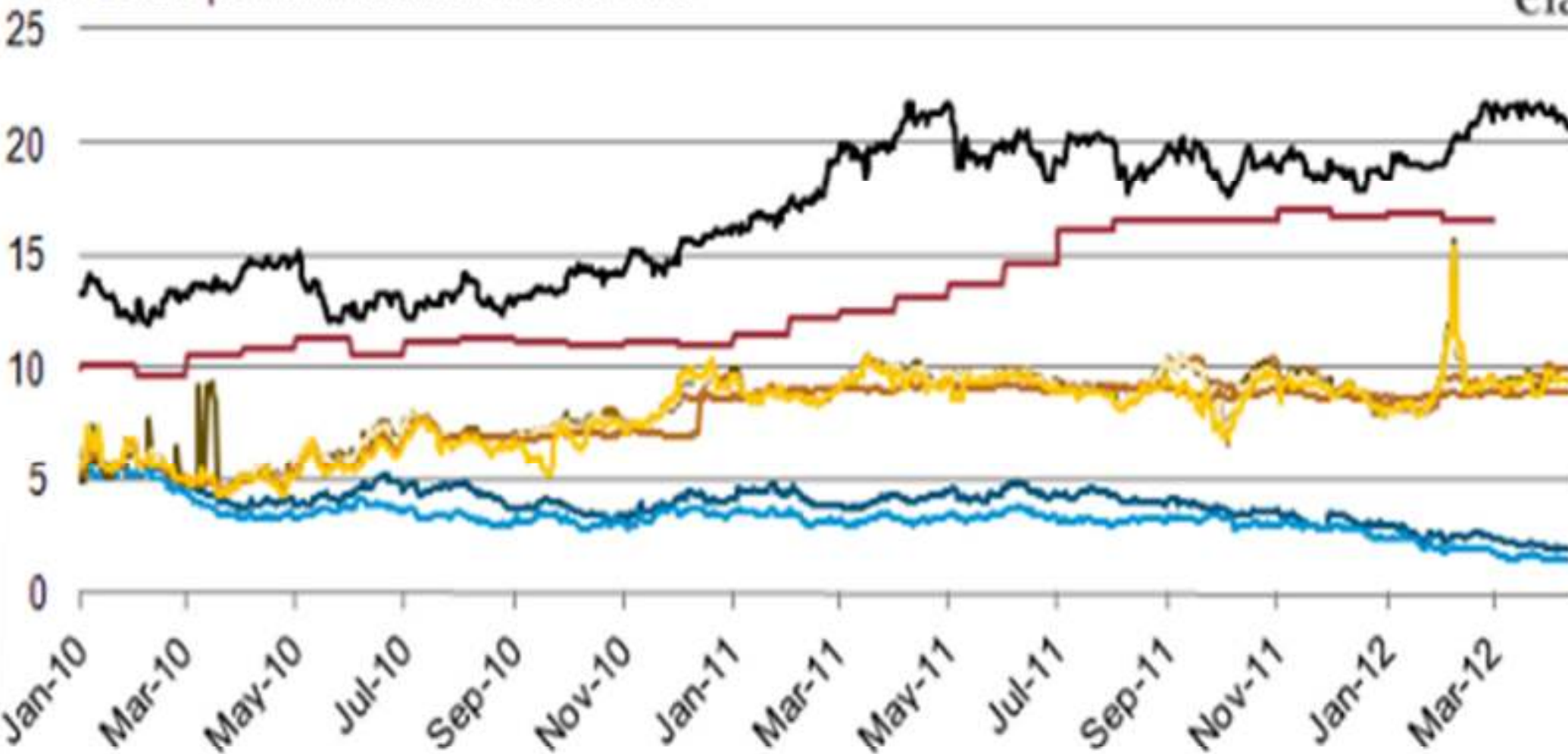
(Don't worry, you can call him
Douglas)

DR. DOUGLAS AKHIMIENMHONAN



Global spot natural gas and crude oil prices with average monthly LNG prices in Japan

U.S. dollars per million British thermal unit



U.S. - Henry Hub

Canada - AECO

Brent crude oil

Japan - LNG

France - PEG

Germany - BEB Hub

Netherlands - TTF

Belgium - Zeebrugge

UK - NBP

Major Changes in World Liquid Energy Supply (2011 to 2035)

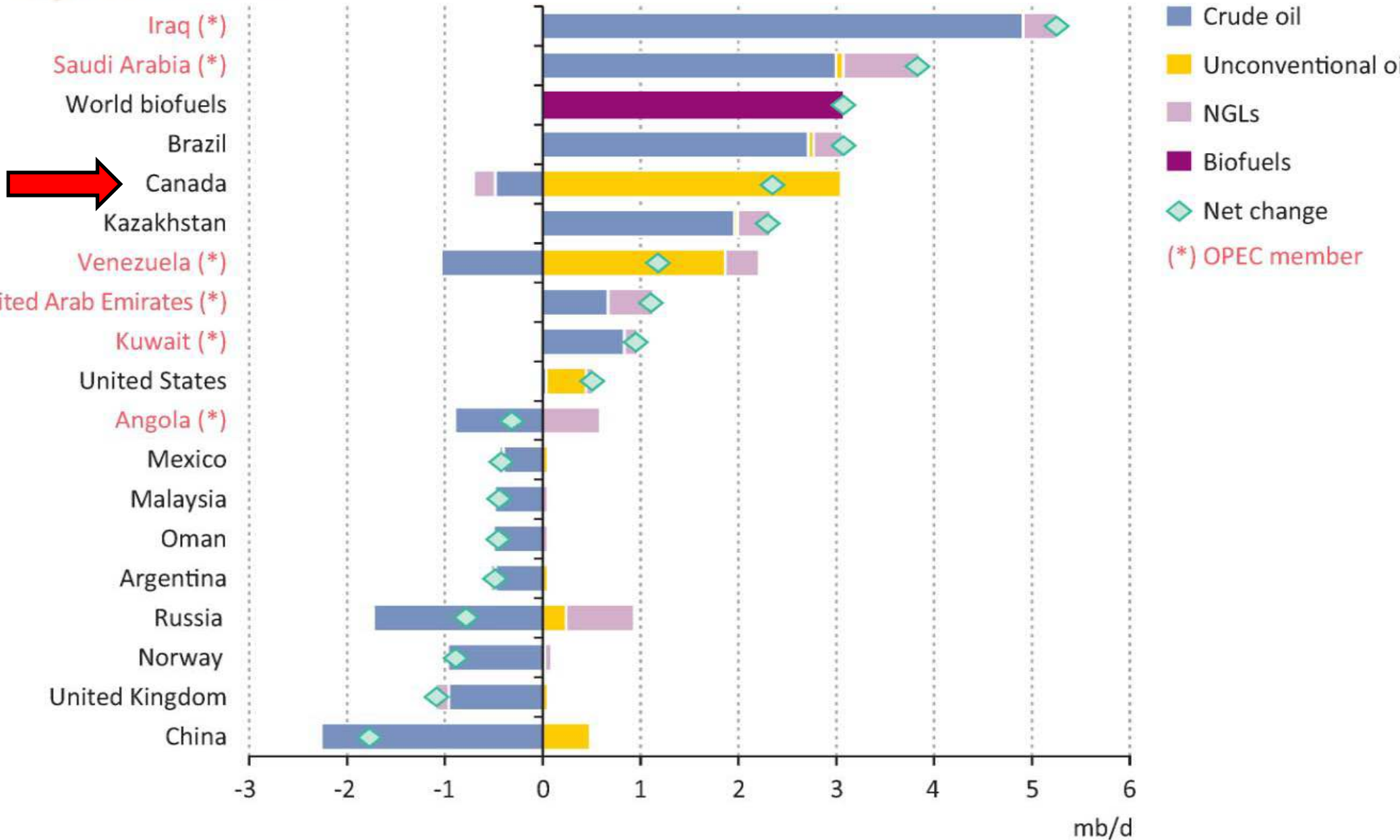
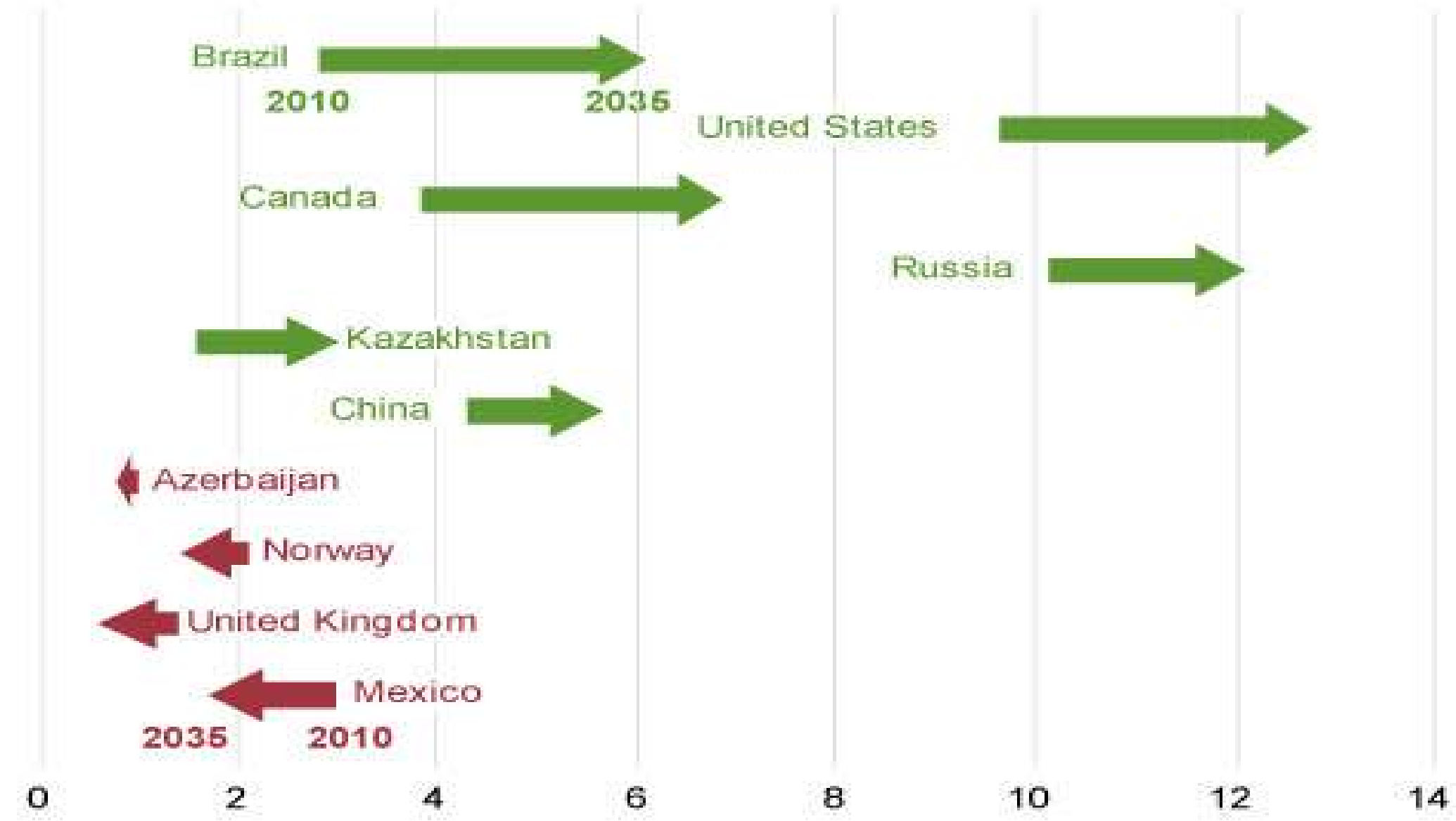


Figure 6. Change in liquids production by top non-OPEC producers, 2010-2035, 1970-2035

(million barrels per day)



Net imports of oil

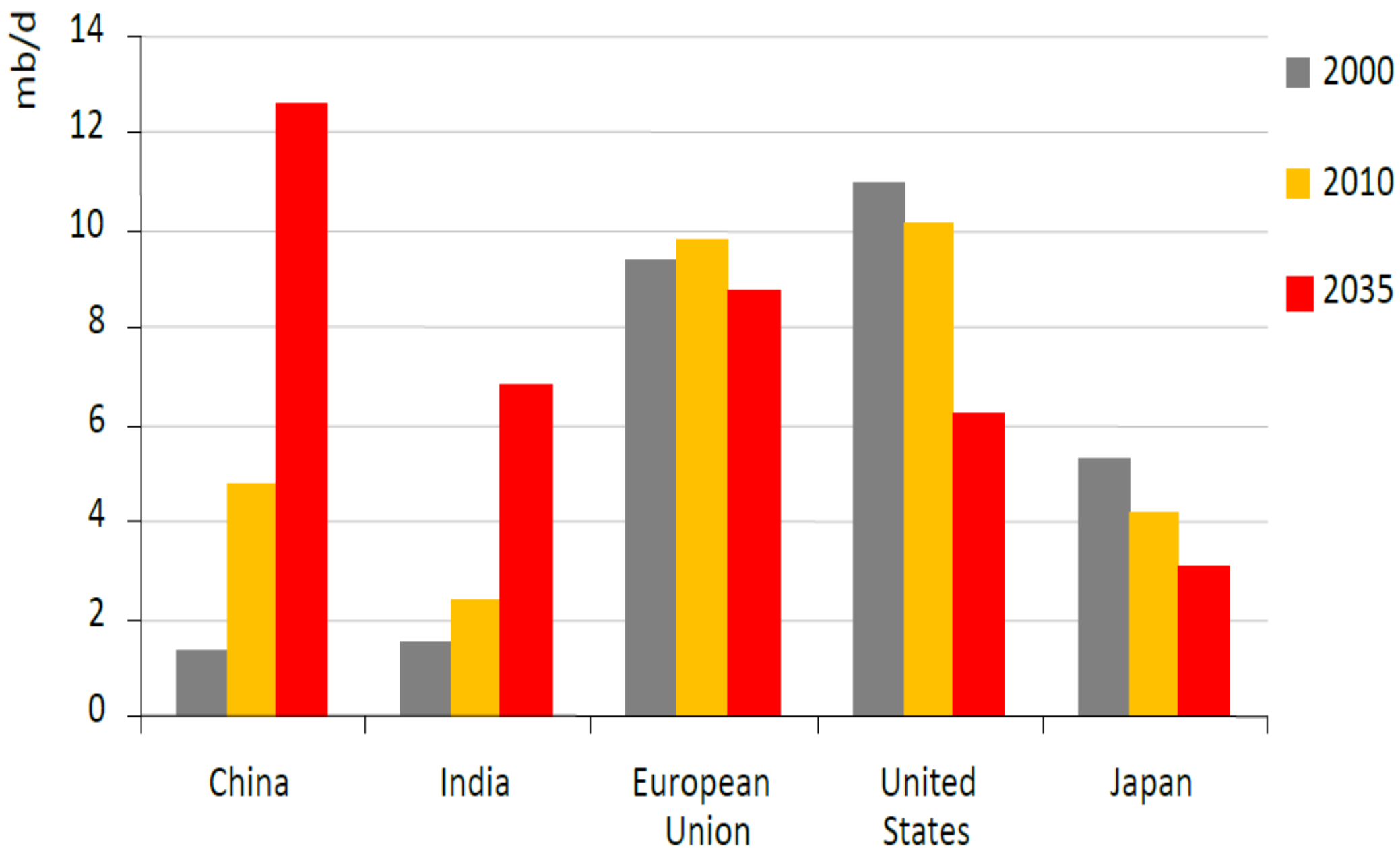
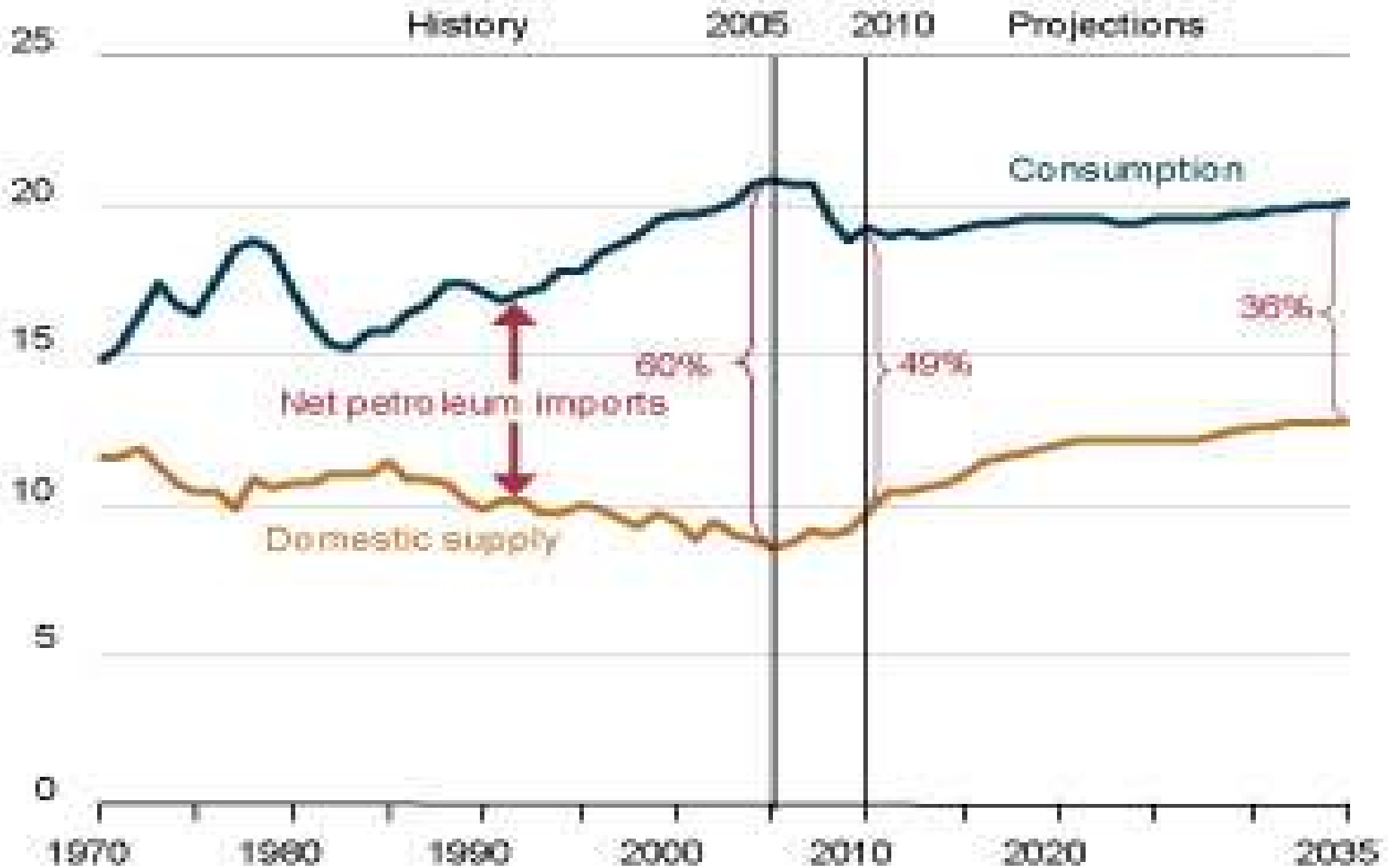


Figure 1. U.S. liquid fuels supply, 1970-2035

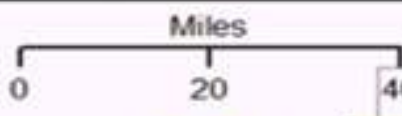
(million barrels per day)



Bakken Shale Production 1985-2010 Williston Basin, ND & MT

2010

- Bakken Shale Producing Wells**
Bbl Oil per Day (Mean per Quarter)
- 0 - 100
 - 101 - 500
 - > 500
- Gas-Oil Ratio (Mean per Quarter)**
- 0 - 1,000 (Oil Bbl >>> Gas BOE)
 - 1,001 - 5,000 (Oil Bbl > Gas BOE)
 - > 6,000 (Gas BOE > Oil Bbl)
- Bakken Depositional Limit



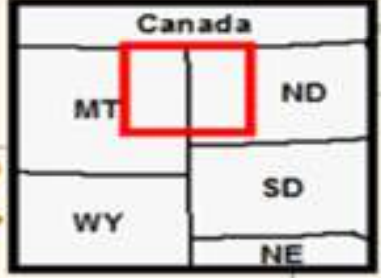
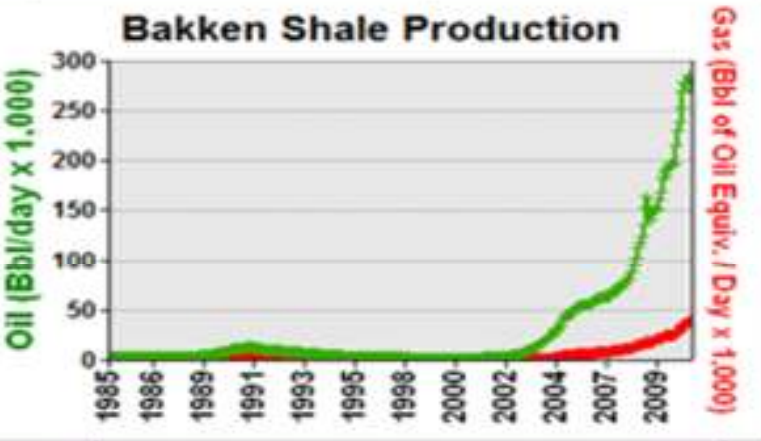
1996: Middle Bakken Vertical well Tests Elm Coulee Field

2000: Elm Coulee Middle Bakken Horizontal wells Discovery

2006: Parshall Field discovered

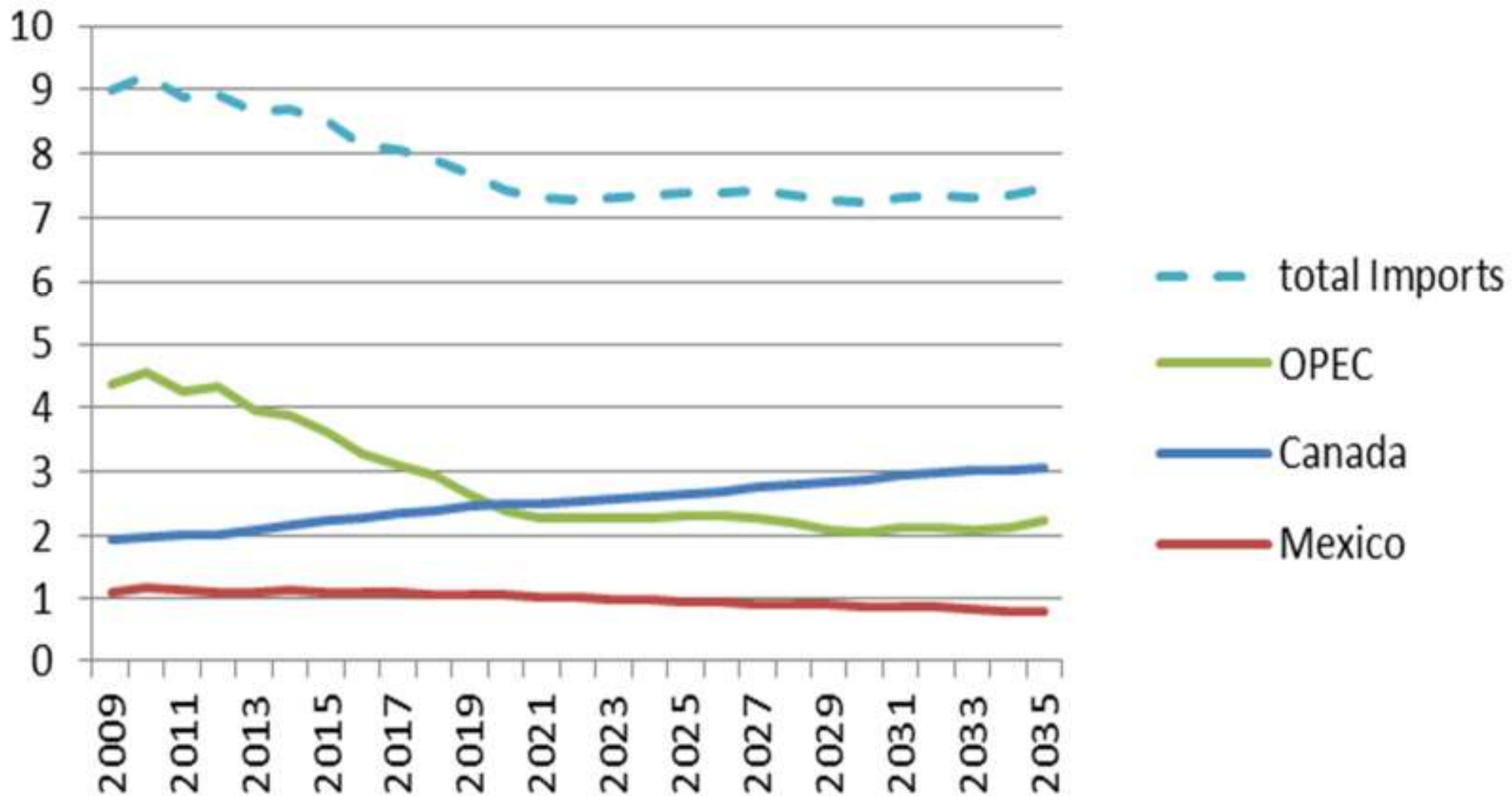
1987: Upper Bakken Shale Horizontal Wells Billings Nose

1976: Upper Bakken Shale, Vertical wells Billings Nose



US Crude Oil Imports

Millions of Barrels per Day



Total Energy : Prices: Imported Crude Oil Price

Reference

AEO2011 Reference

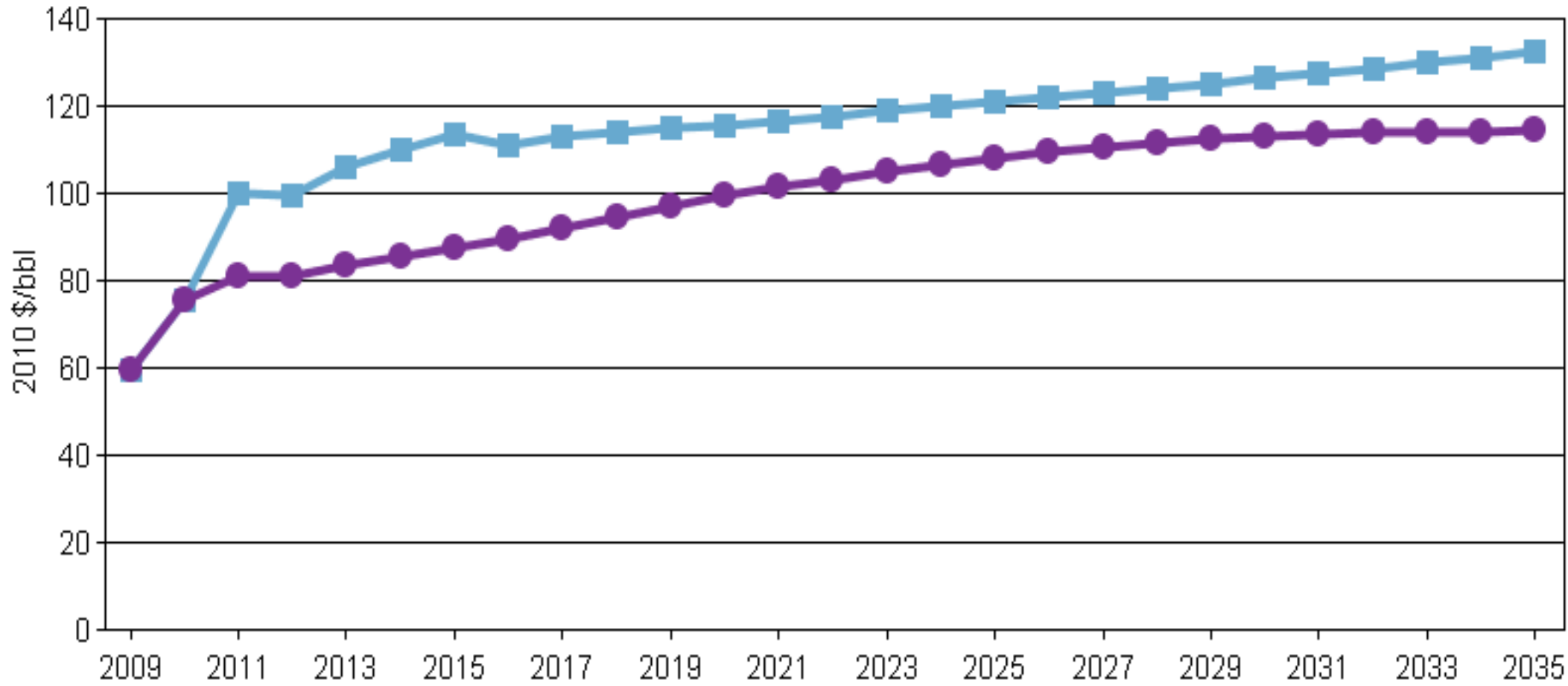
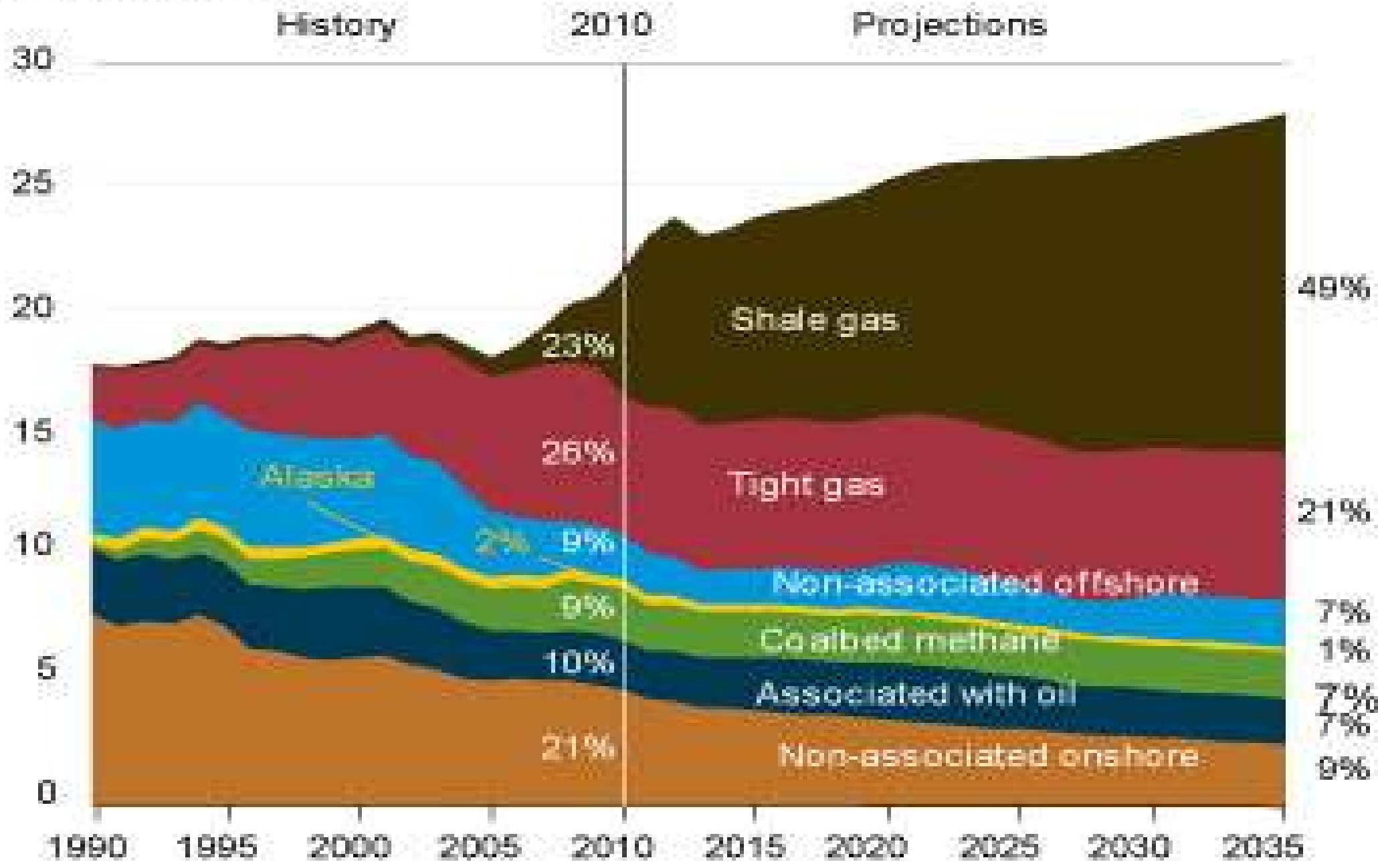
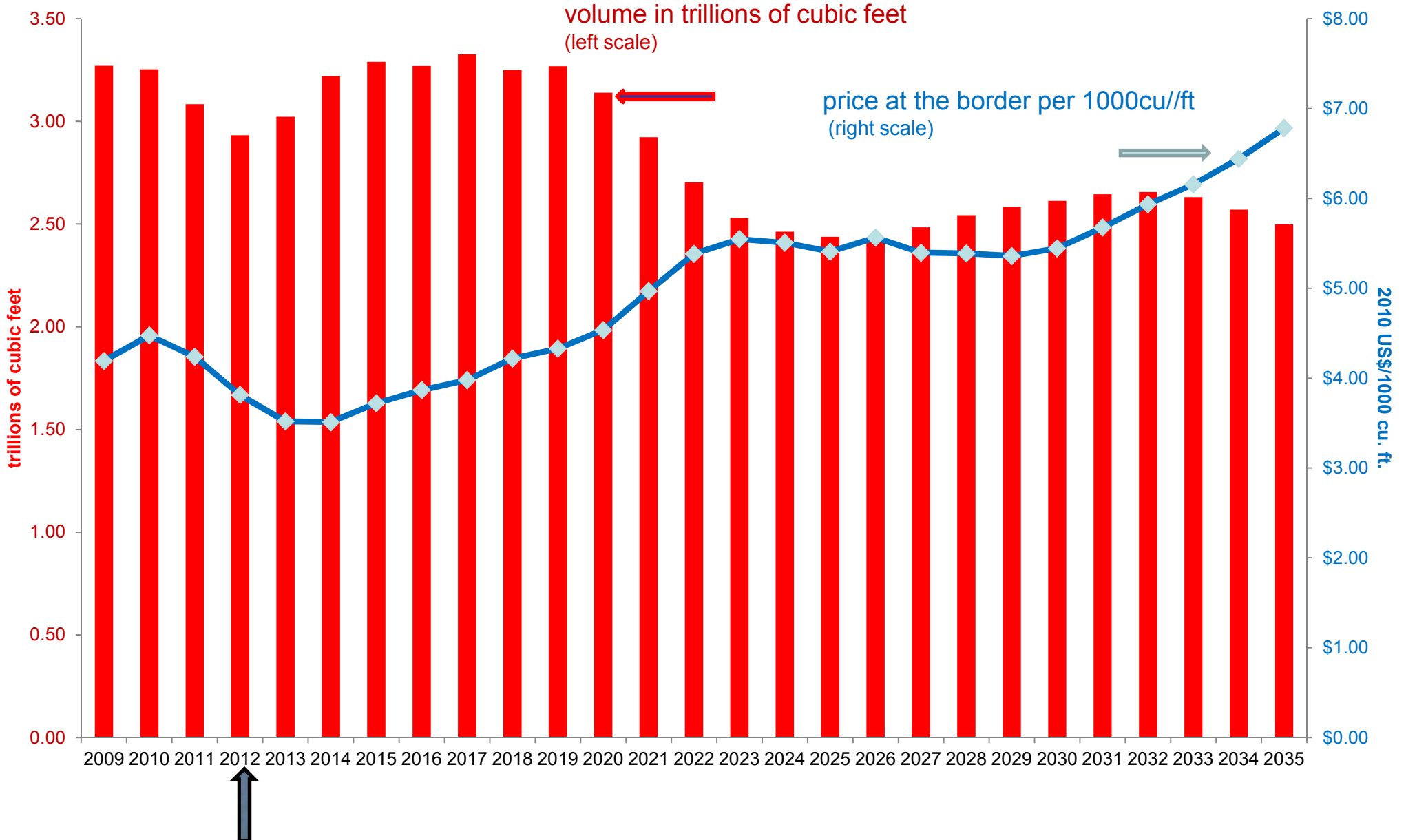


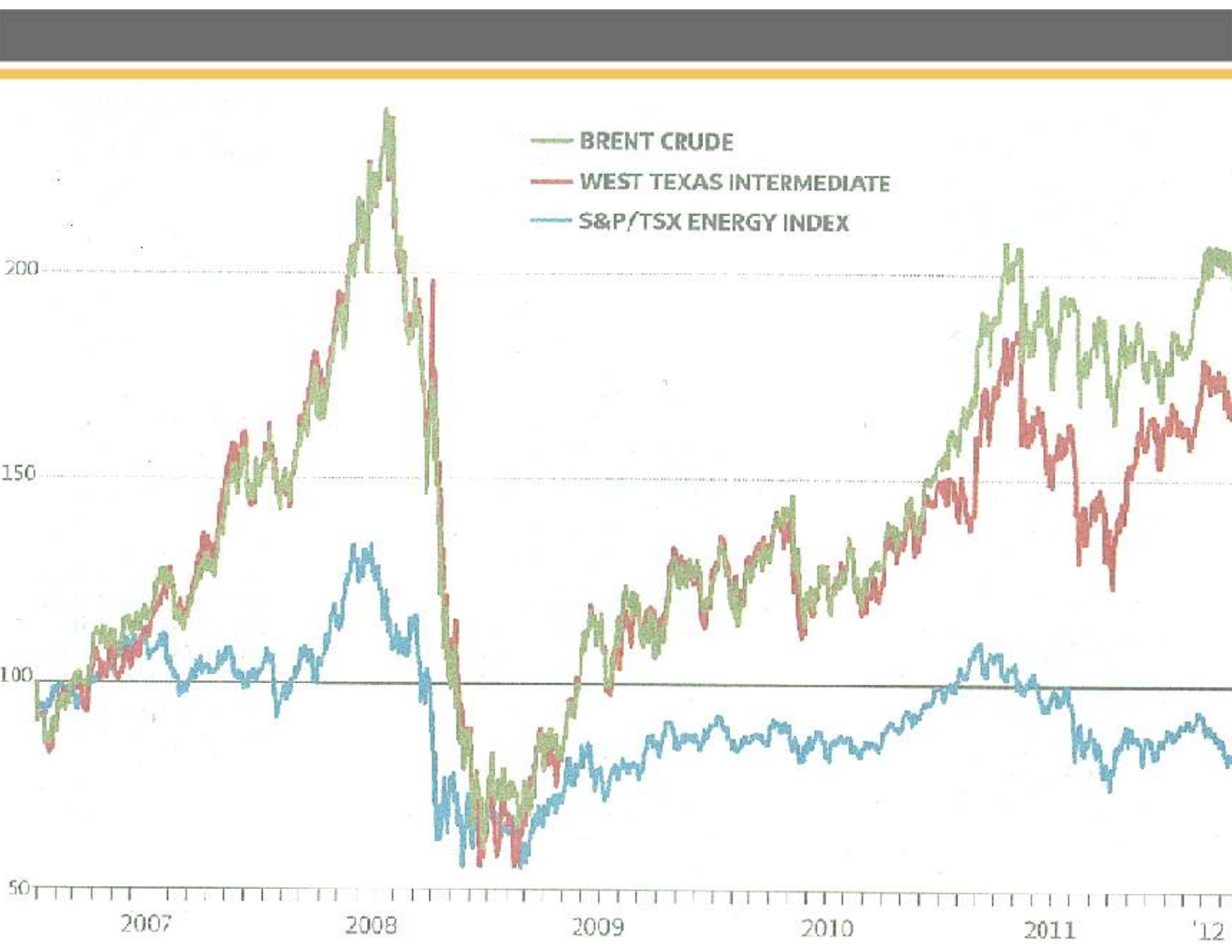
Figure 2. U.S. natural gas production, 1990-2035

(trillion cubic feet)



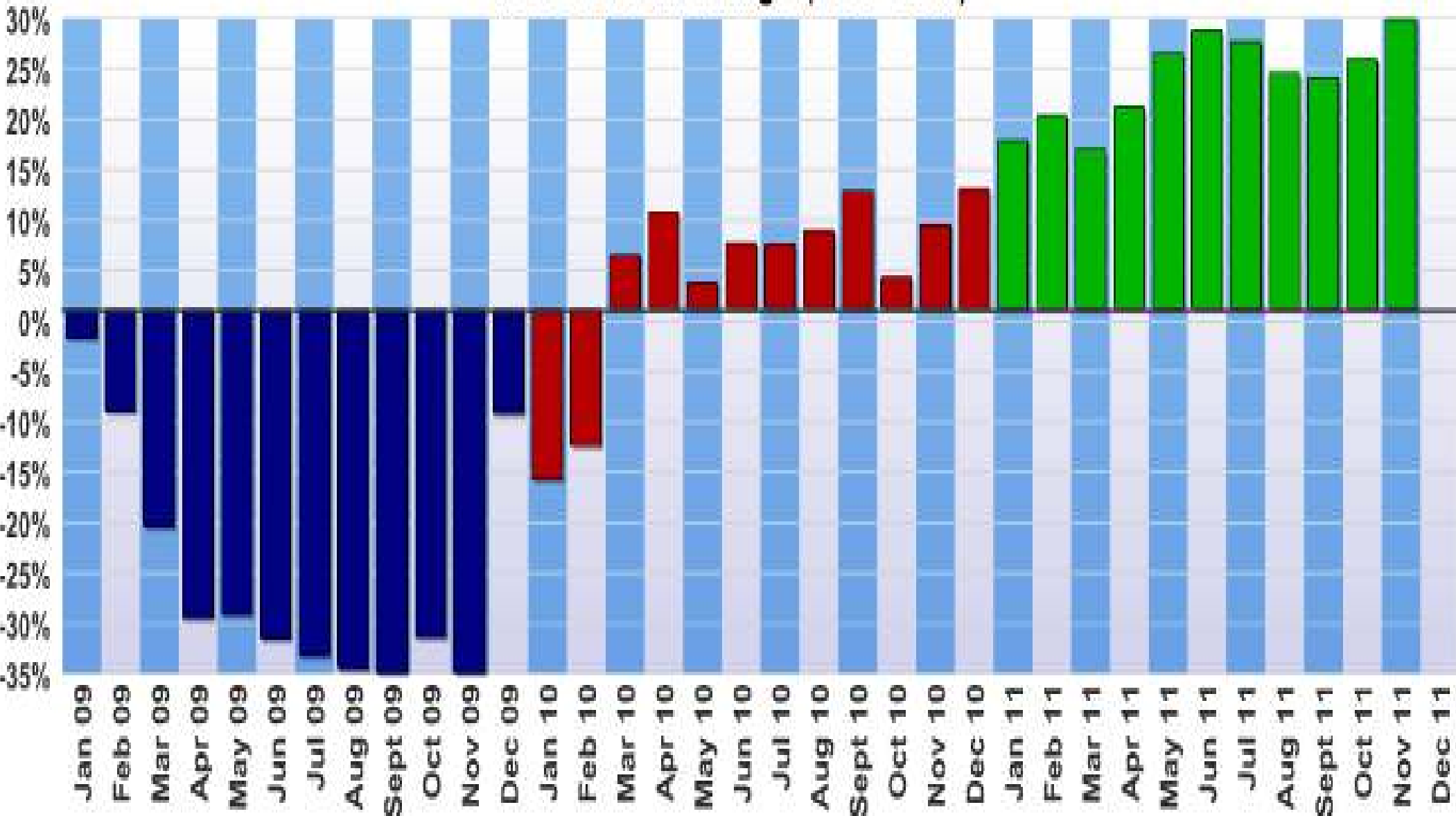
Natural Gas Pipeline US Imports from Canada



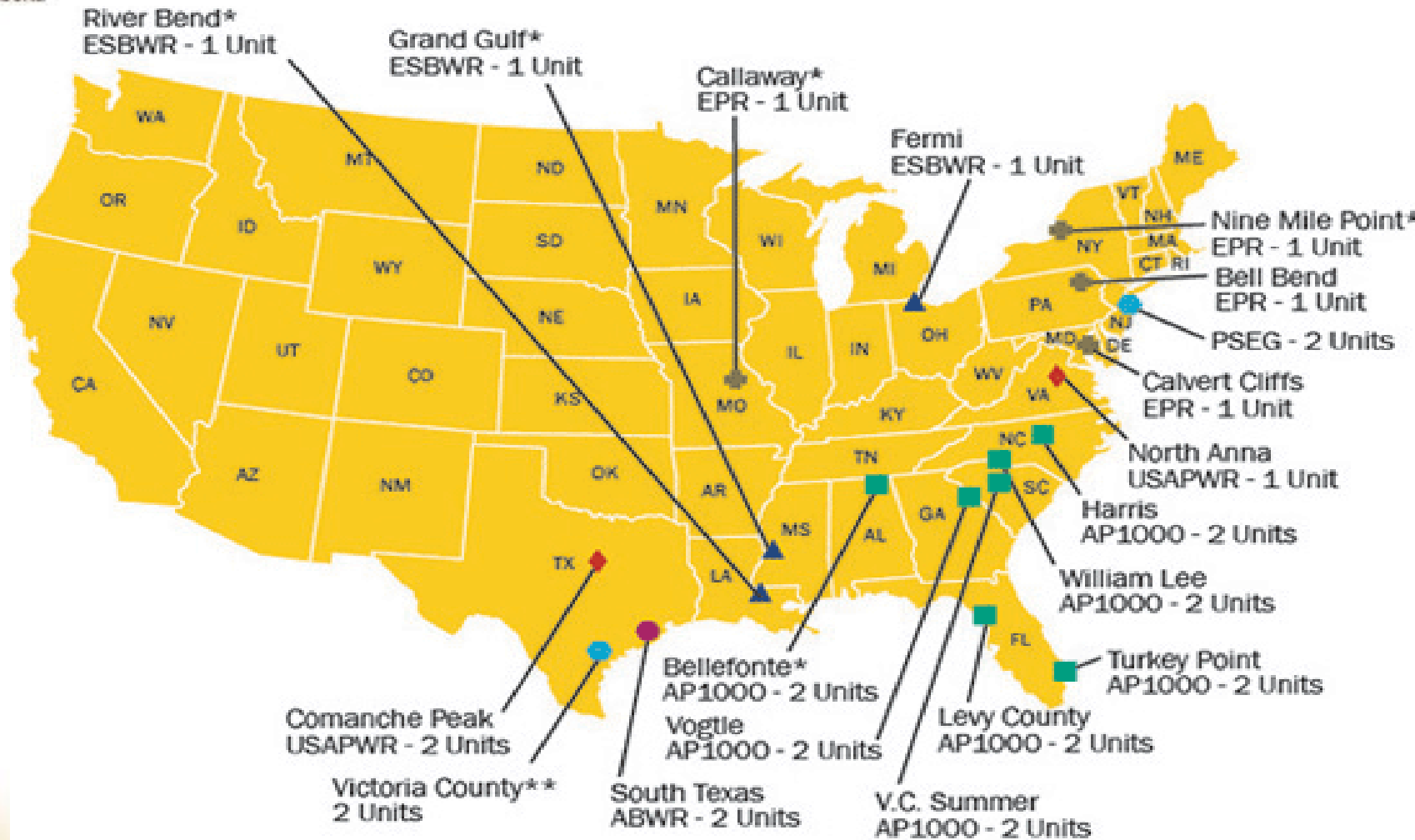


US Industrial Construction Spending

Year over Year Change (2009 - 2011)



US Planned Nuclear Projects

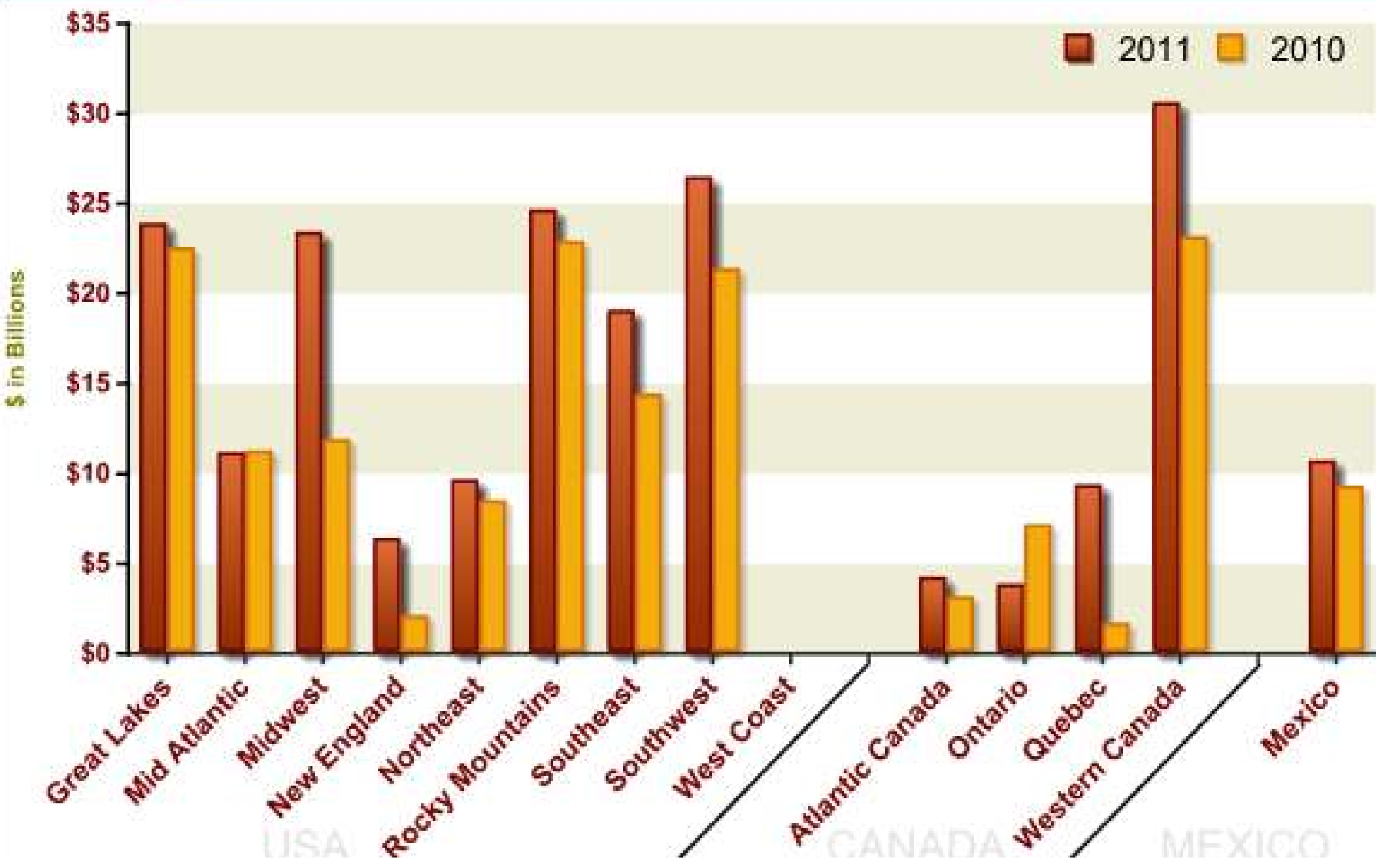


*Review Suspended by Applicant

** COL Application Amended by Applicant to ESP on 03/25/2010

North American Industrial Project Spending - November

Comparing 2010 to 2011



Planned 2012 Metals & Minerals Industry Projects in U.S. & Canada

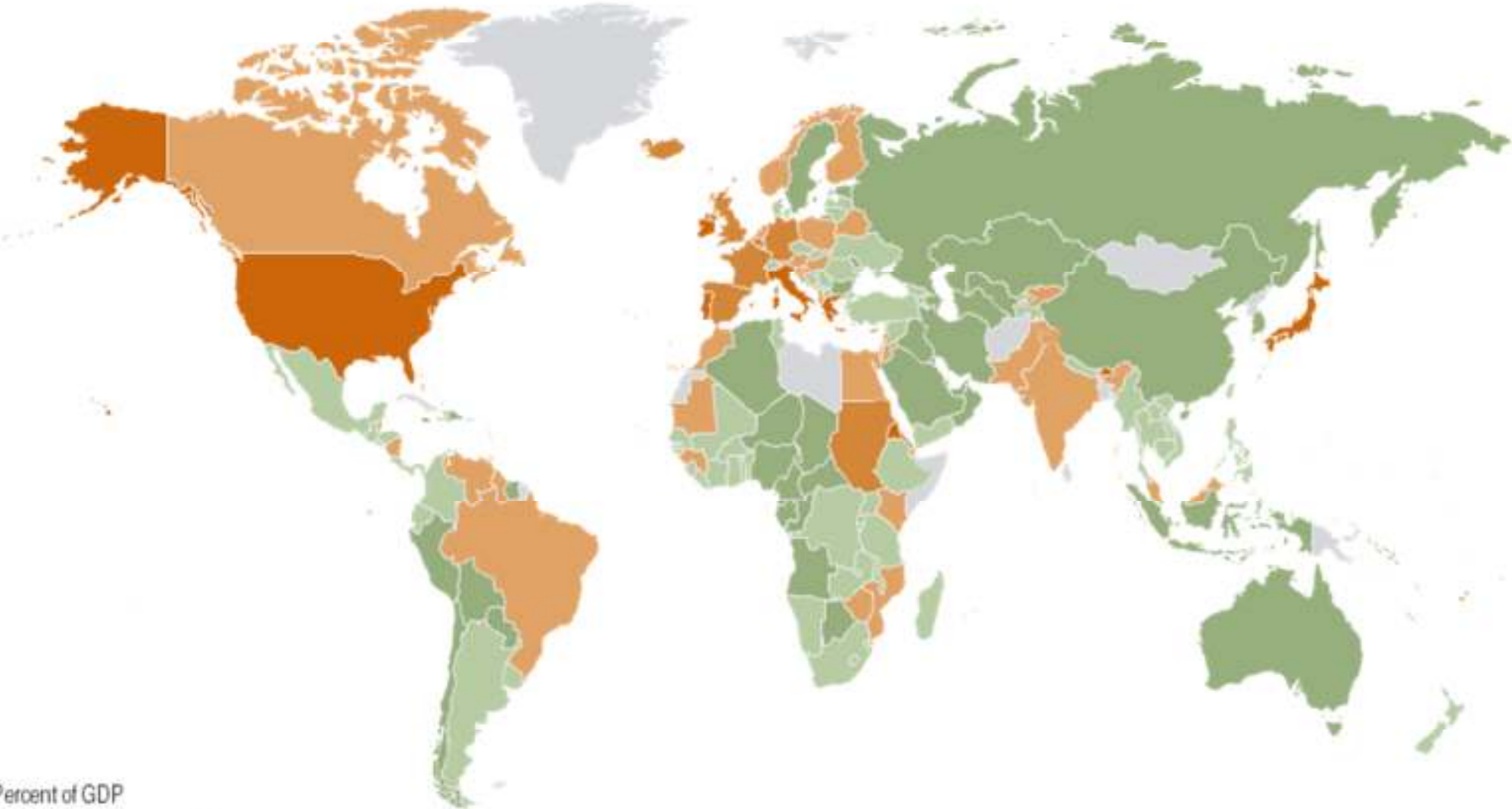
Based on project information in Industrial Info's North American Project Database



IMF Data Mapper®

General government gross debt (2016)

Source: World Economic Outlook (September 2011)



- Percent of GDP
- 100% or more
 - 75% - 100%
 - 50% - 75%
 - 25% - 50%
 - Less than 25%
 - no data



Workforce Development Committee

Best Practices XX Conference

May 15 – 16, 2012

Work Force Development Committee





Doom & Gloom in Alberta?

A lack of skilled trades people will impair the delivery of projects, impact our ability to maintain existing facilities and constrain our provincial and national economic performance.





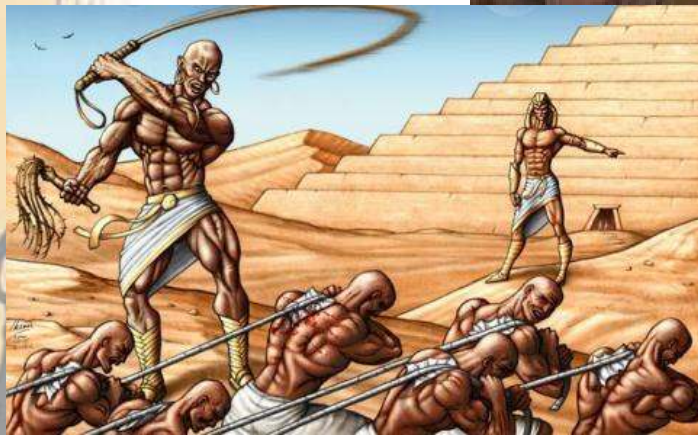
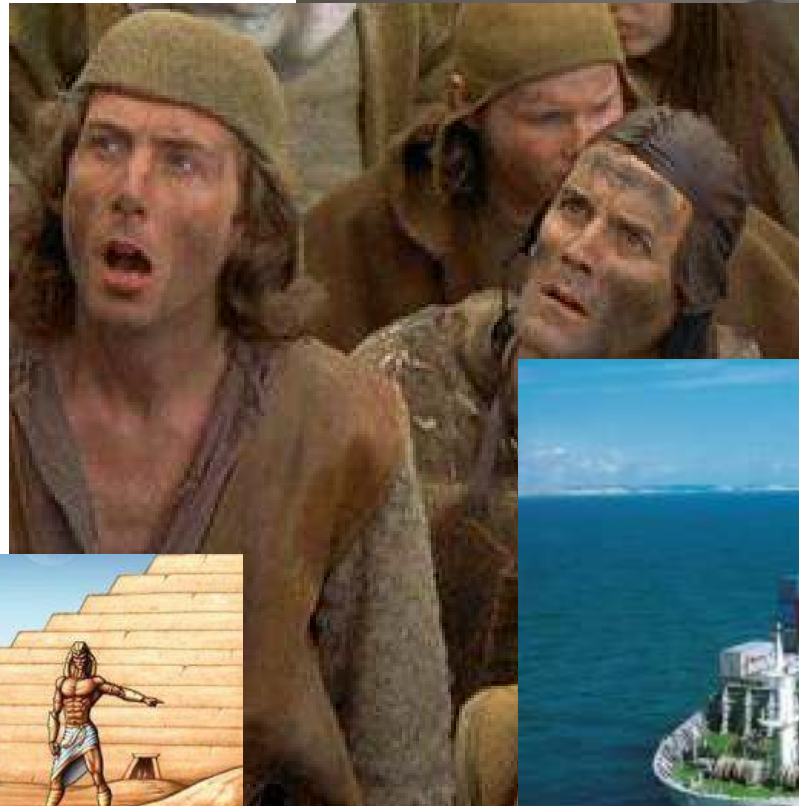
Doom & Gloom in Alberta!

Auuuuuuuuugh!!!!





What to do, What to DO?





What to do, What to DO?





WFD Committee Vision

Ensure that the construction industry has the access to a workforce with:

the right *skills*

...the right *mix*

...at the *right time*

...in the *right numbers*
(supply = demand)



WFD Committee Focus

Work Force Development Committee

Skill Development

- Supervisor Training and Qualifications
- Enhance Journeyman and Apprentice Skills

Attraction & Retention

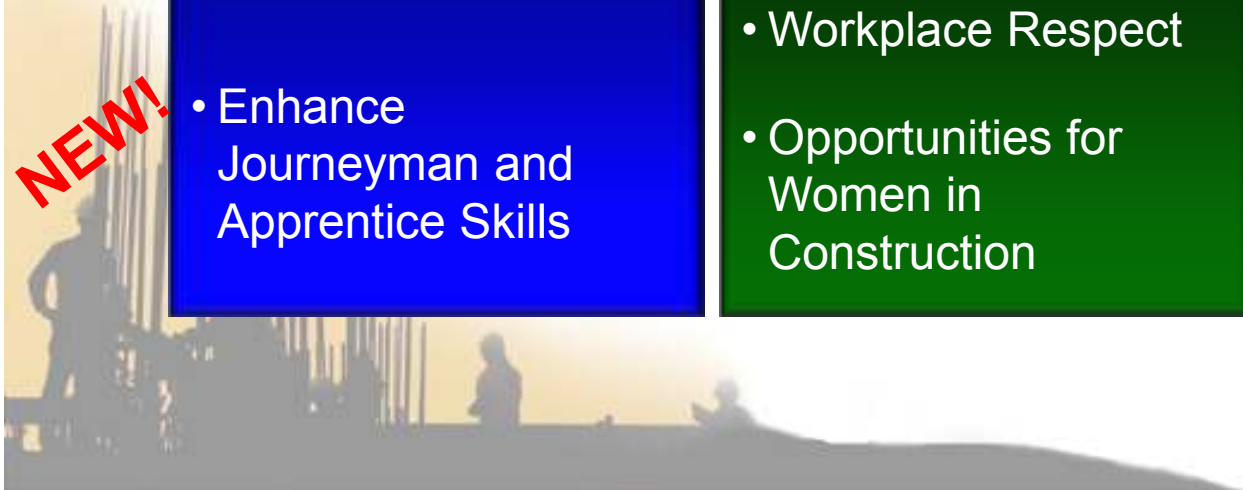
- Work Force Forecasting / Labour Market Info
- Workplace Respect
- Opportunities for Women in Construction

Immigration

- Federal and provincial government policy review

NEW!

NEW!





Skill Development

Supervisory Training and Qualifications

Skill Development

- Supervisor Training and Qualifications
- Enhance Journeyman and Apprentice Skills **NEW!**

- **Promote and encourage the adoption of COAA best practices**
 - ➔ Job Descriptions
 - ➔ Supervisory Development Tool
 - ➔ ICCS Designation
- **Find everything you need at fuelyourcareer.ca**





Skill Development

Supervisory Training and Qualifications

Skill Development

- Supervisor Training and Qualifications
- Enhance Journeyman and Apprentice Skills **NEW!**

Peer Panel Presentation

- ☺ **How industry is implementing the ICCS designation**
- ☺ **Supervisory Development Tool – going forward as we move forward . . .**



Skill Development

- Supervisor Training and Qualifications
- Enhance Journeyman and Apprentice Skills **NEW!**



Skill Development

Enhance Journeyman and Apprentice Skills

Improve safety, effectiveness, and efficiency of our workforce

Looking for volunteers!

Concentrate on increasing the soft and hard skills throughout the lifecycle of a person working in the trades

Focus on enhancing the skills of individuals from apprentice to pre-supervisor status.



Attraction & Retention

Work Force Forecasting / Labour Market Info

Herb's Up Next!



Attraction Retention

- Work Force Forecasting / Labour Market Info
- Workplace Respect
- Opportunities for Women in Construction



Attraction & Retention

Workforce Respect

Respectful workplaces enjoy improved employee retention & absenteeism rates

Respectful workplaces give employers a competitive advantage in attracting and retaining top talent.



2011 revised
Workplace Respect Toolkit©

2011 revised
Workplace Respect Handbook





Attraction & Retention

Workforce Respect

Ongoing Workplace Respect Training

- **Awareness Workshop**
- **Implementation Workshop**



Attraction Retention

- Work Force Forecasting / Labour Market Info
- Workplace Respect
- Opportunities for Women in Construction



Attraction Retention Opportunities for Women in Construction

SSSSHHHHHHHHHHHHHHHHH! HHHHHHH!

A secret, untapped market in Canada:

WOMEN

WFD is partnering with *Women Building Futures* to promote women's participation in construction trades

Attraction Retention

- Work Force Forecasting / Labour Market Info
- Workplace Respect
- Opportunities for Women in Construction





Immigration

NEW!

Immigration

- **Federal and provincial government policy review**



WFD Committee Focus

Work Force Development Committee

Skill Development

- Supervisor Training and Qualifications
- Enhance Journeyman and Apprentice Skills

Attraction & Retention

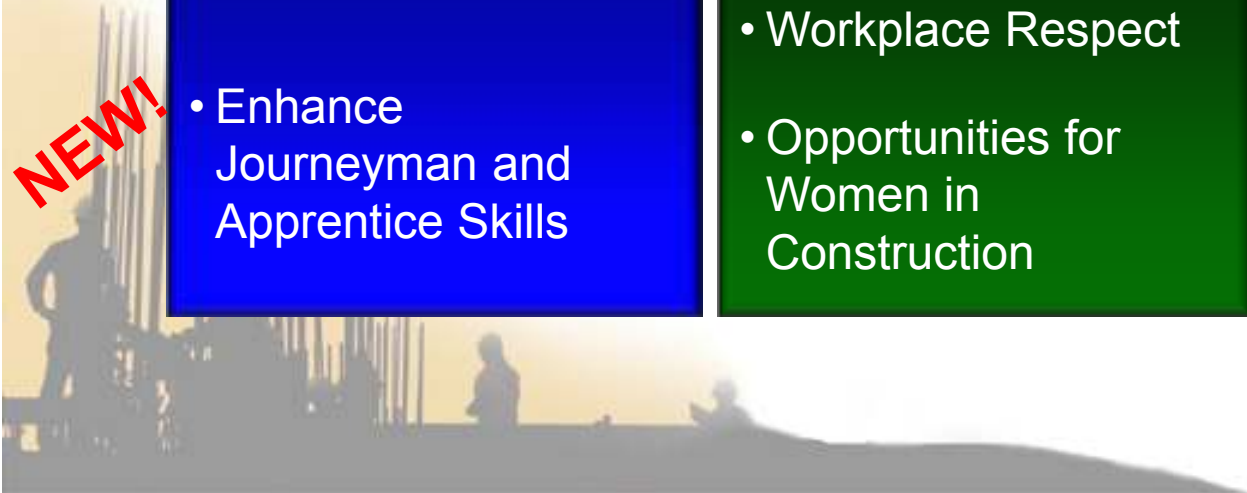
- Work Force Forecasting / Labour Market Info
- Workplace Respect
- Opportunities for Women in Construction

Immigration

- Federal and provincial government policy review

NEW!

NEW!



Fitness-to-Work Testing

What is Fit-for-Duty Testing

A Fit-for-Duty test is a series of medical assessments and physical testing stations designed to match a candidate's musculoskeletal abilities with the physical demands of the job they are applying for. Fit-for-Duty testing provides an employer a recommendation to hire and, if applicable, provides them with a comprehensive report of a candidate's medical and/or physical limitations, along with potential workplace restrictions and/or accommodations based on the job's PDA.

A Fit-for-Duty test attempts to place each candidate in the job best-suited to their abilities.

Why Should I Fit-for-Duty Test

Worker's Compensation Board (WCB) reported 1,307 lost-time claims in Alberta's drilling industry in 2006, costing the industry over \$3.8M.

(WCB Industry Synopsis, Drilling of Oil and Gas Wells, pg. 2)

In 2005, many Canadian drilling companies informally adopted a standardized, industry-wide Fit-for-Duty pre-employment testing protocol.

In 2011, the cost of claims to Alberta's drilling industry had decreased 78%, to \$420,000. (WCB Industry Synopsis, Drilling of Oil and Gas Wells pg. 2)

Why Should I Fit-for-Duty Test

SureHire recently completed a study analyzing the medical and physical testing data of 2000 trade workers (CLAC & Building Trades) from 2010-2012 who participated in the SureHire pre-employment Fit-for-Duty protocol.

The following results represent an average trade worker presently working in an industrial setting in Canada.

Study Results Question #1

What is the average age of the 2000 workers?

1. 34.5 years
2. 49.6 years
3. 41.3 years
4. 28.6 years

Study Results Question #2

What percentage of workers presented with high blood pressure (> 149/90)? *After 3 attempts

1. 15%
2. 31%
3. 68%
4. 50%

Study Results Question #3

What percentage of the 2000 workers weighed over 300 lbs?

1. 1.65%
2. 3.5%
3. 2.98%
4. 7.11%

Study Results Question #4

What % of the 2000 workers came to the testing with current unresolved musculoskeletal injuries?

1. 2.7%
2. 31.4%
3. 12.9%
4. 8.2%

Study Results Question #5

How many individuals disclosed that they were scheduled to undergo a musculoskeletal surgery in the upcoming 12 months?

1. 17
2. 24
3. 6
4. 39

Study Results Question #6

What % of workers were unable to meet the physical demands of the position they applied for?

1. 7.2%
2. 13.1%
3. 3.9%
4. 18.0%

Study Results Question #7

What % of workers disclosed currently taking *Pain Medication, Muscle Relaxants, Nerve Pain Blockers or Anti-Inflammatories* at the time of testing?

1. 2.3
2. 5.4
3. 4.6
4. 6.1

Study Results Question #8

Out of the 2000 workers, what percentage received an initial stoppage?

1. 0.5%
2. 14.7%
3. 4.9 %
4. 7.2%

Study Results Question #9

Out of the 2000 workers, what percentage were unable to receive full site access?

1. 0.5%
2. 14.7%
3. 4.9 %
4. 7.2%

Live From the Front Line

Age: 51

Height: 5'10"

Weight: 160 pounds

- Candidate was stopped on the second set of the floor-waist lift due to insufficient heart rate recovery after one minute of rest.
- Candidates heart rate actually increased from 183 to 188 bpm after one minute of rest. Client was issued Referral #5 and requested to secure physician clearance.
- Candidate re-tested May 2012 and reported that he had heart valve surgery in December 2011 due to the results from the initial fitness to work

Components of a Valid Fit-for-Duty Test

- ❑ Testing criteria is based on a job Physical Demands Analysis (PDA)
- ❑ A physiotherapist's musculoskeletal assessment is best fit
- ❑ Comprehensive critical strength and mobility testing is required for accurate results
- ❑ Testing protocol follows a national standard

Components of a Valid Fit-for-Duty Test

- Hiring recommendations are determined by evidence-based practice
- Level 1-5 results grading system identifies candidate capabilities
- Additional/Follow-up testing recommendations are provided for each candidate



Critical Strength & Mobility Video

<http://www.youtube.com/watch?v=KiLBFxGlgVk>

Please don't make fun of my skinny legs

Alcohol Testing: Breath, Saliva and
FIT-FOR-DUTY TESTING Sp

Full Body Musculoskeletal Assessment Video

<http://www.youtube.com/watch?v=Z8NCvkygrZc>

Implementing a Fit-for-Duty Program

- ❑ Complete a Physical Demands Analysis (PDA) for each work position onsite
- ❑ Find a Fit-for-Duty company who meets your specific requirements
- ❑ Inform your work force that the testing will not affect their current position
- ❑ Update your hiring package to reflect that your offer of employment is based on the results of a Fit-for-Duty test, Drug and Alcohol test, etc.
- ❑ Secure information sessions with your Fit-for-Duty company to present to the team (HR, HSE etc) on the specifics of the program

Frequently Asked Questions

- 1. After implementing a Fit-for-Duty testing program, am I able to test my current employees?**
- 2. If I test a candidate at a specific PDA level, am I able to transfer them to different job positions?**
- 3. Am I obligated to hire applicants that have limitations/restrictions based on the PDA of the job they applied for?**
- 4. What is the average length of time to complete a Fit-for-Duty test?**

Frequently Asked Questions

5. What is the Fit-for-Duty testing company able to provide to the employer in terms of the disclosed applicant information?
6. What information is available to the employer if a tested applicant sustains an injury/incident?
7. What are the critical strength weight levels based on?
8. Where in the hiring process does Fit-for-Duty occur?
9. What is a Physical Demands Analysis (PDA), and how is it completed?

Alcohol Testing: Breath, Saliva and
FIT-FOR-DUTY TESTING Sp

Require Additional Information?

Kyle Powell
SureHire Occupational Testing
kyle.powell@surehire.ca
780-955-2442
1-866-944-HIRE (4473)

Fitness-for-Work Testing Best Practice

Presented by: SureHire Occupational Testing Services



Experts in Occupational Testing

Fitness-for-Work Testing

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Who is working for you?

The dating scene, like hiring, is one filled with infinite unknowns. Until you invest time with a new prospect, you cannot know whether a person will be a short-term relationship or potential life partner. In the initial phase, you get to know his or her history and habits. If you are at risk of disliking their spending, eating, or work habits, a break-up might make the most sense.

Similarly, when a worker steps onto your work site, you know nothing about him or her. The difference: it is much more difficult to break up once a candidate is hired. The moment you hire, legally, the candidate is your responsibility.

If previous or current injuries, medical conditions and/or physical limitations prevent an employee from safely performing the physical demands of their job, simply terminating their employment becomes a human rights infringement.

In the last ten years, occupational testing, and more specifically, Fit-for-Duty testing, has been adopted as a best practice in certain industries, including drilling of oil and gas wells, giving companies a competitive advantage in upholding safety records, reducing incidents and WCB claims, maximizing productivity, and making them the employer of choice.

Fit-for-Duty is not a testing process to tell an employer who they should turn away; instead it empowers employers to make an educated decision based on a worker's medical & physical capabilities and limitations.

What is a Fit-for-Duty test?

A Fit-for-Duty test is a series of medical assessments and physical testing stations designed to match a candidate's musculoskeletal abilities with the physical demands of the job they are applying for. Fit-for-Duty testing gives an employer a recommendation to hire and, if applicable, provides them with a comprehensive report of a candidate's medical and/or physical limitations, along with potential workplace restrictions and/or accommodations based on the job's PDA.

A Fit-for-Duty test attempts to place each candidate in the job best-suited to their abilities to promote a safe and productive work environment for themselves and others working with them.

Worker's Compensation Board (WCB) reported 1,307 lost-time claims in Alberta's drilling industry in 2006, costing the industry over \$3.8M. (WCB Industry Synopsis, Drilling and Gas Wells, pg. 2)

In 2005, many Canadian drilling companies adopted a standardized, industry-wide Fit-for-Duty pre-employment testing protocol, leading to a decreased number of lost-time claims.

In 2011, the cost of claims to Alberta's drilling industry had decreased 78%, to \$420,000. (WCB Industry Synopsis, Drilling of Oil and Gas Wells pg. 2)

Why should I do Fit-for-Duty testing?

In 2012, a study completed by SureHire Occupational Testing, analyzed the medical and physical testing data of 2000 trade workers from 2010-2012 who participated in pre-employment Fit-for-Duty testing. The results below represent the average trade worker presently working in an industrial setting in Canada.

- **2000 trade workers tested between July 24, 2009 and March 13, 2012** participated in a SureHire Fit-for-Duty testing protocol
 - Musculoskeletal/Medical Pass Rate: **92.4% (1848)**
 - Critical Strength & Mobility Testing Pass Rate: **92.8% (1856)**
 - Musculoskeletal/Medical Stoppage Rate: **7.6% (152)**
 - Critical Strength & Mobility Testing Stoppage Rate: **7.2% (144)**

- **Of the 152 Musculoskeletal/Medical Stoppages:**
 - **4% (80)** of the **7.6% (144)** received written clearance from a physician for Blood Pressure
 - **2.9% (58)** had other documents reviewed and were permitted to continue with the Critical Strength & Mobility testing
 - The **2.9% (58)** consisted of the workers requiring clearance after reviewing diagnostic imaging, completion of a rehab program and review of medical professional discharge report
 - **0.7% (14)** were unable to continue with the physical testing

- **Of the 144 Critical Strength & Mobility Stoppages:**
 - **0.5% (10)** were unable to safely complete a three minute stepping exercise
 - **4.0% (80)** were stopped during one of the five lifting stations
 - **2.7% (54)** were stopped on the low back endurance test

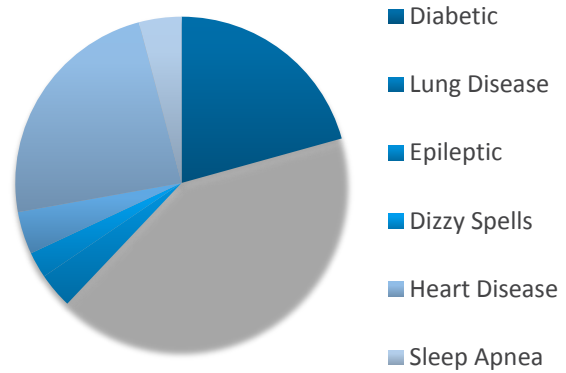
- **Age & Gender:**
 - **Average Age:** **41.3 years**
 - **Male:** **92.7% (1854)**
 - **Female:** **7.3% (146)**

- **Average Weight:** **201 lbs**
 - **Maximum Weight:** **418 lbs**
 - **Minimum Weight:** **98 lbs**
 - **300 lbs+:** **1.65% (33) weighed 300 lbs or greater**

- **Pulse Oximetry (O2 Saturation)**
 - **2.1% (42)** scored an O2 reading of 90-93% at rest
 - **0.3% (6)** scored an O2 reading of 89 or lower at rest

- **Acute (current) Injuries**
 - **8.2% (164)** presented with current unresolved musculoskeletal injuries
 - Of which, **5.0% (100)** workers did not fully disclose these injuries but were identified during the musculoskeletal test or during the physical testing

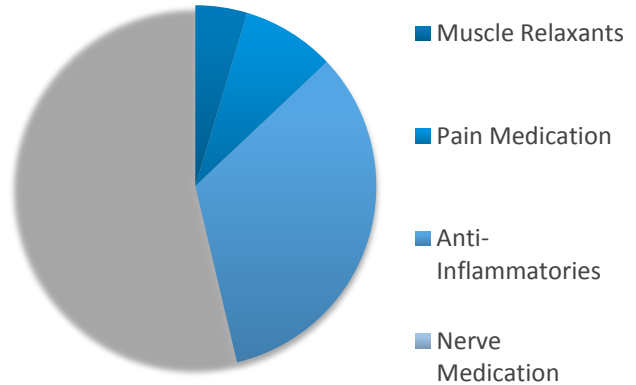
- **Medical Conditions**
 - **3.25% (65)** disclosed as being diabetic
 - **6.5% (130)** disclosed as having current lung issues (e.g. COPD, asthma, emphysema)
 - **0.54% (9)** disclosed being epileptic
 - **0.4% (8)** disclosed having fainting/dizzy spells
 - **0.65% (13)** disclosed current sleep apnea
 - **3.72% (75)** disclosed previous heart surgery, heart disease, stroke



- **Worker’s Compensation Claims**
 - **18.4% (368)** disclosed previous WCB claims
 - Of the **16.3% (60)** that were reviewed, **86.7% (52)** were confirmed closed, **13.3% (8)** were still open
- **Scheduled Musculoskeletal Surgeries**
 - **0.85% (17)** are scheduled for an upcoming musculoskeletal surgery in the upcoming 12 months
- **Low Back**
 - **3.17% (63)** disclosed chronic low back pain
 - **0.52% (10)** were identified through assessment with low back pain
- **Repetitive Strain Injuries**
 - **1.66% (33)** disclosed current or previous repetitive strain injuries
 - **0.78% (16)** were identified through assessment with current repetitive strain injury
- **Blood Pressure:**
 - **10% (200)** disclosed high blood pressure (140/90 or higher)
 - **50% (1000)** were classified as high blood pressure of which **6.5% (130)** were stopped and requested to secure written medical clearance from a physician (meaning after three attempts the lowest reading was 160/100)

• **Medications**

- **53.70%** nerve medication
- **4.63%** muscle relaxants
- **8.33%** pain medications
- **33.33%** anti-inflammatories



A valuable Fit-for-Duty test informs an employer about a candidate’s physical capabilities and limitations to be able to reduce work site incidents and WCB claims, and optimize productivity. Fit-for-Duty is not a candidate elimination process, but, rather, a screening that enables employers to place the right candidate in the right job.

For example, an employee with a torn rotator cuff would receive a work site recommendation that may include restricted prolonged overhead work. If they have a torn knee meniscus, another worker can be assigned to the duties that require scaling scaffolding or repeated use of stairs.

By identifying musculoskeletal injuries, medical conditions, and critical strength and physical capabilities, employers can:

1. Decrease safety incidents and WCB claims on your work site.

Creating a safe working environment is an ongoing vision for all upstream oil and gas industries.

Over the last five years, the lost-time claim rate for drilling of oil and gas wells decreased by 33.5%-- Employment Alberta

2. Increase employee retention.

If the well-being of already existing employees is compromised by someone unqualified or injured joining the team, you take the risk of losing the employees you are already have. Also, safety incidences on site lower team morale.

A major Canadian drilling company reported that after implementing a Fit-for-Duty testing protocol, their 90 day retention rate increased 17% in one year. --SureHire

3. Optimize productivity.

Work in the upstream oil and gas sector is rewarding, as well as challenging and dangerous. In Alberta's upstream and oil and gas industries, the average number of days lost per lost-time claim in 2010 was 35, compared to an average 23 days per claim for all other sectors in the province (Employment Alberta).

Costs incurred in a lost-time claim are numerous and on the rise. When a safety incident occurs, employers deal with lost work hours, costs to find and train new hires, and, in some cases, replace equipment. In Alberta, in 2006, the average claim cost to an employer was \$5500. By 2011, that average cost increased by 68%, \$8,100 (Employment Alberta).

Fit-for-Duty testing is not only an informed way to put the right candidates in the right job from day one, but, ultimately, gives employers a competitive advantage to optimize productivity and help bottom line.

4. Place people in a job where they can succeed.

You would not ask a first-year apprentice to do an advanced journeyman's task. Similarly, you would not expect someone with a back injury to lift 50 pounds. A Physical Demands Analysis, or PDA, positions employees for successful performance.

In 2010, 44.5% of lost-time claims were from workers under the age of 35 years. This same group also accounted for over half of the disabling injury claims. --*Employment Alberta*

It might be assumed that the younger population is more fit, and less likely to sustain injuries; however, even placing a younger worker in the wrong position leads to lost-time claims and lost productivity.

5. Independent third party recommendation.

Recommendations resulting from Fit-for-Duty testing take pressure off superintendents and project supervisors to enforce candidate activity limitations on site, as restriction/accommodation recommendations have been determined by third-party medical professionals.

6. Become a contractor of choice.

Setting the stage for a safe and productive work site starts with hiring people who are capable of fulfilling their duties safely, without endangering themselves or others. A contractor's safety record can steer clients away if it is not reputable. Contractors who make Fit-for-Duty testing a best practice offer a competitive advantage when bidding on work because they have reduced safety incidences, higher productivity, and find the best of the best employees to complete their projects.

Attributes of a valuable Fit-for-Duty test

“In most sub-sectors of the oil and gas industry, including upstream oil and gas, oilfield maintenance and construction, and drilling of oil and gas wells, lost-time claim rates decreased between 2006 and 2010.”--
Employment Alberta

□ **A Physiotherapist’s musculoskeletal assessment is best fit**

Physiotherapists are movement specialists, trained to perform assessments of muscles, bones, joints, ligaments, and tendons (soft tissue). A physiotherapist’s skill set is best-suited to assess a worker’s musculoskeletal condition based on a PDA before they start working on your job site.

□ **Comprehensive critical strength and mobility testing is required for accurate results**

Traditional Fit-for-Duty testing typically consists of push-ups and sit-ups to determine a candidate’s readiness to work; however, these tests do not accurately reflect or reproduce job site requirements. Standardized job-specific lifts, carries, and movements provide a valid basis for physical testing.

□ **Testing criteria is based on a job’s Physical Demands Analysis (PDA)**

A Physical Demands Analysis, or PDA, determines standardized job-specific duties. Before testing begins, the critical strength and mobility requirements for each type of job on site are determined, assessed by a physiotherapist or kinesiologist, and applied accordingly in Fit-for-Duty testing.

□ **Testing protocol follows a national standard**

Recruiting workers often spans a large geographic region. A Fit-for-Duty testing program should use standardized training and testing equipment and protocols across a testing network to meet human rights requirements.

□ **Results are processed in a centralized location**

When workers are tested across a geographic region, results reviewed by a team in a central location eliminates biases and ensures inter-tester reliability is high. A team of assessors with an in-depth understanding of PDAs, musculoskeletal assessments, and medical conditions ensures Fit-for-Duty testing results will meet job requirements.

□ **Hiring recommendations are determined by evidence-based practice**

The use of surgical timelines, stages of tissue healing, and medical conditions to determine fitness for duty should be based on peer-reviewed, evidence-based practice. That is to say, Fit-for-Duty results and accompanying recommendations are not the opinion of an independent medical professional, but based on research gathered through data collection and past cases. This ensures standardization of Fit-for-Duty outcomes, and eliminates inter-tester biases and differing levels of knowledge and experience.

□ Level 1-5 results grading system identifies candidate capabilities

Fit-for-Duty testing is not a simple yes or no result. Based on the physical demands of a job, a candidate may be able to safely and productively complete certain components of the position. A Fit-for-Duty testing protocol identifies medical and/or physical limitations of a candidate, providing an employer with a recommended level at which the candidate can work safely and accommodation options based on the testing results and the PDA.

□ Additional/Follow-up testing recommendations are provided for each candidate

A Fit-for-Duty program that does not assign a full pass should inform a candidate of reason(s) for their grading level, and what steps to take to change the original assessment results. The Fit-for-Duty protocol should have systems in place to ensure 100% of candidates are informed of why restrictions were placed on them, and what course of action they can take to remove those conditions (if any).

Making Fit-for-Duty a best practice

A proactive approach to hiring and accommodating a candidate's physical capabilities and/or limitations wins companies decreased safety incidents and maintains a healthy productive team and work site morale, where everyone is committed to creating a safe working environment.

Fit-for-Duty testing is one way of ensuring that the right people are on your work site from day one.

Steps to make Fit-for-Duty testing a best practice for your company are:

- Complete a Physical Demands Analysis (PDA) for each position on your work site
- Find a Fit-for-Duty company who can meet your needs
- Inform your work force Fit-for-Duty testing will not affect their current position
- Update your hiring package to reflect your employment offering is based on the results of a Fit-for-Duty test, Drug and Alcohol test, etc.
- Secure information sessions with your Fit-for-Duty company to present to the rest of your team to explain the human rights aspect, how results are interpreted, etc.
- Implement your best practice

Frequently Asked Questions

1. After implementing a Fit-for-Duty testing program, am I able to test my current employees?

Fit-for-Duty testing is primarily meant for potential job candidates as an employer is attempting to ascertain whether that candidate will be successful in the job that they are applying for. However, if an existing employee quits their job and returns at a later date (e.g. layoff due to seasonal work), an employer is able to have them complete the Fit-for-Duty test upon their return. Additionally, if a current employee desires to move to a different role within the company that has physical demands that are different from their current role, the employer can have them complete the Fit-for-Duty test to determine their match to the new position. If they are not successful moving into the new role, the employer must ensure that the worker is able to return to their current/previous position.

2. If I test a candidate at a specific PDA level, am I able to transfer them to different job positions?

A worker who has successfully completed a Fit-for-Duty test is able to transfer to other jobs within a company as long as the physical job demands of the new position are equal to or less intense than the current position. If the new position contains job demands that are greater than the current position, it is recommended that the worker complete a new Fit-for-Duty test.

3. Am I obligated to hire applicants that have limitations/restrictions based on the PDA of the job they applied for?

No, if there is no ability to accommodate the job duties so that the worker can safely complete the key job tasks without causing undue hardship to the company, then the company is not obligated to offer employment to the candidate.

As an example, if an electrician has a partial thickness tear of his/her rotator cuff, the accommodation would restrict overhead work. If the job position required prolonged overhead work and the environment could not be altered to accommodate the candidate's physical limitations, another candidate would be recommended to fill that position.

4. What is the average length of time to complete a Fit-for-Duty test?

Sixty minutes is the average length of time to complete a comprehensive Fit-for-Duty test. A full body musculoskeletal evaluation ranges anywhere from 20-30 minutes and the critical strength and mobility testing lasts 30 minutes. This can be extended if the candidate has high blood pressure, a laundry list of pre-existing injuries that need to be assessed and cleared by the physiotherapist, or a medical condition that needs to be discussed with a physician.

5. What is the Fit-for-Duty testing company able to provide to the employer in terms of the disclosed applicant information?

Information disclosed by a candidate during the Fit-for-Duty testing is available to the employer to be used in the hiring process. The safeguarding of the information is the responsibility of the employer and their Fit-for-Duty testing company, similar to life insurance company protocol.

6. What information is available to the employer if a tested applicant sustains an injury/incident?

If a candidate completes a Fit-for-Duty test and sustains an injury once they commence work for that employer, the employer has the ability to request the original paperwork from their Fit-for-Duty testing company. The paperwork can be used to determine if the current injury is based on a pre-existing condition and a request for cost relief from WCB is an available option for the employer.

7. What are the critical strength weight levels based on?

The weights that a candidate lifts during a Fit-for-Duty test are based on a job's Physical Demands Analysis (PDA) that has been completed by a certified assessor. A candidate cannot be asked to lift weights more than what the job demands, and it is not valid to lift weights that are less than what is required.

The weights used in a Fit-for-Duty test need to confirm that the candidate has the necessary strength and conditioning to safely work in a job with that specific weight expectation.

8. Where in the hiring process does Fit-for-Duty occur?

In a typical pre-hire testing protocol, the Fit-for-Duty testing follows the successful completion of the drug and alcohol test, and before the baseline audiometric test. Often if the candidate is not successful with the drug and/or alcohol test the Fit-for-Duty test is not completed.

9. What is a Physical Demands Analysis (PDA), and how is it completed?

A Physical Demands Analysis is a systematic procedure to quantify and evaluate all of the physical demands and environmental components of essential and non-essential tasks of a job. PDA is a process of establishing what a job is. A PDA is the "cornerstone" of the analytical process used to determine compatibility of a candidate to do a specific job.

A PDA is a process of breaking up a job in order to examine its individual tasks. When conducting a Physical Demands Analysis, investigators will objectively quantify and evaluate the environmental conditions, use of machines, equipment, tools, work aids, and physical demands of each task. To quantify the physical and environmental demands of the job, direct and indirect observation techniques are utilized.

Resources

Occupational Injuries and Diseases in Alberta. Employment Alberta. Retrieved from <http://employment.alberta.ca/documents/OID-upstream-oil-and-gas.pdf>, March 2012

WCB Provincial Synopsis, Alberta--All Industries and All Accounts. WCB Injury Stats 2006-2011. Page 1-8.

WCB Industry Synopsis, Drilling of Oil & Gas Wells. WCB Injury Costs Drilling 2006-2011. Page 1-8.

For Further Information Please Contact:

Kyle Powell, President
SureHire Occupational Health Testing

TF: 1.866.944.HIRE (4473)
C: 780.975.1192
E: kyle.powell@surehire.ca
W: www.surehire.ca

	SureHire Fit-for-Duty Protocol	Standard Health Assessment
MEDICAL/MUSCULOSKELETAL		
Ability to assess the musculoskeletal (MSK) integrity of Candidate	YES	NO
Able to identify pre-existing MSK injuries without Candidate disclosure	YES	NO
Ability to identify recurring/degenerative MSK injuries	YES	NO
Candidate performs self-reporting medical questionnaire	YES	YES
Height, weight, blood pressure measurements	YES	YES
Objective grip strength measurement	YES	NO
Assessment of general health	YES	YES
Ability to recommend specific re-test criteria - not just "doctor's clearance"	YES	NO
Uses the Krause Webber Back Questionnaire to assess low back health *(developed in the 1950s for children with Spina Bifida)	NO	YES
Pulse Oximetry/Oxygen Saturation Reading	YES	NO

CRITICAL STRENGTH & MOBILITY (PHYSICAL TESTING)		
Lifting based on physical demands of the job Candidate is applying for	YES	NO
Use of heart rate monitors & O2 saturation monitors during the lifting for cardiovascular safety	YES	NO
4 years post-secondary education of biomechanics & ergonomic assessments (eg. Physio, Kinesiologist, Ex. Therapist)	YES	NO
Perform push-ups and sit-ups to assess critical strength	NO	YES
Standardized lifting boxes, lifting tables, stairs across Canada	YES	NO
Medical/Physical Stoppage Rate	10-12%	<1%



Supervisory and Training Qualifications Subcommittee

Foreman Skills Development Tool





Foreman Skills Development Tool

- A performance management system developed and piloted by the University of Alberta designed to identify individual supervisor performance and monitor overall trends and tendencies within a company, project or organization.



Foreman Skills Development Tool

The Foreman Skills Development Tool can be used by organizations in a number of ways:

1. To provide foremen with feedback on their skills, and to measure improvements over time
2. To identify training and mentoring required for foremen to improve their skills in the core competencies
3. To measure the impact of training or mentoring on the skills of foremen

Foreman Skills Development Tool

4. To provide foremen with the opportunity to gain recognition for their skills based on their assessment
5. To help the organization to identify site-wide or project-wide issues that may be affecting the ability of their foremen to carry out their responsibilities
6. To help in identifying company- or industry-wide areas that require further training or mentoring of foremen
7. To help in the definition of a formal qualification for a Construction Trades Foreman

Foreman Skills Development Tool

How to initiate the process

1. Review the report and the tool – disks available
2. Review the FuelYourCareer website – fuelyourcareer.ca
3. Contact Dr. Robinson Fayek @ U of A
 1. Information session
 2. Summer workshops
 3. Support from ST&Q committee members



Foreman Skills Development Tool

Next Steps

Explore alternate methods of industry integration (possible commercial aspects)

Future workshops



INDUSTRIAL CONSTRUCTION CREW SUPERVISOR (ICCS)

PEER PANEL ON TRI-PARTITE ALLIANCE

COALITION OF THE WILLING

**Supervisor Training &
Qualifications Sub-Committee
Work Force Development**



Peer Panel OBJECTIVE - We have an idea and we need your help to make it better

Purpose:

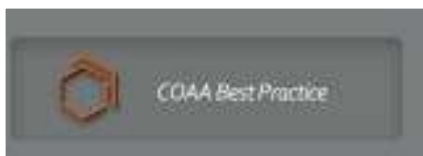
Review an early draft roadmap for an ICCS Tri-Partite Alliance to...

Create early awareness and understanding

Encourage collaboration and discussion - Coalition of the Willing

Objectives:

- Your Feedback — Opportunities, Pinch Points, Unintended Consequences
- Discuss Readiness
 - Implementation in your organization; what are the right targets/timing?
 - What is the right mechanism to engage people



Background – The power of collaboration

Tri-partite Alliances were first discussed at the 2010 Building Trades of Alberta (BTA) conference

- 2011 – Syncrude and Shell successfully used this approach towards Emissions Reduction and Safety Leadership
- 2012 – Shell, Imperial, and Syncrude are moving forward with a new alliance on ICCS - supported by BTA and CLAC
 - We believe:
 - The competency of front level supervision is a key enabler for a safe worksite.
 - The adoption of ICCS certification can help us achieve a vision of a work place where nobody gets hurt.
 - Multi-Stakeholder alliance to improve Safety while improving productivity
 - Alliance is drafting a formal signed agreement with senior executive commitment

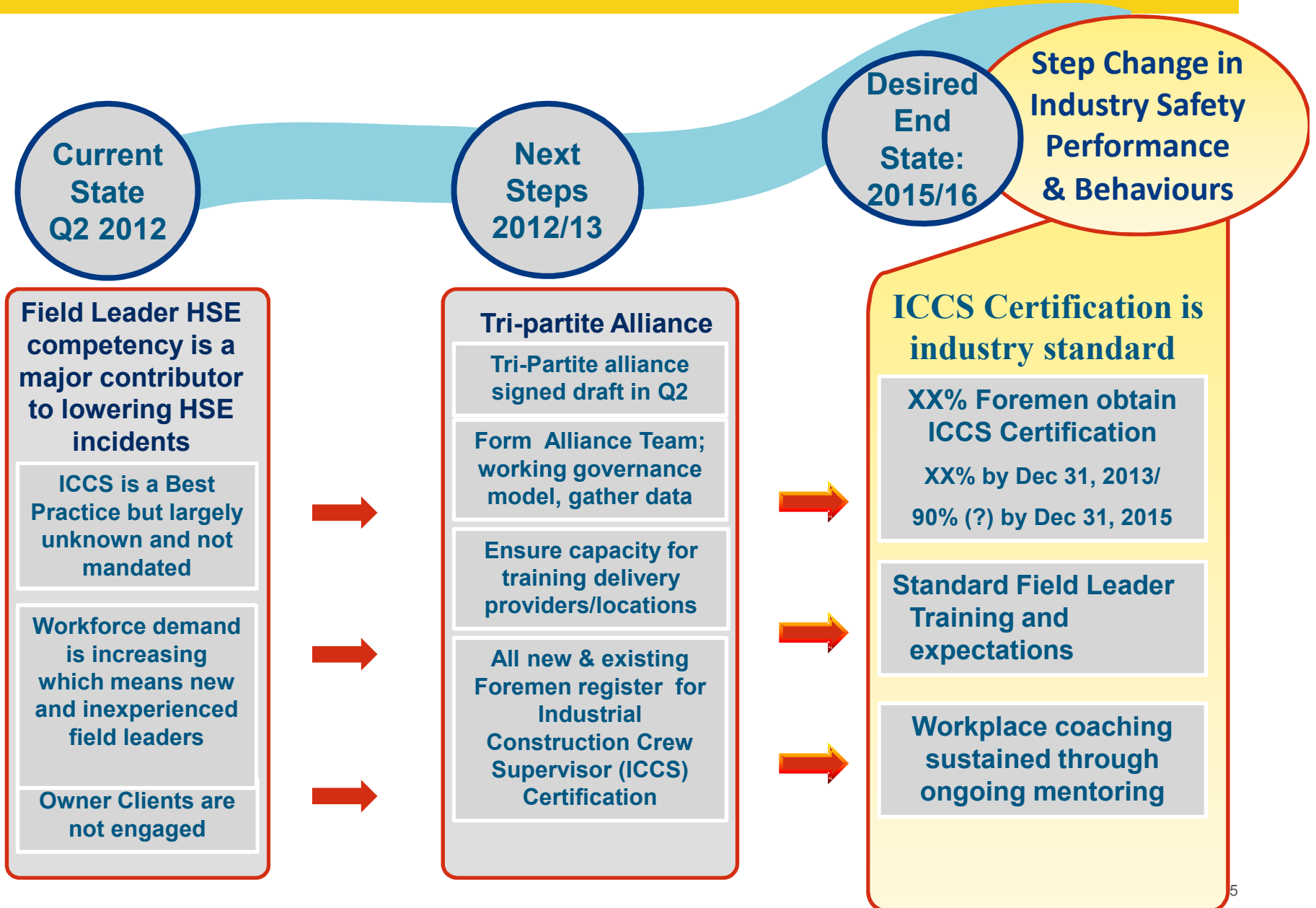


Business Case

- OS/AB Construction/Ops Safety is lagging in global benchmarks
- Mitigate New Worker risk/workforce demand by raising the quality and capacity of field leaders/supervision
- Baby Boomers are retiring – prepare next generation
- Create a Career Path for Front Line Leaders (& others)



ICCS ROADMAP – SHELL/IMPERIAL/BUILDING TRADES



Background



INDUSTRIAL CONSTRUCTION CREW SUPERVISOR (ICCS)

To qualify for an Alberta Occupation Certificate, applicants must :

- Complete one of the following:
 - Better Supervision (approx. 850\$, 48 hours)
 - Supervisor Training Program (Christian Labor Association)
 - Supervisor Training (Merit Contractors Association)
 - CSC e-learning
- Complete **Leadership for Safety Excellence** training program (approx 300\$ (non-member, 16 hours)
- There is an option to complete a Employer Assessment Of Competency form in lieu of the safety training
- Complete 1000 hours of work experience as a supervisor within 24 months (deadline is within 5 years of application)
- Pass written 3 hour exam



RISKS

- **Alignment of Vision**
 - Enabling Contractor Companies to understand the benefits
 - Commitment to stay the course
- **Financial**
 - Additional cost to pay for courses/register/prep
 - Additional time/space required to study
 - Cost of low retention
- **Commitment to Industry Adoption**
 - Clarity around who will drive industry adoption
 - Owner Client commitment to mentoring; consistency
 - Inclusion /Communication; non-support from owner clients outside of the Tri-Partite Safety Alliance
- **Logistics**
 - Capacity to train large numbers of individuals; Turnarounds – short term requirements
 - Feasibility of mobile training model
 - Work Force Planning
 - Management of Change - ICCS version control; Refresher training
- **Duration**
 - Multi year strategic initiative





Who's taking the lead?



Our Industry, Our Sites, Our People



Workplace Respect



Committee

Marla McCready (Co-chair)
Merit Contractors Association

Lynne Harder (Co-chair)
Construction Labour Relations

Rob Cleveland
Christian Labour Association of Canada

Shandra Linder
Syncrude Canada Ltd.

Kathy Camina
KBR Canada

Lindsay Osmond
Jardeg Construction Services Ltd.

Michelle Devlin
Creating People Power

Shayantani Sarkar
Bird Construction Company

Dale Hildebrandt
Ledcor Industries Inc.

Cailín Mills
Alberta Employment and Immigration

Roland LaBossiere
Suncor Inc.

Our Industry, Our Sites, Our People



Who's taking the lead?



Our Industry, Our Sites, Our People



RESPECT

“The willingness to show consideration for the rights or feelings of others; to treat them courteously, inclusively and safely.”



How many acts of disrespectful conduct have you been witness to or experienced in the past month in your workplace?

- None
- Just a few
- Quite a few
- It's an every day occurrence!



In the past month, are you aware of any of your behavior(s) that were disrespectful?

- None – “I am the most respectful person in the world”
- Rarely – “But I always apologize when I realize what I have done”
- Often – “It is the only way to get things done in my organization”
- Every Day – “Cannot keep up with ‘politically correct’ behaviour”



How would a workplace respect program benefit your work environment?

- No Value – “my organization is great”
- Low Value – “some people could use a tune up”
- Moderate Value – “it would definitely benefit my workplace”
- High Value – “Very toxic, we need an intervention”



Workplace Respect



Why are you here?

Our Industry, Our Sites, Our People





**Who's responsibility is it in the
Industry to ENSURE there is a
Respectful work environment?
Why?**



**What are the challenges/opportunities
to eliminate disrespectful behaviour in
our Industry?**



Workplace Respect



How can we help Industry succeed?



Our Industry, Our Sites, Our People



Workplace Respect



Interested? Please join us....

Lynne Harder lynne@clra.org

Marla McCready mmccready@meritalberta.com

Our Industry, Our Sites, Our People



The Knowledge Leader for Project Success

Leveraging 25 Years of Industry Leadership

COAA Benchmarking and Metrics Program

COAA Best Practices Conference XX
May 16, 2012

Stephen P. Mulva, Ph.D.
Associate Director



CII History



- CII is an Organized Research Unit (ORU) of the Cockrell School of Engineering at the University of Texas at Austin
- Founded in 1983 by 29 companies; now 115+ members
- Purpose is to MEASURABLY improve the delivery of capital facilities
- First structured owner-contractor-academic research collaboration for the constructed project.
- The industry forum for the engineer-procure-construct process.



Owner CII Members

Abbott	Ecopetrol S.A.	SABIC
Air Liquide	Eli Lilly and Company	Sasol Technology
Air Products and Chemicals	Eskom Holdings Limited	Shell Global Solutions US
Ameren Corporation	ExxonMobil Corporation	Smithsonian Institution
American Transmission Co.	GlaxoSmithKline	Southern Company
Anheuser-Busch InBev	Hovensa, LLC	Statoil ASA
Aramco Services Company	International Paper	Teck Resources Limited
Archer Daniels Midland Co.	Irving Oil Limited	Tennessee Valley Authority
Architect of the Capitol	Kaiser Permanente	TransCanada Corporation
Barrick Gold Corporation	Koch Industries	U.S. Army Corps of Engineers
BP America	LyondellBasell	U.S. Dept. of Commerce/NIST/ Bldg. and Fire Research Lab
Bristol-Myers Squibb Co.	Marathon Oil Corporation	U.S. Dept. of Energy
Cargill, Inc.	NASA	U.S. Dept. of Health & Human Services
Chevron	NOVA Chemicals Corp.	U.S. Dept. of State
CITGO Petroleum	Occidental Petroleum Corp.	U.S. General Service Administration
ConocoPhillips	Ontario Power Generation	
The Dow Chemical Company	Petrobras	
DuPont	Praxair, Inc.	
Eastman Chemical Company	The Procter & Gamble Co.	



Contractor CII Members

Aker Solutions	Emerson Process Management	Midwest Steel
Alstom Power	eProject Management, LLC	Mustang
AMEC	Faithful+Gould	Oracle USA
Apex Engineering	Flad & Associates	Parsons
AZCO INC.	Flint Energy Services	Pathfinder LLC
Baker Concrete Construction	Fluor Corporation	Quality Execution
Bateman Engineering N.V.	Foster Wheeler USA Corporation	S&B Engineers and Constructors
Bechtel Group	Grinaker-LTA/E+PC	The Shaw Group
Bentley Systems	Gross Mechanical Contractors	Siemens Energy
BIS Frucon Industrial Services	GS Engineering & Construction	SNC-Lavalin
Black & Veatch	Hargrove Engineers+Constructors	Technip
Burns & McDonnell	Hilti Corporation	URS Corporation
CB&I	Industrial Contractors	Victaulic Company
CCC Group	IDEA	Walbridge
CDI Engineering Solutions	Jacobs	Wanzek Construction
CH2M HILL	JMJ Associates	WorleyParsons
Coreworx	KBR	Zachry Holdings
CSA Group	Lauren Engineers & Constructors	Zurich
Day & Zimmermann	M. A. Mortenson Company	
Dresser-Rand Company	McDermott International, Inc.	



CII Benchmarking & Metrics (BM&M)

- 2,049 projects entered since 1995, valued at over \$133 billion
- Confidential
- Cost Effective
- Compelling, Focused Metrics
 - unique measures of CII Best Practices and productivity for engineering and construction
 - **external** performance benchmarks of safety, cost, schedule, change, and rework
- Unique Approach
- Experienced
 - Competent, Professional Staff



WHY BENCHMARKING?



Trim Capital Spending by 25%

- McKinsey & Company

“The management of capital investment has an enormous effect on profitability and competitiveness, yet few companies do it effectively. We believe that the use of **evaluation tools**, **disciplined processes**, and **best practices** can help companies trim capital spending by **up to a quarter** without reducing capacity or functionality - and improve their operating costs and revenues through **better investment decisions.**”



National Research Council (2009)

- Advancing the Competitiveness and Efficiency of the U.S. Construction Industry
 - Opportunities for Breakthrough Improvements:
 - Widespread Use of Interoperable Technology Applications (BIM)
 - Improved Jobsite Efficiency (Effective Interfacing of People, Processes, Materials, Equipment and Information)
 - Greater Use of Prefabrication, Preassembly, Modularization, and Offsite Fabrication (PPMOF) Techniques and Processes
 - Innovative, Widespread Use of Demonstration Installations
 - **Effective Performance Measurement to Drive Efficiency and Support Innovation**

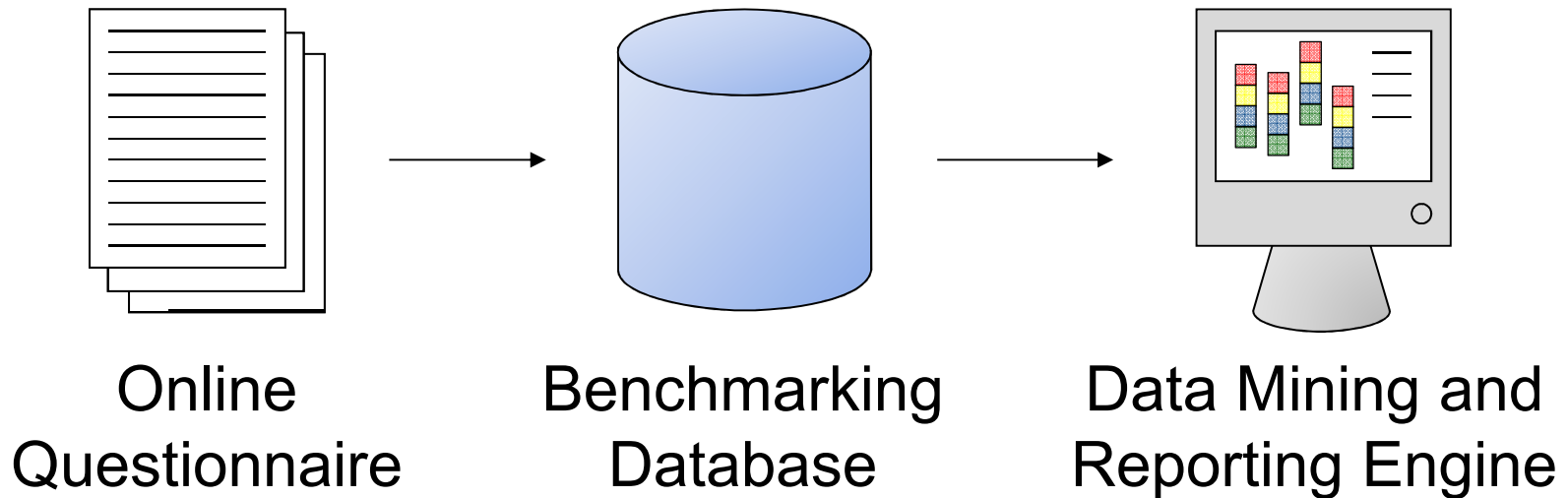


HOW DOES COAA BENCHMARK CAPITAL PROJECTS?

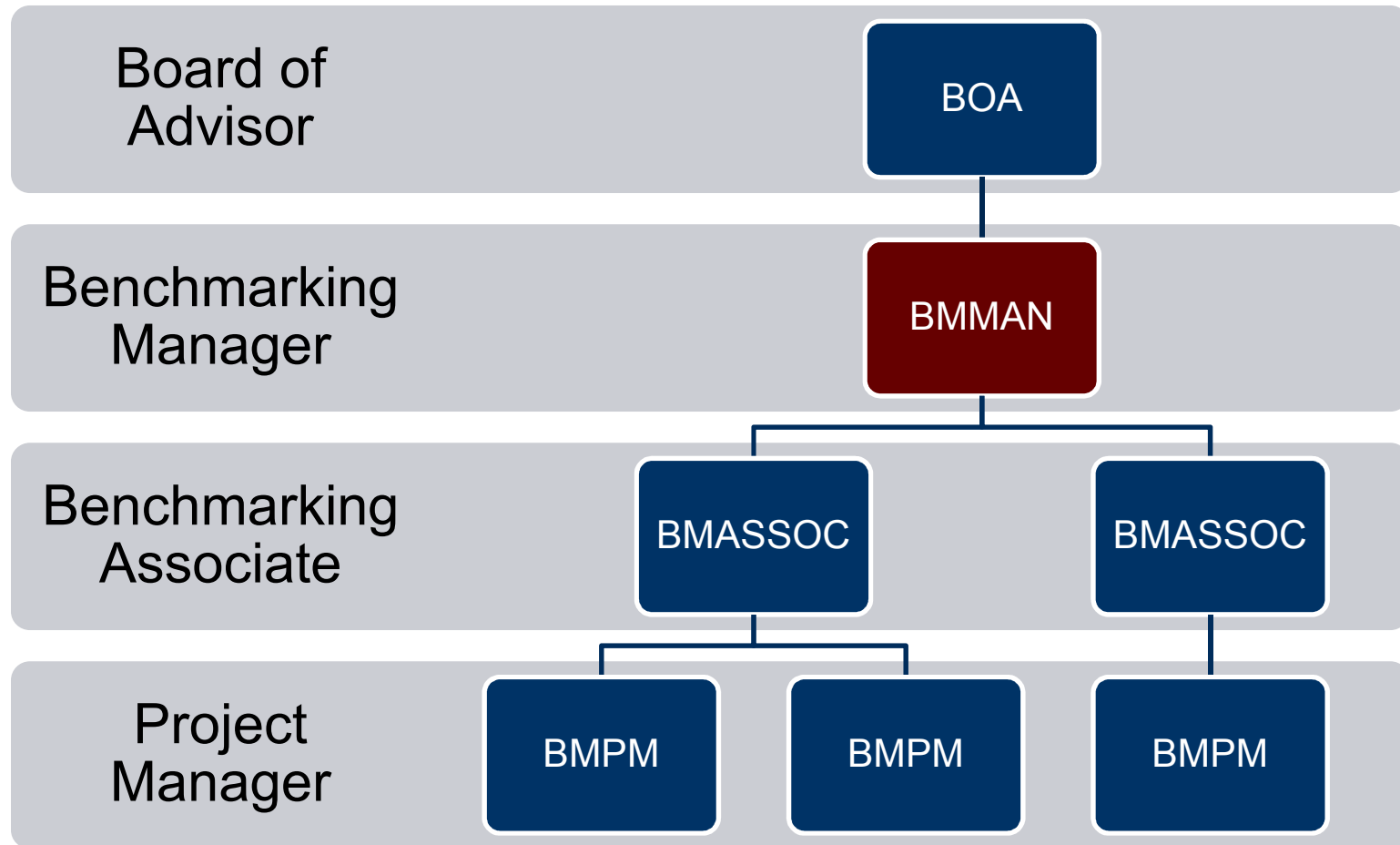


COAA Benchmarking Process

Three-step Process



COAA Benchmarking Roles



General Benchmarking Questionnaire

Currently editing - BMMAN TESTs

General Project Info	Performance	Practices	Engineering Productivity	Construction Productivity
Project Description	Budgeted & Actual Project Costs	Front End Planning	Instructions	Instructions
Project Information	Planned & Actual Project Schedule	Alignment	Engineering Team & Workhours	Concrete
Project Scope	Achieving Facility Capacity	Partnering	Concrete	Structural Steel
Project Management Team	Project Outcomes	Team Building	Structural Steel	Electrical-Part1
Union Site Construction Workforce	Work Hours & Safety Data	Project Delivery	Electrical	Electrical-Part2
Engineering Deliverables	Project Environment Impacts	Constructability	Piping	Piping
Contract Type & Alliance		Risk Assessment	Instrumentation	Instrumentation
		Change Management	Equipment - Part1	Equipment-Part1
		Zero Accident Techniques	Equipment - Part2	Equipment-Part2
		Benchmarking	Direct Hire/Contract/Off-Shore	Insulation
		Planning For Start Up		Scaffolding
		Technology Use		

Project Process Legend: Not Started In Progress



PAS – Data Collection / Internal Benchmarking

Hierarchy Control Panel

Company Business Unit Product Line

Country / State / City

- United States
 - Texas
 - Austin**
 - Dallas
 - Houston
 - Florida
 - Tampa
 - Saint Petersburg
 - Miami
 - California
 - LA
 - Brazil
 - United Kingdom
- Canada
 - Quebec
 - Montreal
 - Ontario
 - Toronto

Hierarchy Editor

Project Assignments

User Assignments

Project Permissions

Users:



ID	First Name	Last Name	Role	Approver
54	Test	PM	BMPM	matto2
50	Greg	Test2	BMASSOC	lab_master
4074	Matt	O	BMPM	matto
4086	Yatzo	Brobgozy	BMPM	matto

Projects:

Project ID	Project Name	None	Read	Full
L01C102	Once again test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L01C103	test-as-a-bmpm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C109	Sample Thing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
L01C11	North Equator Pipelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C110	Sample Test	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C111	More proj	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L01C112	Yams	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C113	Samss	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C114	Simple Tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
L01C115	More simple things	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L01C120	CurrencyTest	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Project Key Reports

 Construction Industry Institute®	Test General Large - Contractor		
	General Performance Key Report Report Date: 10/05/2011		
Project General Information			
Company Name	Testco	Respondent Type (RT)	Contractor
Project ID	CIIC09219	Questionnaire Type (QT)	General Benchmarking (Large)
Project Location	United States	Location Category (LC)	Domestic
Project Cost	USD\$ 91,849,000.00	Company Involvement (CI)	Design and Construct
Site Work Hours	4,000,000	Industry Group (IG)	heavy industrial
Overall Project Duration	988 Days	Project Type (PT)	Oil Sands SAGD
Design thru Startup Duration	988 Days	Project Nature (PN)	grass roots
Midpoint of Construction	04/15/2007	Cost Category (CC)	\$50MM - \$100MM
Key Report Legend			
<ul style="list-style-type: none"> • Q1, Q2, Q3 and Q4 stands for the 1st, 2nd, 3rd and 4th quartile respectively. If the quartile cell is colored, Q1 represents best performance and Q4 represents worst performance. • If the quartile cell is not colored, Q1 represents the group with the highest metric value, while Q4 represents the group with the lowest metric value. (for these metrics, lower or higher scores are not necessary better.) • UO indicates an Upper Outlier with a extremely high metric value. LO indicates a Lower Outlier with an extremely low metric value. • C indicates that the benchmarking result is suppressed because the comparison dataset doesn't meet minimum requirements to ensure confidentiality (i.e. 10 or more projects from 3 or more companies). •  in the comparison criteria indicates that the comparison dataset has the same specific characteristic as your project. • Asterisk (*) on the n value denotes a small sample of projects (between 10 & 20) 			
Hide Legend			

General Performance - Cost											
Metric	Project Score	CII Database Mean	Quartile	Comparison Criteria							n
				QT	LC	CI	IG	PT	PN	CC	
Project Cost Growth	0.031	0.010	Q3	✓	✓	✓	✓	all	✓	✓	19*
Delta Cost Growth	0.031	0.092	Q1	✓	✓	✓	✓	all	✓	✓	19*
Project Budget Factor	0.970	0.950	Q3	✓	✓	✓	✓	all	✓	✓	18*
Delta Budget Factor	0.030	0.083	Q2	✓	✓	✓	✓	all	✓	✓	19*
Detail Engineering Cost Growth	0.026	0.068	Q2	✓	✓	✓	✓	all	✓	✓	15*
Procurement Cost Growth	0.036	-0.040	Q3	✓	✓	✓	✓	all	✓	✓	17*
Construction Cost Growth	0.048	0.011	Q3	✓	✓	✓	✓	all	✓	✓	15*
Startup Cost Growth		C	C	C	C	C	C	C	C	C	C



PAS – Data Miner

Data Mining V1.88CJ

Y-Axis Metric: General Performance | Cost | Project Cost Growth [RESET] [BR] [US]

X-Axis Metric: General Performance | Management/Supervisi | Management/Supervision [Select Range]

Respondent

Owner
 Contractor
 Both

Project Priority

Cost
 Schedule
 Balanced

Project Location

Component Types

Project Driver

Project Nature

Project Delivery Method

Contract Type

Work Involvement

Variables

Project Variables

Selections

- % Planned Capacities Achieved During Startup
- % of Overtime Hours
- % Design Completion Prior to Authorization
- % Design Completion Prior to Construction
- % Modularization
- Schedule Change
- Actual Startup Phase Cost
- Actual Construction Phase Cost
- Actual Engineering Phase Cost
- Actual Front End Planning Phase Cost
- Actual Procurement Phase Cost
- Actual Change Cost
- Total Actual Project Cost
- Project Complexity
- Equipment Cost
- Direct Rework Cost
- Complete and Accurate Engineering Deliverables
- Engineering Deliverables Released Timely
- Product Quality Specifications Achieved
- Planned Project Quality Specifications Achieved
- Direct Rework Hours

Best Practices

Schedule Variables

Quartile Chart

Respondent - Owner

Comparisons

Project Priority - Cost

Variables

Min	P10	Q1	Median	Q3	P90	Max
-0.45	-0.3029	0.0847	0.2595	0.4925	0.5660	0.58

N = 16

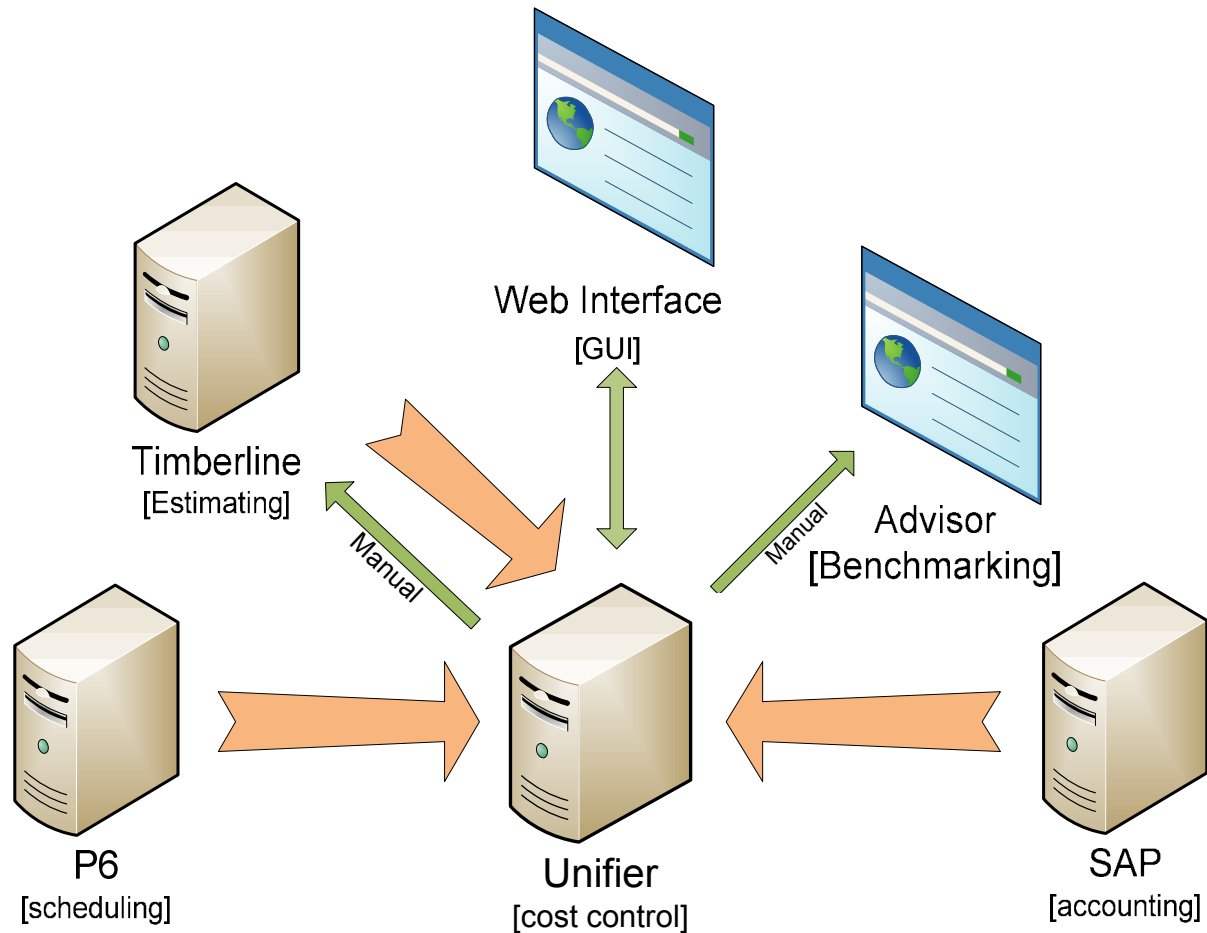
[Save Chart Only] [Save Chart With Info]

Cost Min: [] Max: [] [Compute]

Year Min: [] Max: [] [Compute]



PAS – Integration with Corporate Systems is Important

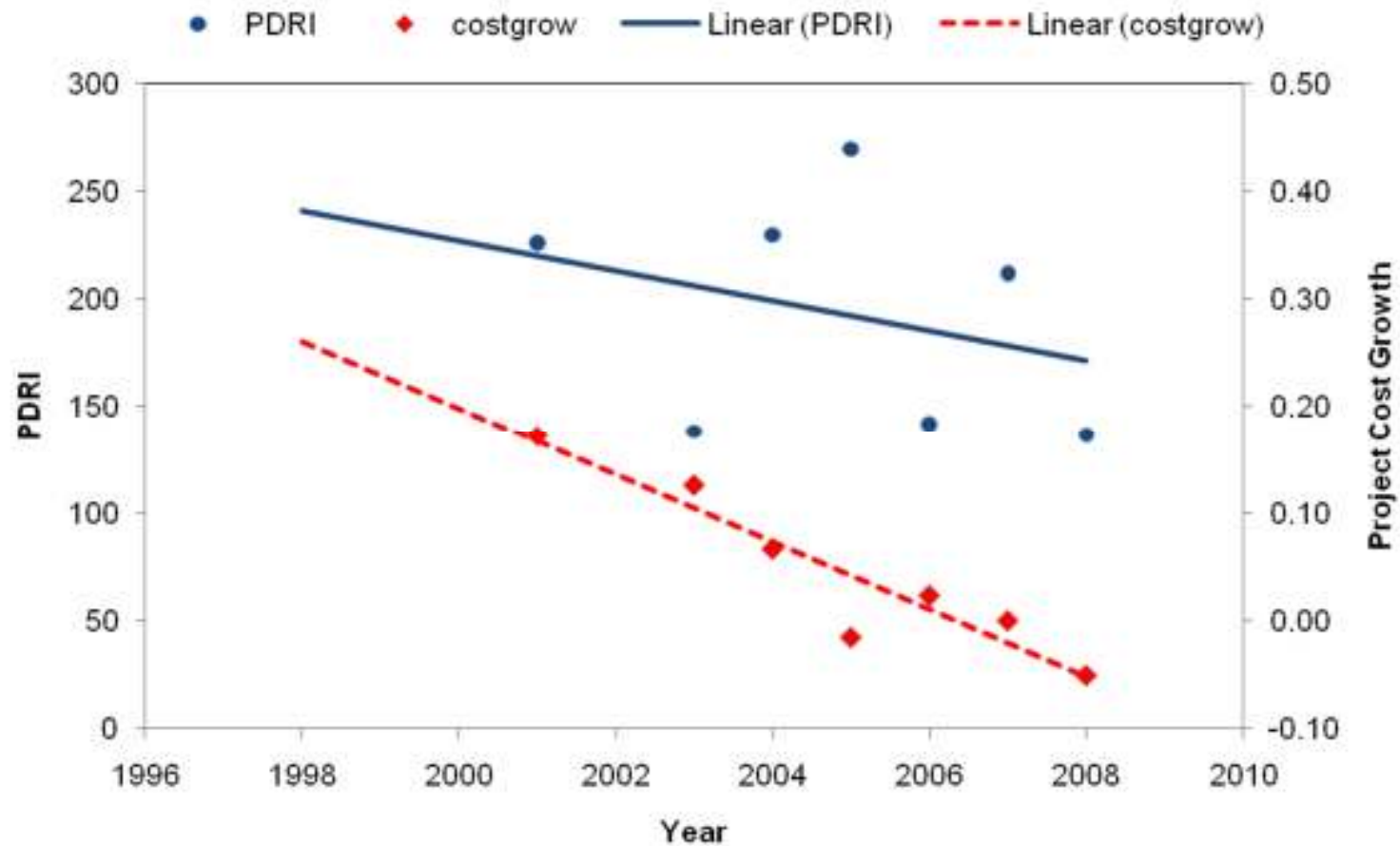


WHAT ARE THE RESULTS?



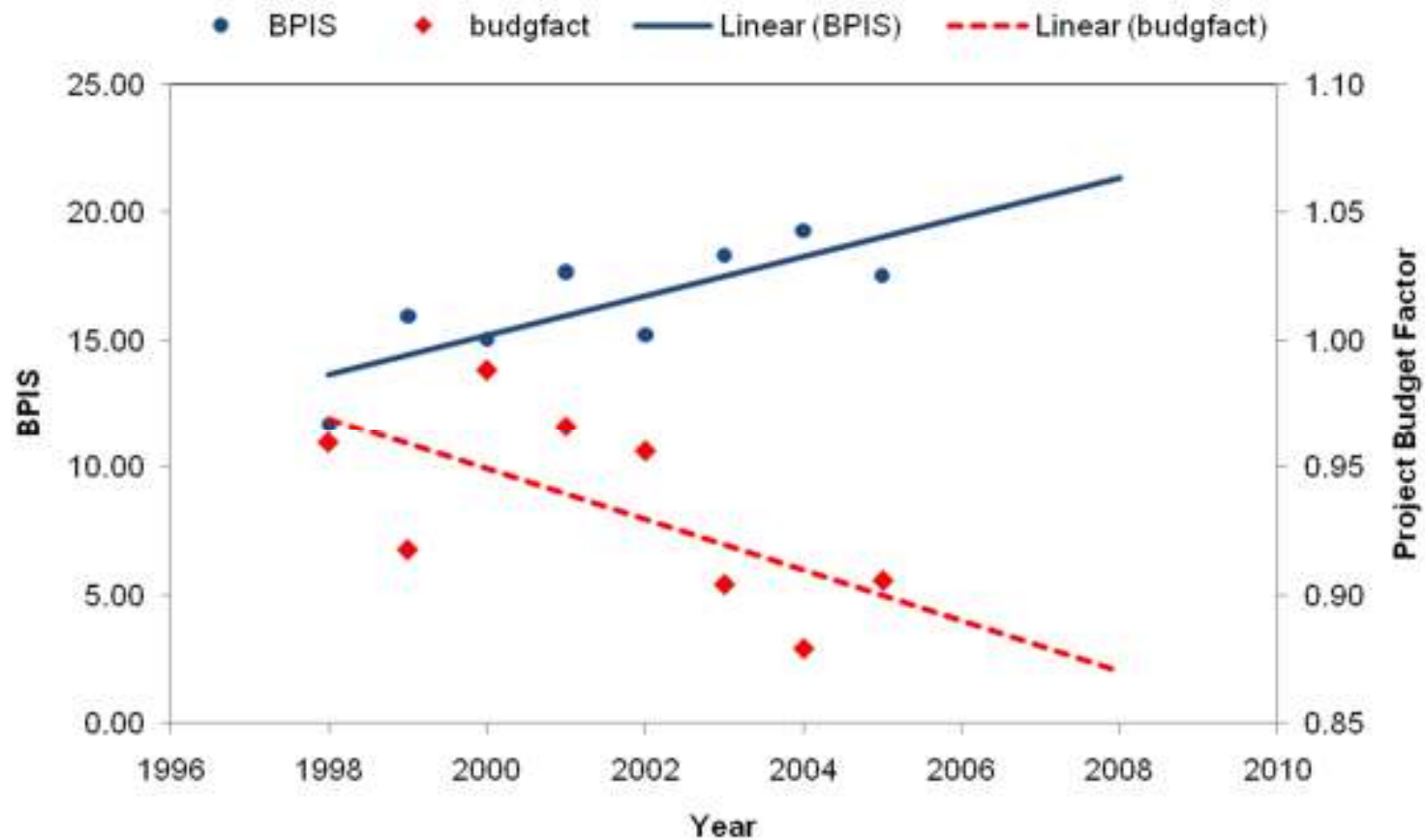
Owner “1”

- PDRI vs. Project Cost Growth



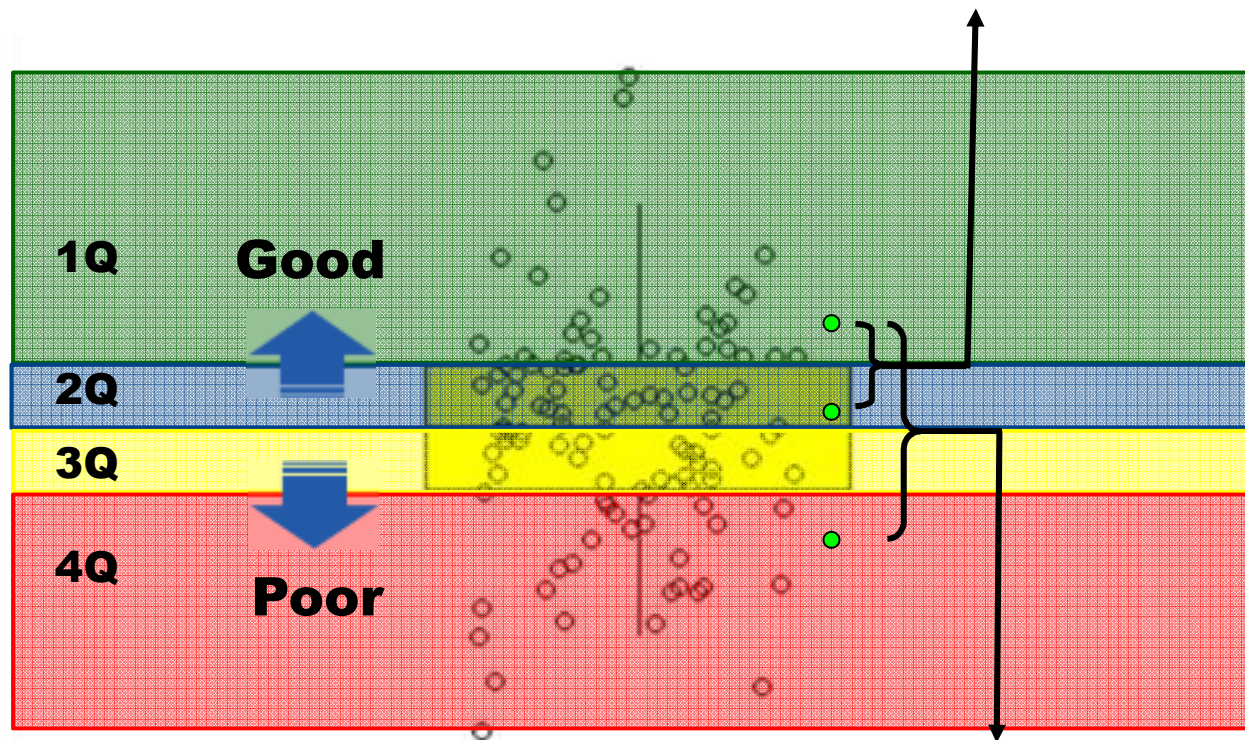
Contractor "1"

- BPIS vs. Project Budget Factor



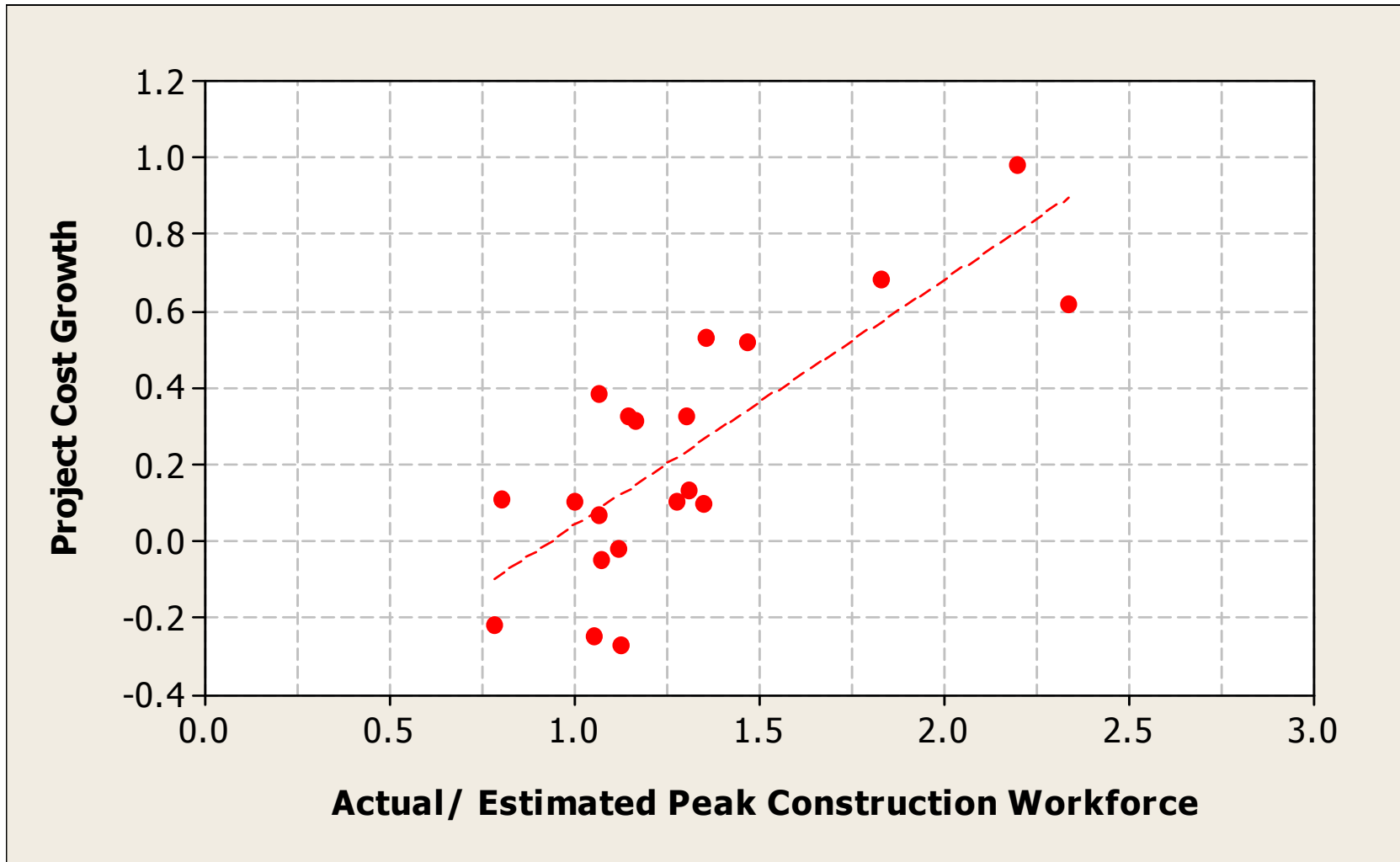
Project-Level Engineering Productivity

- 11% Improvement (2nd to 1st Quartile)

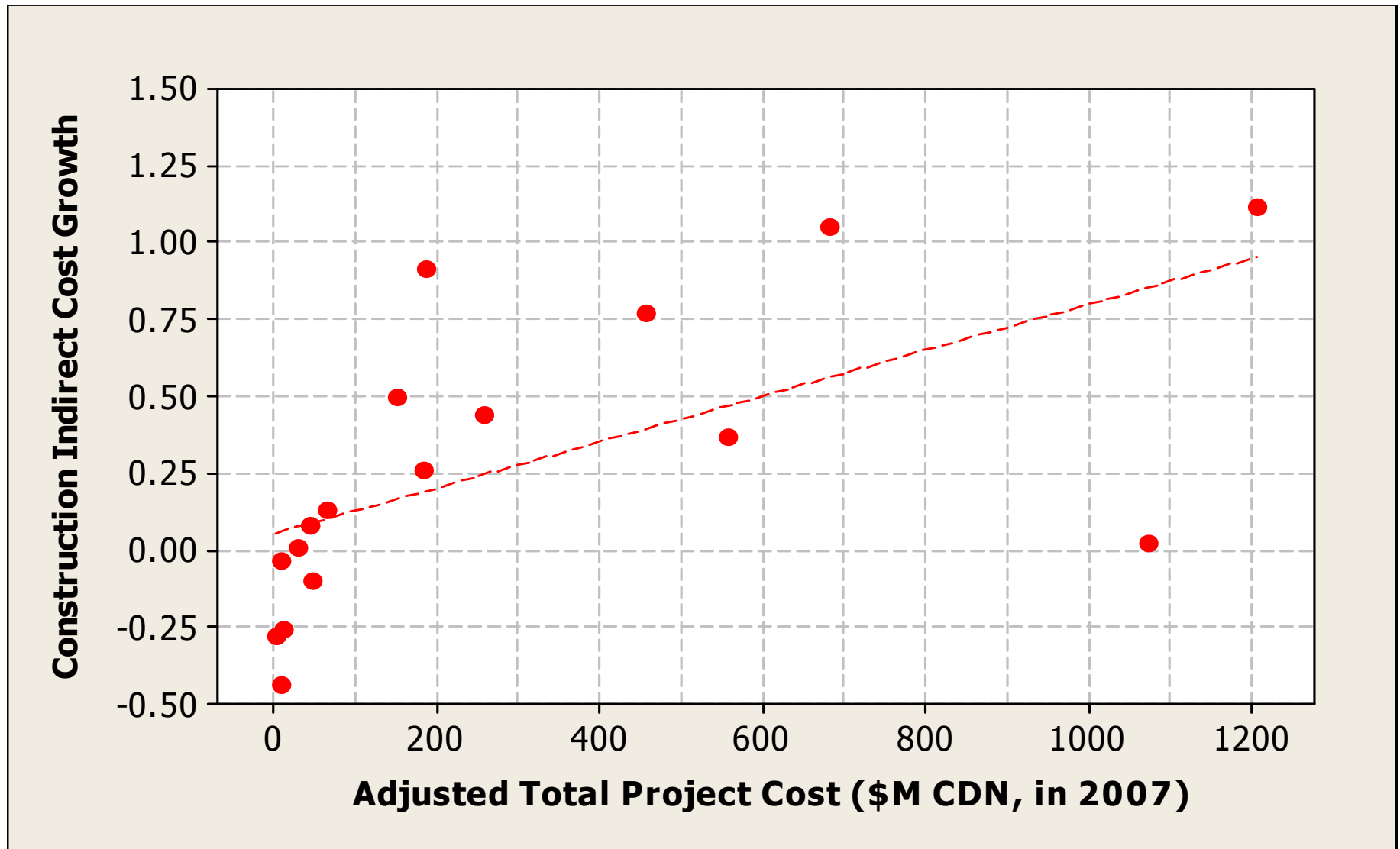


- 26% Improvement (4th to 1st Quartile)

Actual / Estimated Peak Construction Workforce

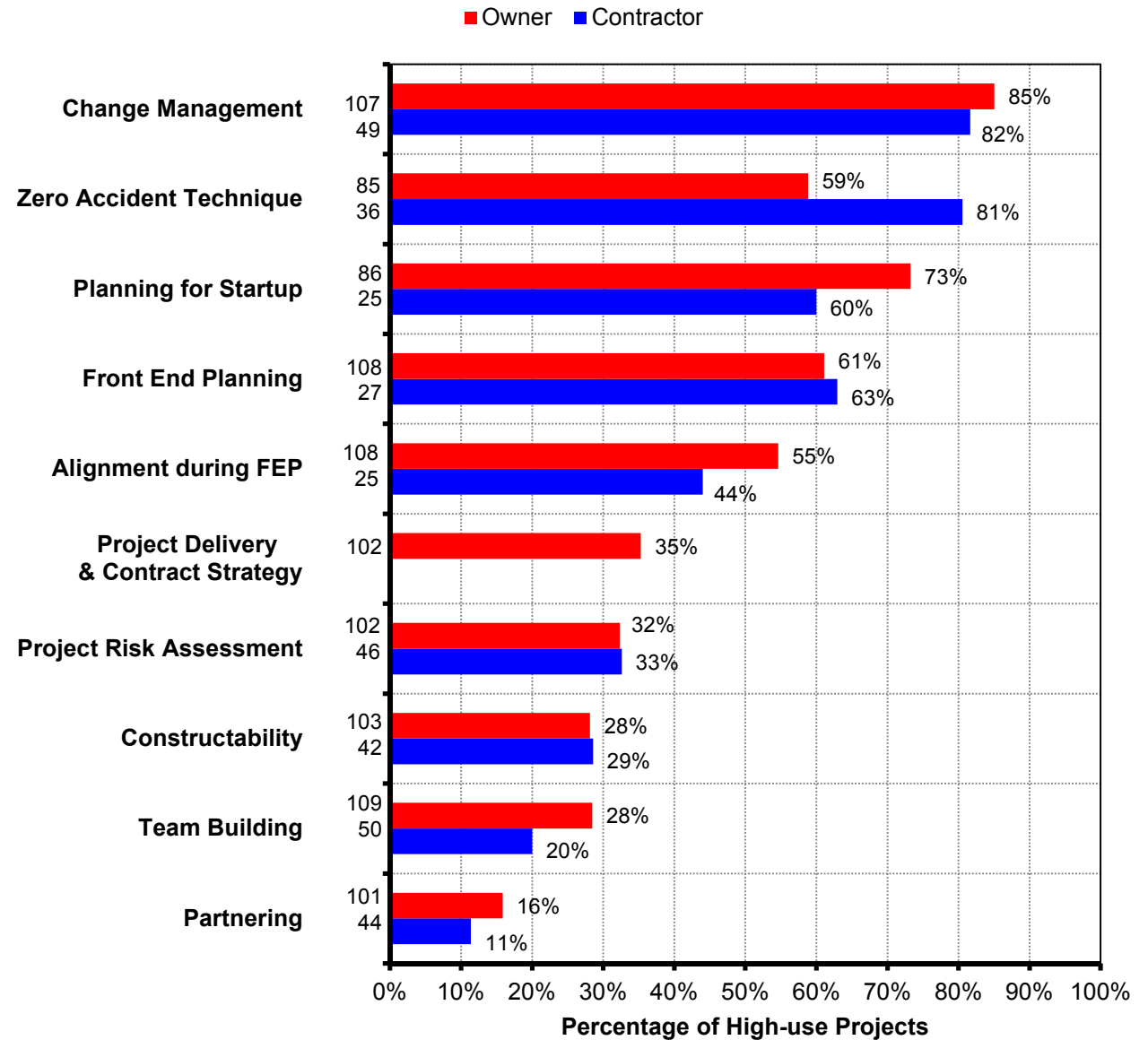


Construction Indirect Cost Growth

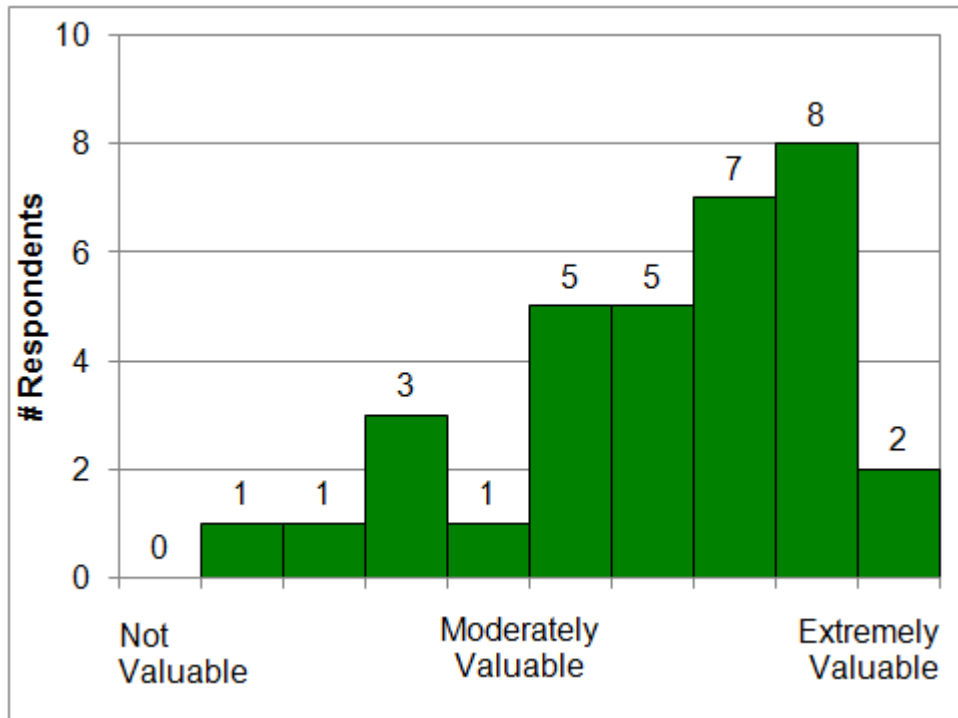


Best Practices

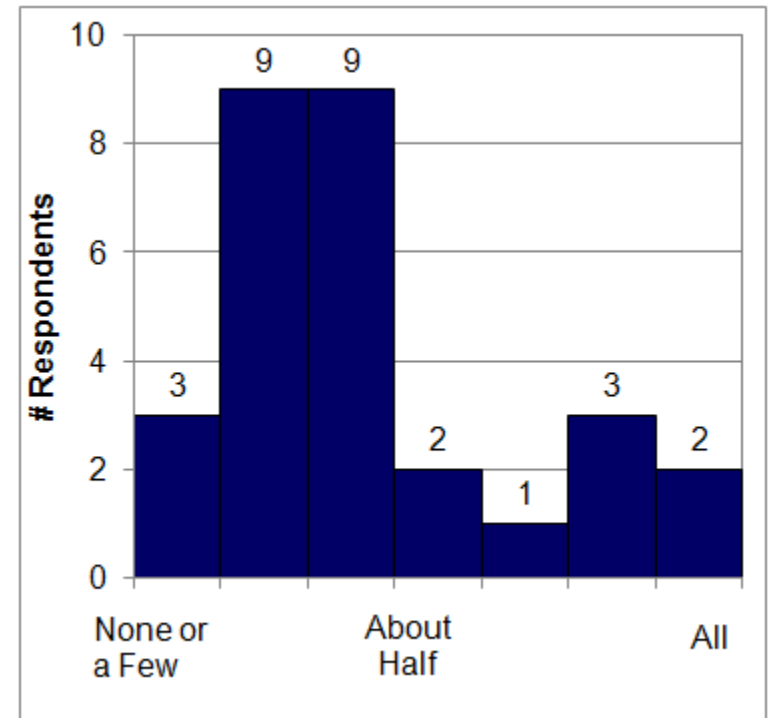
Percent of Projects with High Best Practice Use



The Benchmarking Dilemma



Value of External Benchmarking



Projects' Use of External Benchmarking

Benchmarking Lessons Learned

- Senior management buy-in is vital to success, and hard to achieve
- A company champion is essential, but often not enough
- No one wants to be at the bottom
- “My project is special”



WHAT ARE THE POTENTIAL PITFALLS?



Potential Pitfalls

- Benchmarking is NOT Estimating
 - Good PM Practice: Develop Ground-Up Estimate
 - Measure Project (Process), NOT Product
- Ignoring Tools / Proven Best Practices
 - PDRI, PHI, PFS
 - FEP, Partnering, Constructability, etc.
- Not Benchmarking
 - No Objective Measures of Performance
 - No Understanding of Where to Improve



**DEMO:
COAA PERFORMANCE ASSESSMENT
SYSTEM (PAS)**





The Knowledge Leader for Project Success

Leveraging 25 Years of Industry Leadership

Productivity Research Efforts

A Summary of Productivity Research (CII and COAA)

May 16, 2012

Stephen P. Mulva, Ph.D.
Associate Director



Agenda

- “Global Thoughts”
- COAA Benchmarking of Productivity
- CII’s Productivity Research Program (RT 252)
- Other Productivity Initiatives
 - NIST
 - ASTM
 - CSC
 - Petrobras
 - PER
- Path Forward



Global Thoughts

- McKinsey & Co.

“The management of capital investment has an enormous effect on profitability and competitiveness, yet few companies do it effectively. We believe that the use of **evaluation tools**, **disciplined processes**, and **best practices** can help companies trim capital spending by **up to a quarter** without reducing capacity or functionality - and improve their operating costs and revenues through **better investment decisions.**”



Global Thoughts

- Advancing the Competitiveness and Efficiency of the U.S. Construction Industry
 - Opportunities for Breakthrough Improvements:
 - Widespread Use of Interoperable Technology Applications (BIM)
 - Improved Jobsite Efficiency (Effective Interfacing of People, Processes, Materials, Equipment and Information)
 - Greater Use of Prefabrication, Preassembly, Modularization, and Offsite Fabrication (PPMOF) Techniques and Processes
 - Innovative, Widespread Use of Demonstration Installations
 - Effective Performance Measurement to Drive Efficiency and Support Innovation

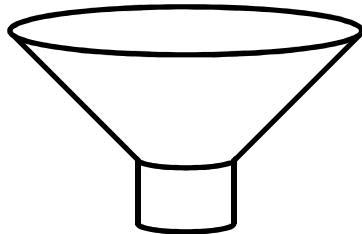
National Research Council (2009)



COAA Benchmarking of Productivity

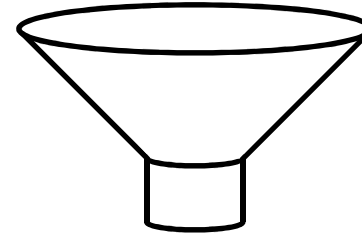
DISCIPLINE-LEVEL PRODUCTIVITY

Concrete Engineering Productivity
Structural Engineering Productivity
Piping Engineering Productivity
Equipment Engr. Productivity
Electrical Engr. Productivity
Instrumentation Engr. Productivity



**ENGINEERING
PRODUCTIVITY**

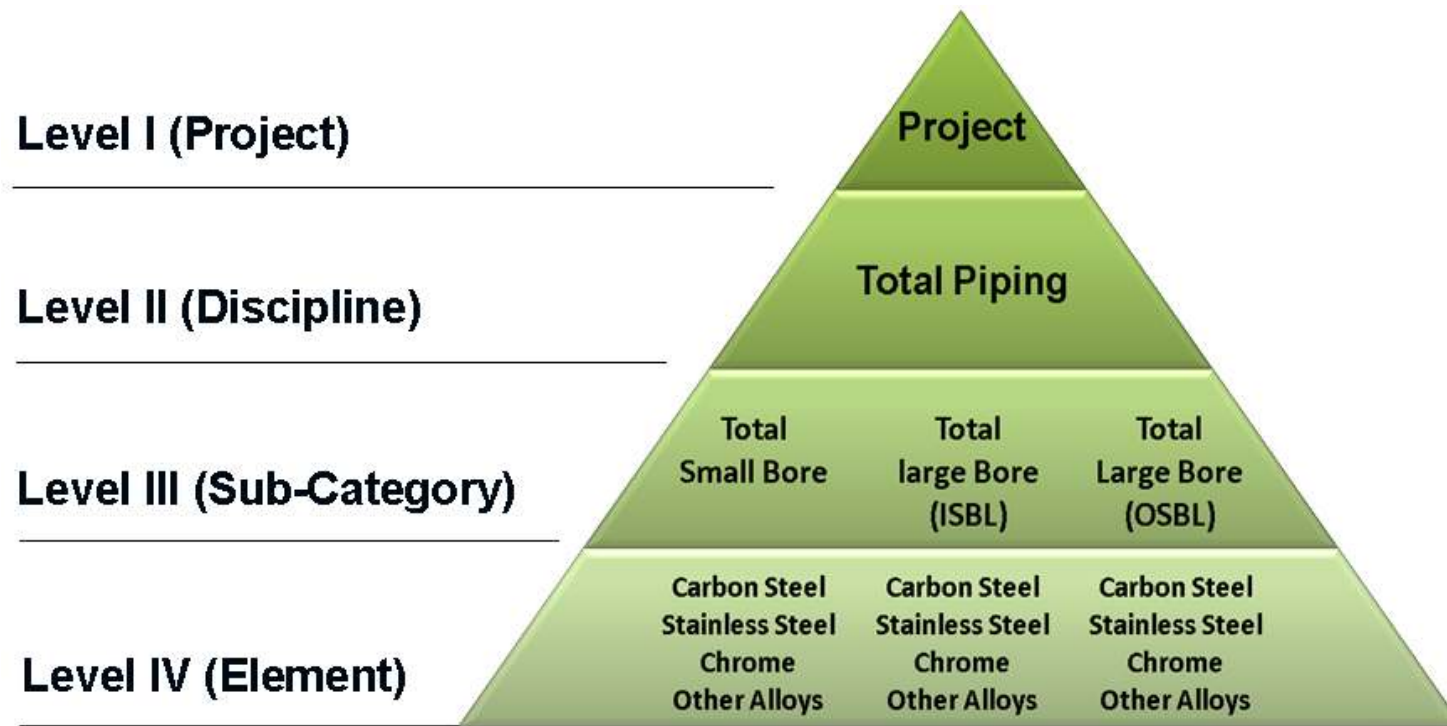
Concrete Construction Productivity
Structural Steel Const. Productivity
Piping Construction Productivity
Equipment Const. Productivity
Electrical Const. Productivity
Instrumentation Const. Productivity
Insulation Const. Productivity
Scaffolding Const. Productivity
Module Installation Productivity



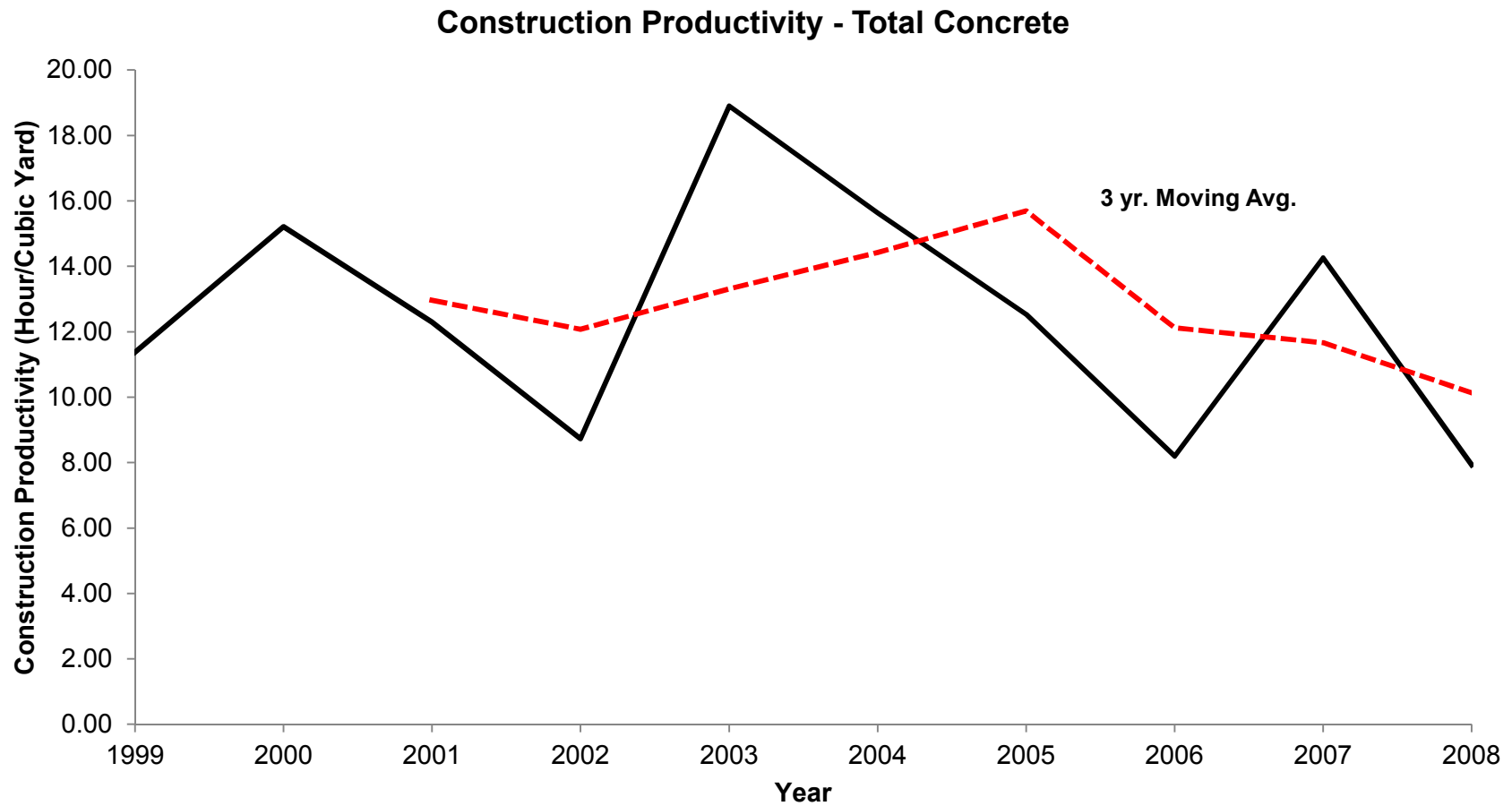
**CONSTRUCTION
PRODUCTIVITY**

CII / COAA Productivity Hierarchy

- Piping Engineering

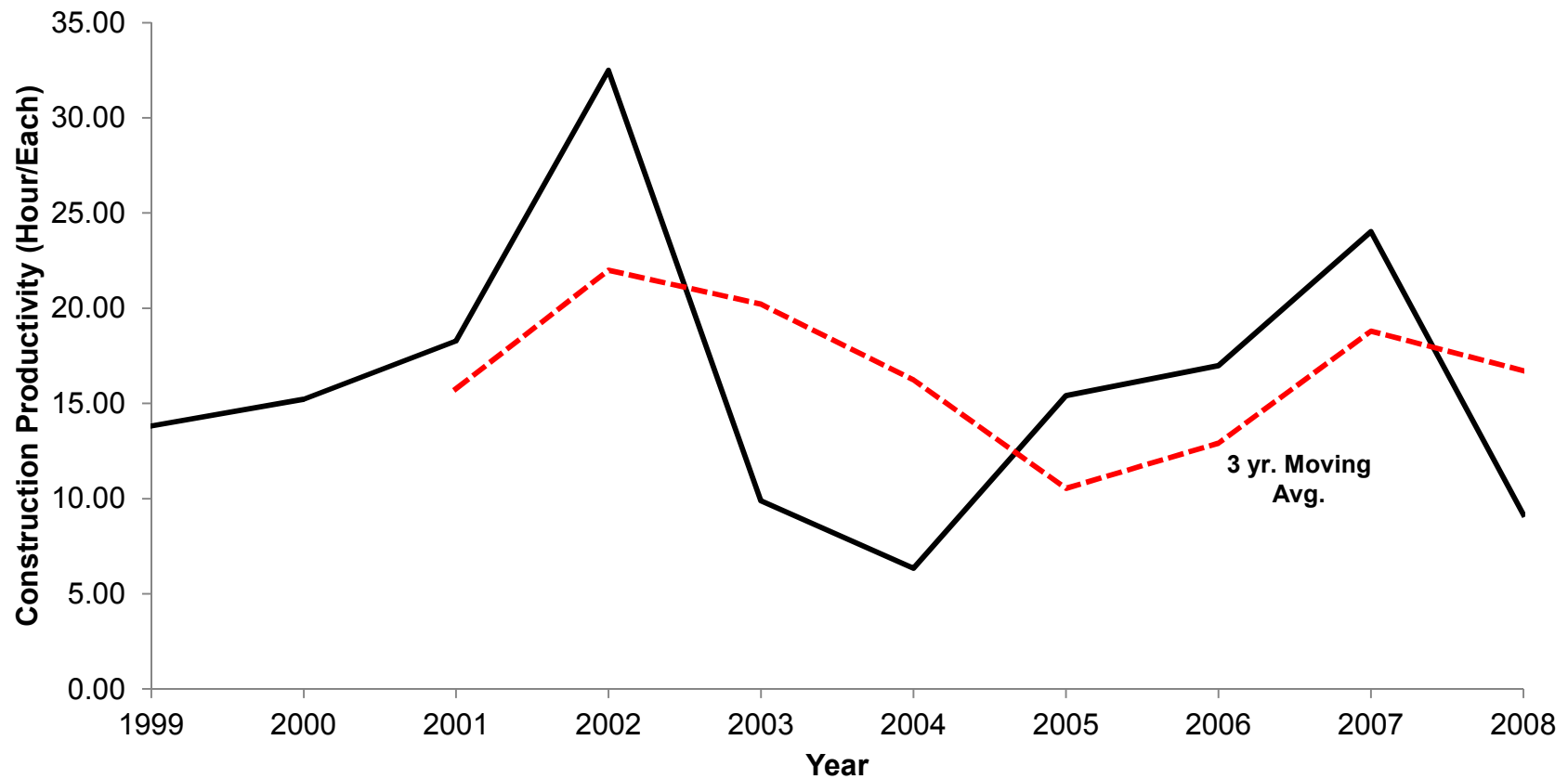


CII Construction Productivity - Total Concrete



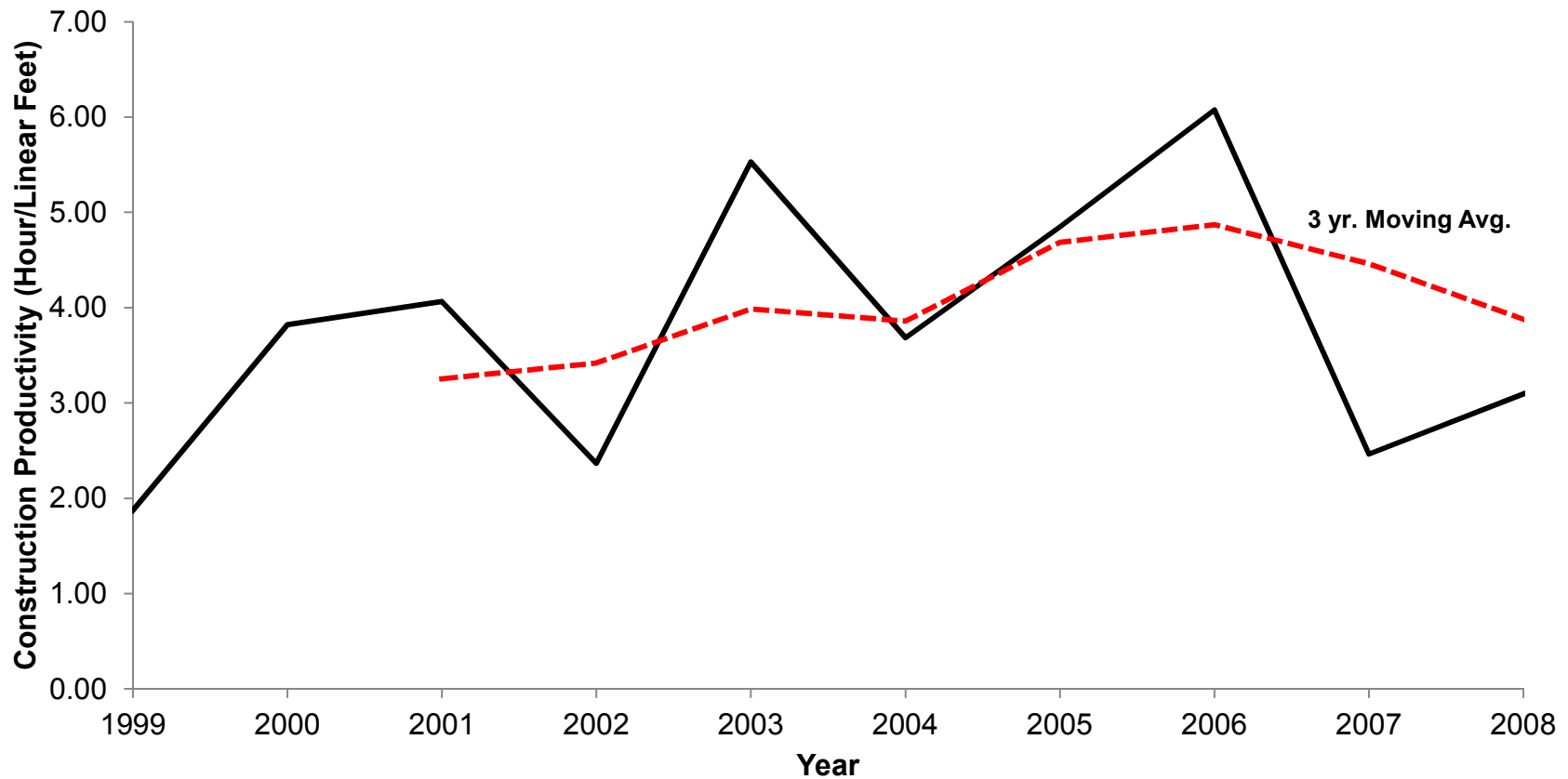
CII Construction Productivity – Instrumentation Devices

Construction Productivity - Instrumentation Devices



CII Construction Productivity - Total Large Bore Piping

Construction Productivity - Total Large Bore



PAS Data Miner (COAA Phase II)

Data Mining V1.88CJ

Y-Axis Metric: General Performance | Cost | Project Cost Growth [RESET] [Brazil] [USA]

X-Axis Metric: General Performance | Management/Supervisi | Management/Supervision [Select Range]

Respondent

Owner
 Contractor
 Both

Project Priority

Cost
 Schedule
 Balanced

Project Location

Component Types

Project Driver

Project Nature

Project Delivery Method

Contract Type

Work Involvement

Variables

Project Variables

Selections

- % Planned Capacities Achieved During Startup
- % of Overtime Hours
- % Design Completion Prior to Authorization
- % Design Completion Prior to Construction
- % Modularization
- Schedule Change
- Actual Startup Phase Cost
- Actual Construction Phase Cost
- Actual Engineering Phase Cost
- Actual Front End Planning Phase Cost
- Actual Procurement Phase Cost
- Actual Change Cost
- Total Actual Project Cost
- Project Complexity
- Equipment Cost
- Direct Rework Cost
- Complete and Accurate Engineering Deliverables
- Engineering Deliverables Released Timely
- Product Quality Specifications Achieved
- Planned Project Quality Specifications Achieved
- Direct Rework Hours

Best Practices

Schedule Variables

Quartile Chart

Respondent - Owner

Comparisons

Project Priority - Cost

Variables

Min	P10	Q1	Median	Q3	P90	Max
-0.45	-0.3029	0.0847	0.2595	0.4925	0.5660	0.58

N = 16

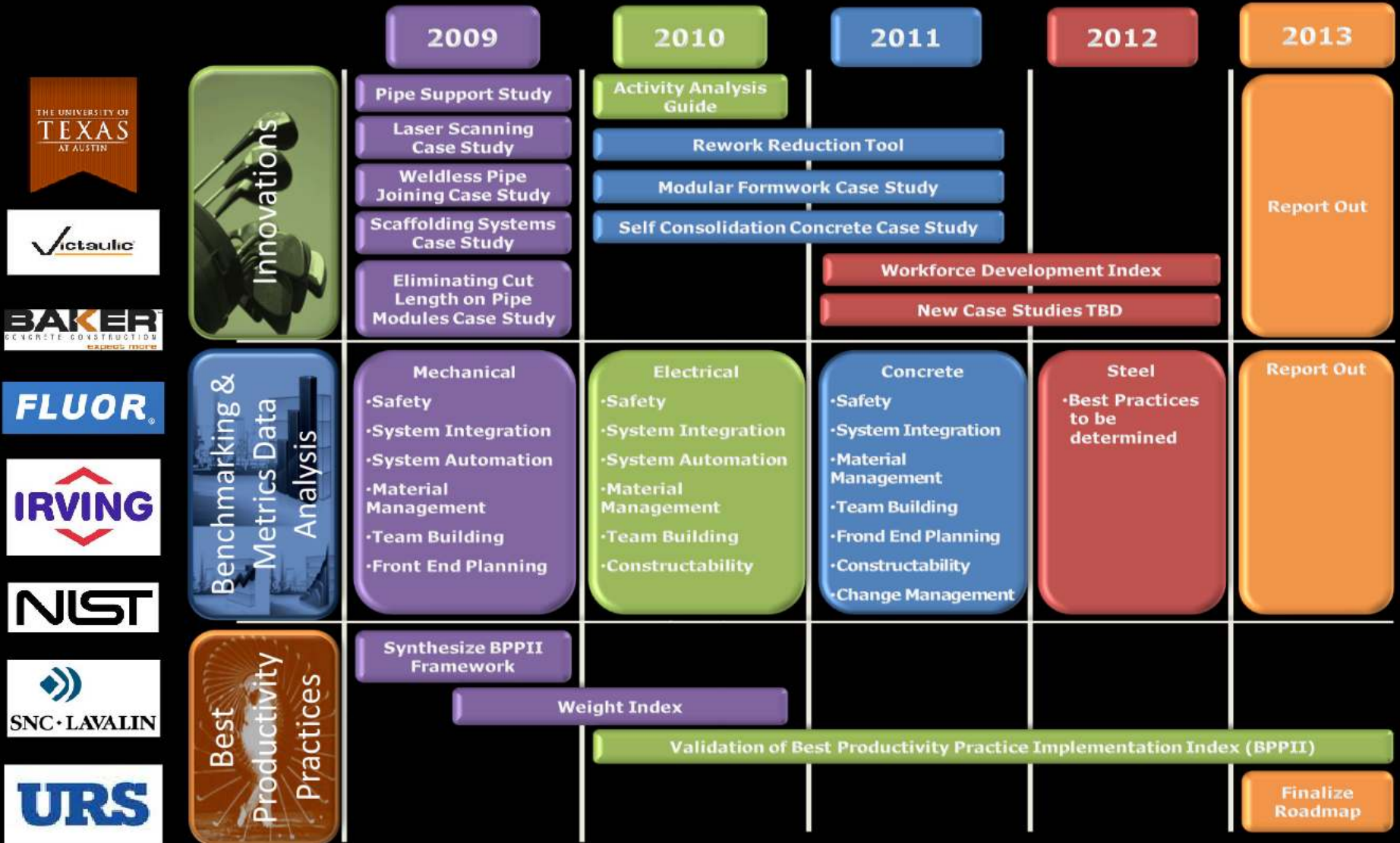
[Save Chart Only] [Save Chart With Info]

Cost Min: Max: [Compute]

Year Min: Max: [Compute]

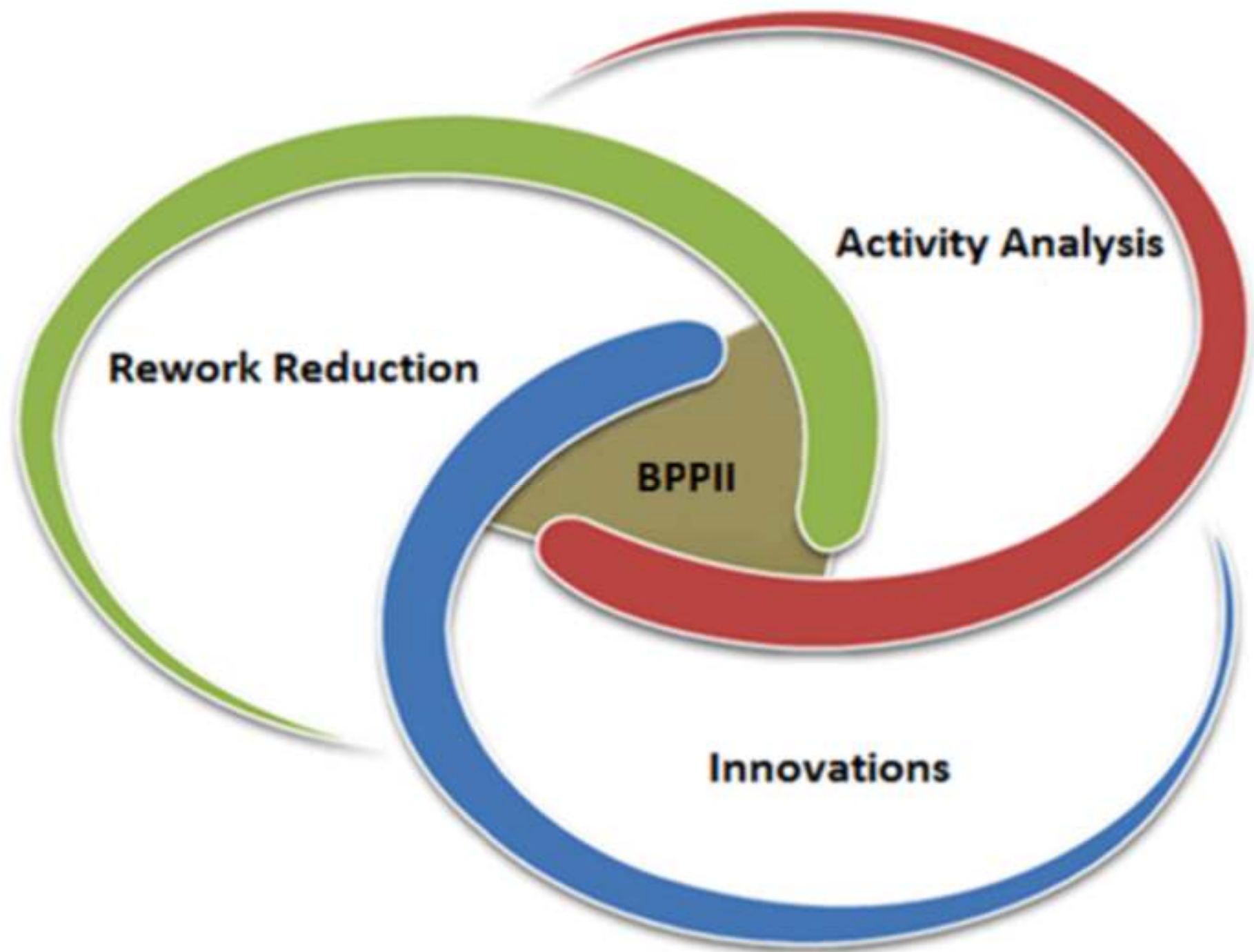


6-Year Voyage: Construction Productivity Research Program



Objectives of the Program:

- Improve Direct Work Rates;
- Reduce the Number of Work Hours Required to Complete a Unit of Work; and
- Reduce Rework

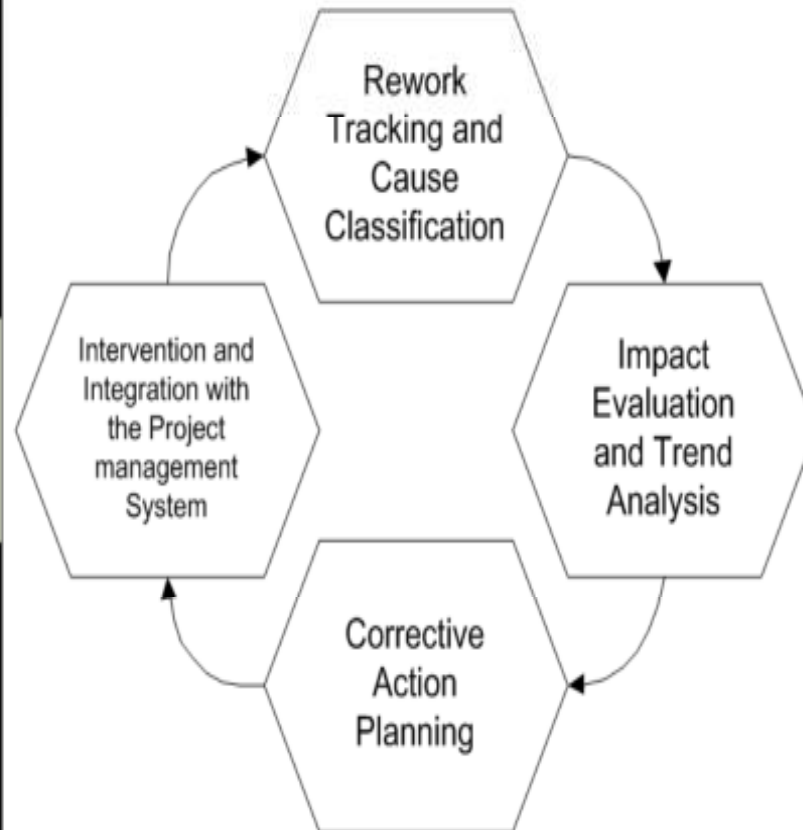


Rework Reduction Model

Inputs

- Organizational Process
- Project Scope Definition
- Project Management Plan
- Unit Price of Resources
- Planned Schedule

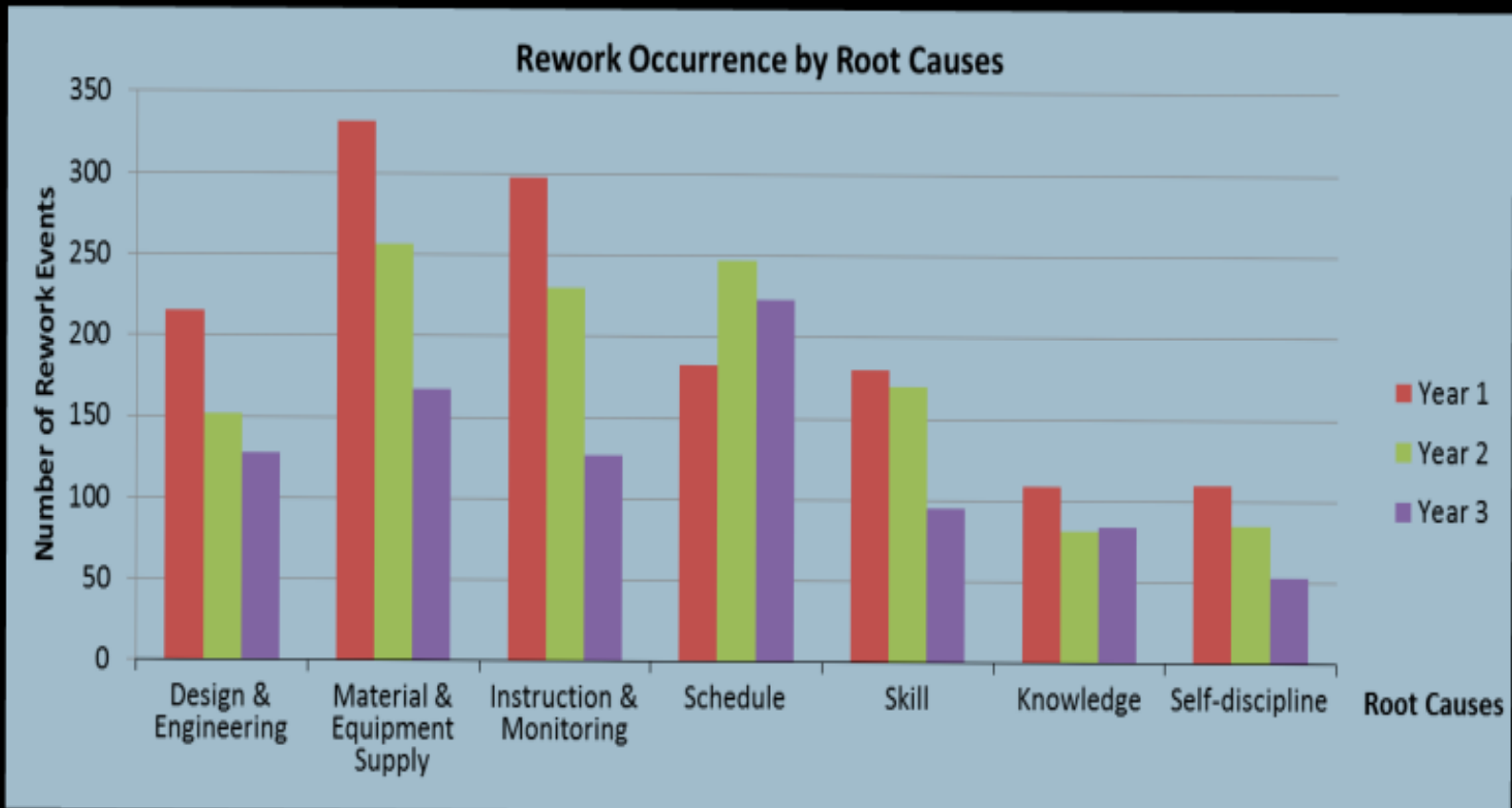
Rework Tracking and Intervention Model



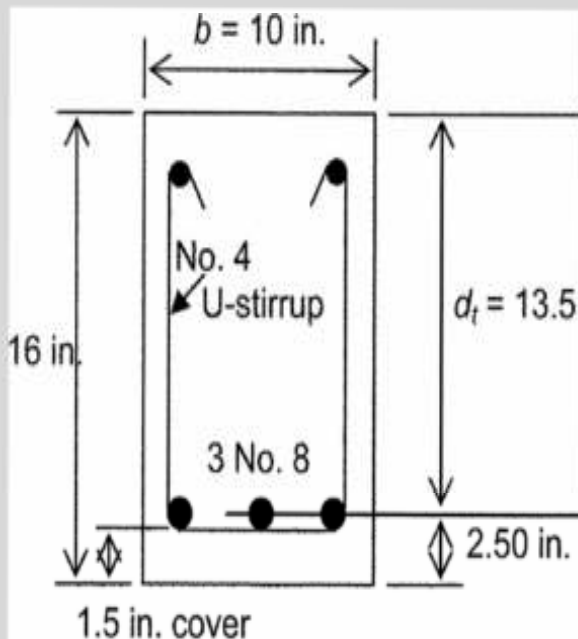
Outputs

- Rework Classification List
- Rework Occurrence Analysis
- Rework Cost Impact Analysis
- Rework Schedule Impact Analysis
- Updated Corrective Action Plan

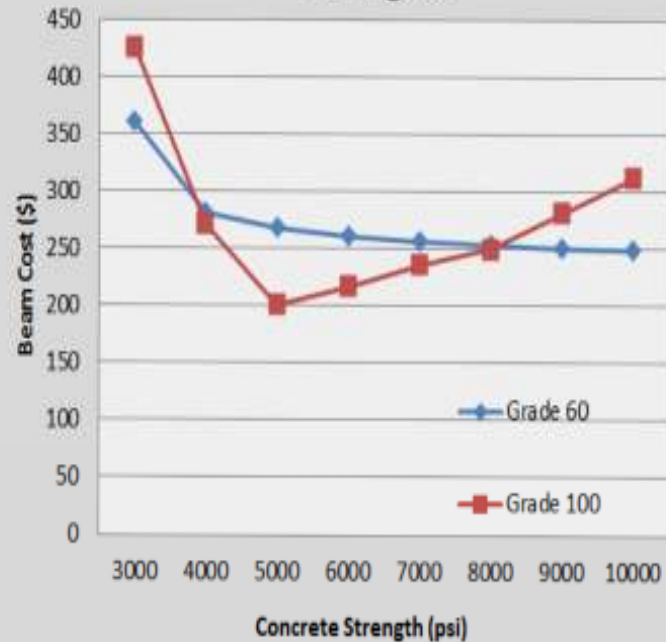
Rework Reduction: Data Analysis



High Strength Steel Reinforcement



Total Beam Cost for Varying Concrete Strengths



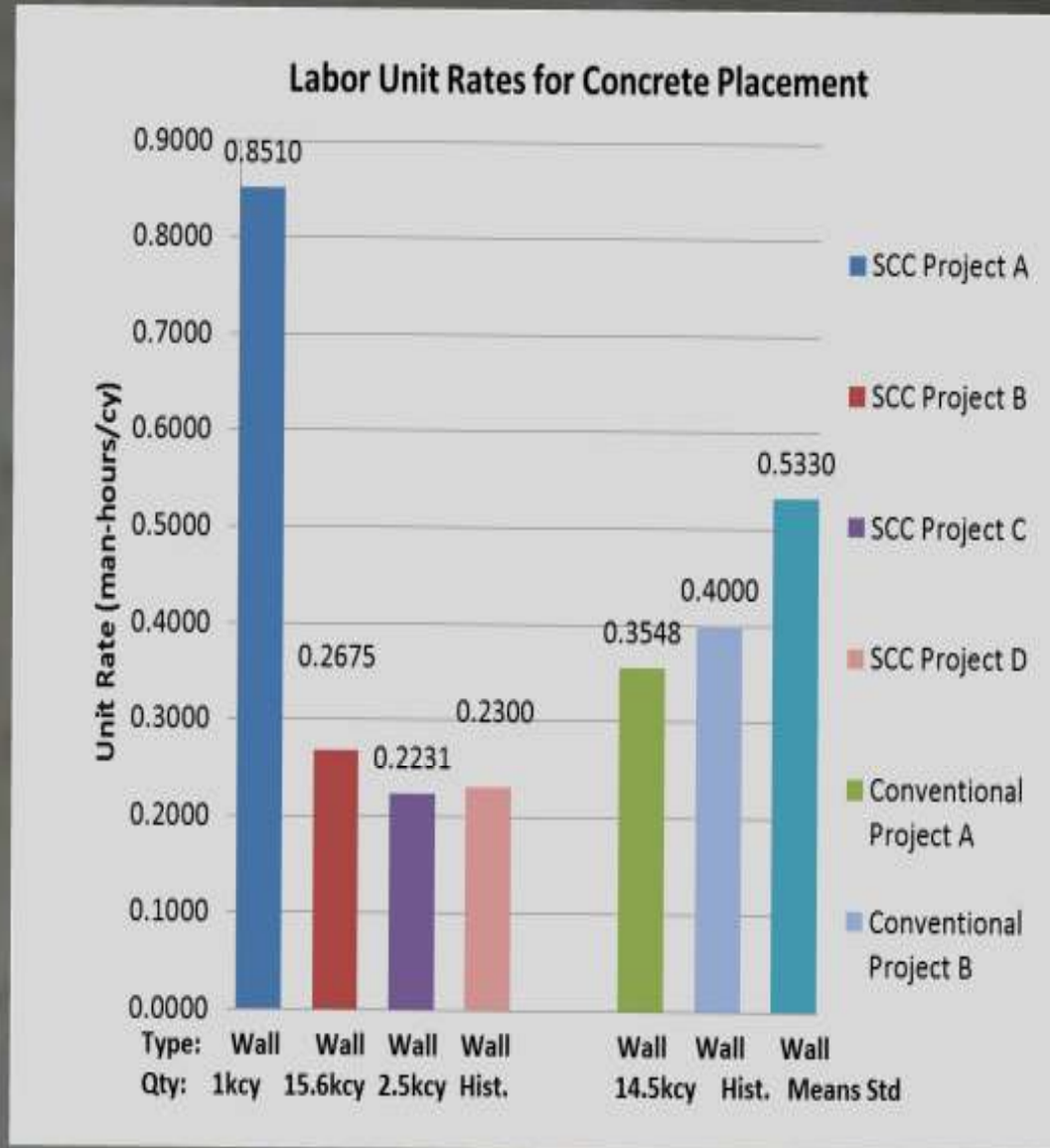
*Costs given for 32' long, 14"x23" beams

Modular Formwork

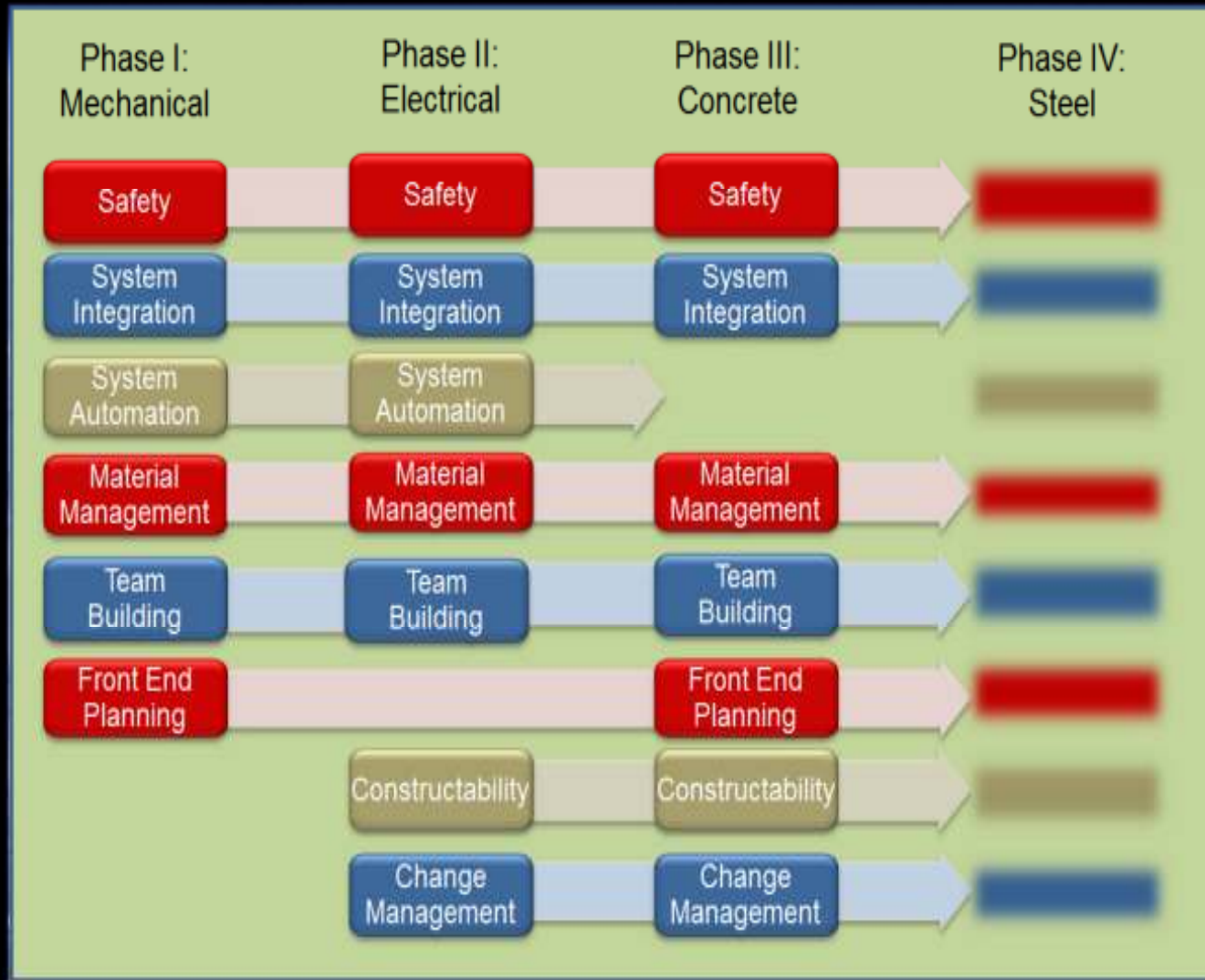


	Modular	Prefab-custom unit	Stick-build
Purchase or Rental	Rent + buy	Buy bulk + Buy reusable units	Buy bulk
Manpower for fabrication	Low (but need trained labour)	High on initial stage and then low	High
Crane	Need (usually)	Need (usually)	Need (rarely)
Fabrication on Site	No	Required on initial stage	Usually
Fabrication Areas	No	Need	No
Flexibility	Medium	Low	High
Speed of Erection	Fast	Medium	Low

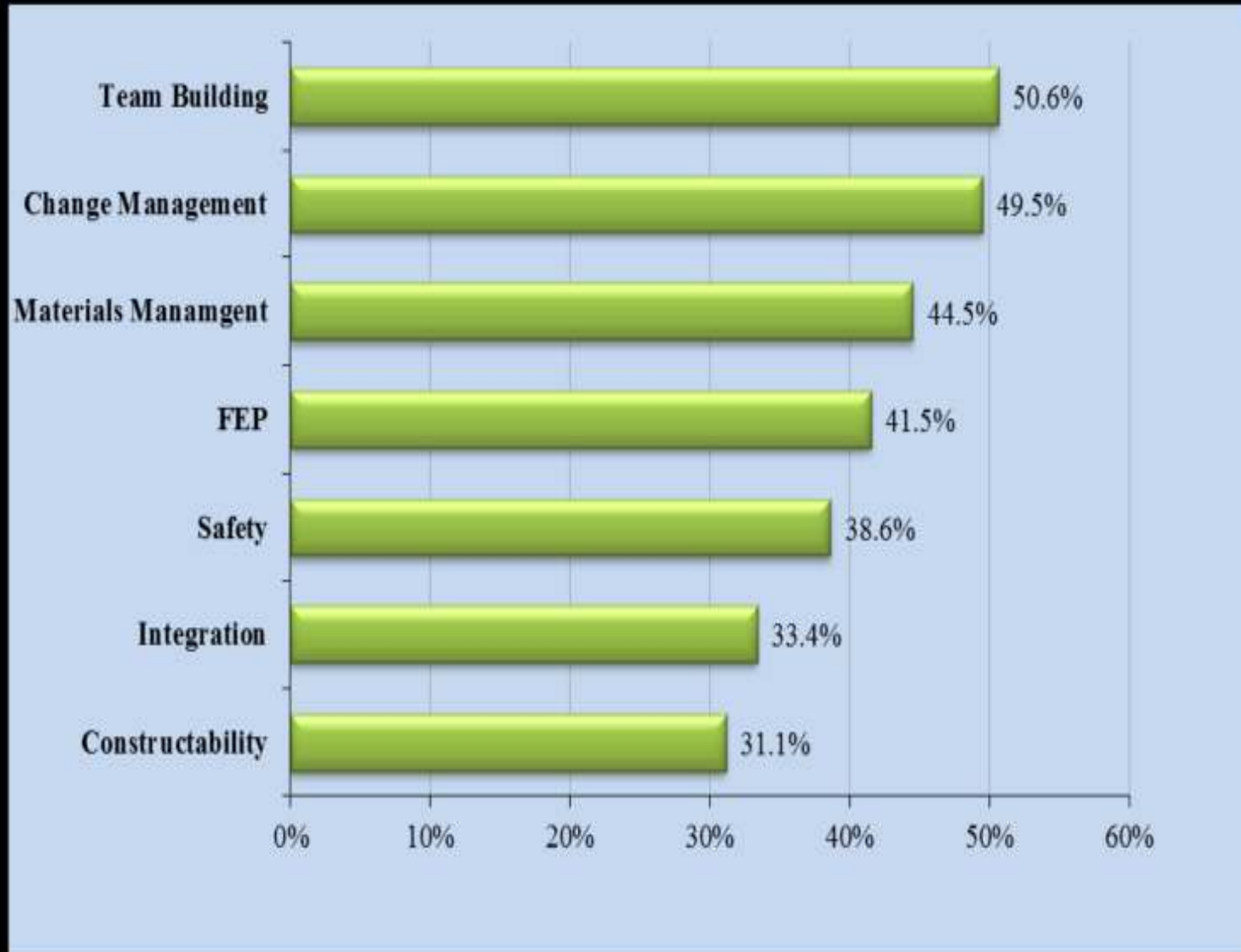
Self Consolidating Concrete



Productivity Practices



Actual Productivity Difference by Practices in the Concrete Trade



Other Productivity Initiatives

- U.S. Dept. of Commerce / NIST / BFRL
 - CII Benchmarking Productivity Research
 - Best Practices, TUI, and Economic / Craft Productivity
 - Intelligent Test Bed (for Case Studies)
 - Fall 2011 Workshop (BLS, Census, CII, AGC, etc.)
 - Sector Measures of Construction Productivity
 - Standard Industrial Chart of Accounts
- ASTM JPM (Job Productivity Measurement)
 - Voluntary Standard E2691-09 (SPC)
- Construction Sector Council (CSC) in Canada
 - Concluded Summer 2011



Other Productivity Initiatives

- Petrobras / ABEMI / CE-EPC / CII
 - CII Fab Yard Productivity Metrics (Offshore Projects)
 - Work Sampling / Time & Motion Studies
 - Case Study at 2011 CII Annual Conference (Chicago)
- PER (Productivity Enhancement Resources)
 - Chris Buck, President
 - Statistical Productivity Improvement (SPI) vs. PF
 - Productivity Data Management System (PDMS)
 - PF Forecasting and “Budgetivity”
- Mulva: Piecework and Cycle Time?



Questions?

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Austin, TX 78759-5316
<https://www.construction-institute.org>



Proving Something Big

Improving Construction Productivity: Time & Motion



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Presented by: Jason Scherpenisse, BSc, MSc(Civil)
Special Projects, R&D
Laricina Energy Ltd.

Chandana Siriwardana, BSc, MSc(Civil)
Ph.D. Student in Project Management
University of Calgary

Janaka Ruwanpura, PQS, PhD, PEng
Centre for Project Management Excellence
University of Calgary

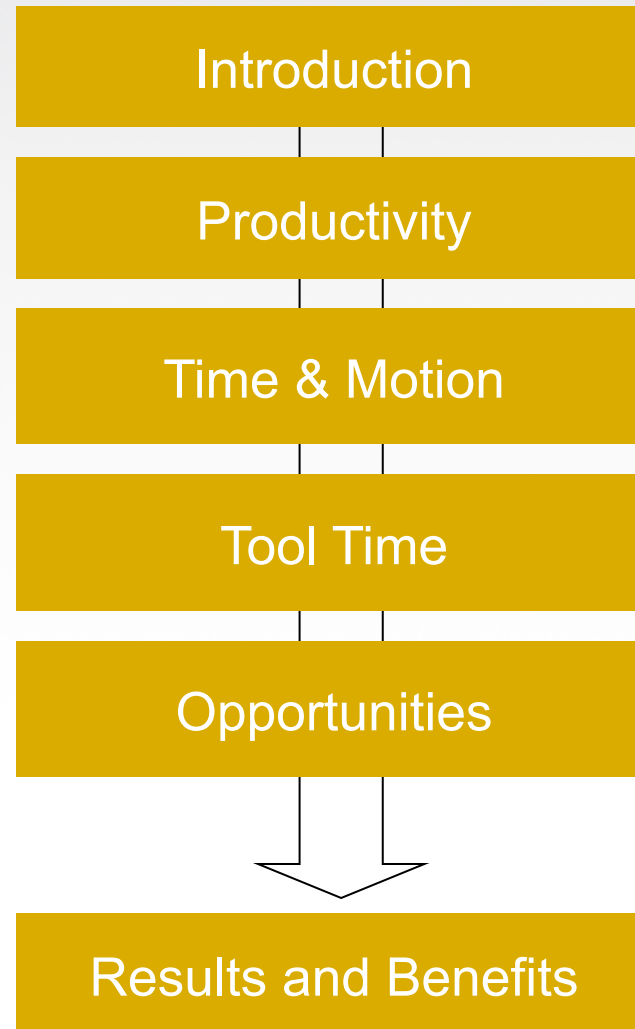
Date: May 16, 2012

Forward-looking statements

This Laricina Energy Ltd. (the “Company”) presentation contains certain forward-looking statements. Forward-looking statements may include, but are not limited to, statements concerning estimates of exploitable original-bitumen-in-place, predicted recovery factors, steam-to-oil ratios and well production rates, estimated recoverable resources as defined below, expected regulatory filing, review and approval dates, construction and start-up timelines and schedules, company project potential production volumes as well as comparisons to other projects, statements relating to the continued overall advancement of the Company’s projects, comparisons of recoverable resources to other oil sands projects, estimated relative supply costs, potential cost reductions, recovery and production increases resulting from the application of new technology and recovery schemes, estimates of carbon sequestration capacity, costs for carbon capture and sequestration and possible implementation schedule for carbon capture and sequestration processes or related emissions mitigation or reduction scheme and other statements which are not historical facts. You are cautioned not to place undue reliance on any forward-looking statements as there can be no assurance that the plans, intentions or expectations upon which they are based will occur. By their nature forward-looking statements involve numerous assumptions, known and unknown risks and uncertainties, both generally and specific, that contribute to the possibility that the predictions, forecasts, projections and other forward-looking statements will not occur. Although the Company believes that the expectations represented by such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct and, accordingly that actual results will be consistent with the forward-looking statements. Some of the risks and other factors that could cause results to differ materially from those expressed in the forward-looking statements contained in this presentation include, but are not limited to geological conditions relating to the Company’s properties, the impact of regulatory changes especially as such relate to royalties, taxation and environmental changes, the impact of technology on operations and processes and the performance of new technology expected to be applied or utilized by the Company; labour shortages; supply and demand metrics for oil and natural gas; the impact of pipeline capacity, upgrading capacity and refinery demand; general economic business and market conditions and such other risks and uncertainties described from time to time in the reports and filings made with security regulatory authorities, contained in other disclosure documents or otherwise provided by the Company. Furthermore the forward-looking statements contained in this presentation are made as of the date hereof. Unless required by law the Company does not undertake any obligation to update publicly or to revise any of the included forward-looking statements, whether as a result of new information, future events or otherwise. The forward-looking statements contained in this presentation are expressly qualified by this advisory and disclaimer.



Outline



Introduction

- **It is said that oil sands projects are not executed that efficiently:**

“ ...the performance and improvement in construction ***productivity has been declining*** over the past 20 years¹. The decline in Alberta is consistent with the ***decline of productivity in North America*** over the past three decades^{2,3} .”

1.- Choy, E.C.Y. (2004). “Modeling Construction Site Productivity using situation-based simulation tool.”

2.- Business Roundtable (BRT), 1989; Dozzi and AbouRizk, 1993; Hewage and Ruwanpura, 2006; Sharpe, 2006.

3.- Jergeas, G & Alberta Economic Development (2009).” Improving Construction Productivity on Alberta Oil & Gas Projects

Introduction

- **Effective work time, or ‘Tool-time’ is lower than that of commercial construction projects:**

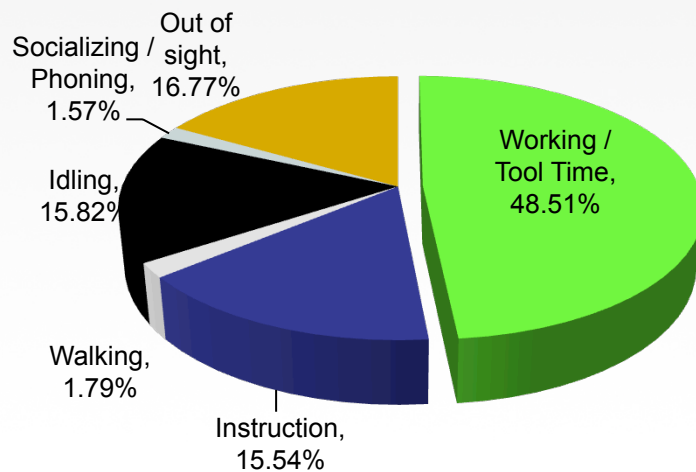


Figure 1: Commercial construction¹

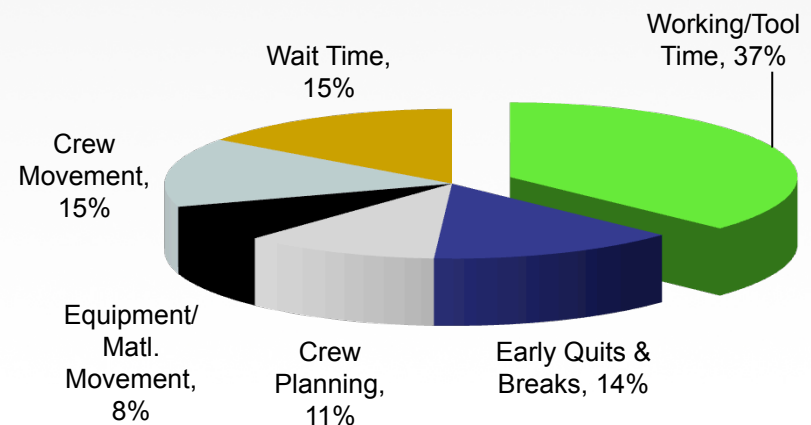


Figure 2: Oil sands²

- **Random improvements based on experience are not enough...**

1.- University of Calgary(2008)

2.- Construction Owners Association of Alberta (COAA) – Source unknown



Improve productivity, an industry challenge

Laricina is advancing *innovation project execution strategies*



- **Facility construction is capital intensive.**

- **Labour is a key component**
- **Any efficiency obtained means significant cost savings**
- **Estimates up to 9% reduction in TIC/CAPEX¹⁾**



*Images from Laricina Energy Ltd website, www.laricinaenergy.com

1.- Cusitar, W. (2009). "Project Planning: A case study. COAA Workface Planning Conference



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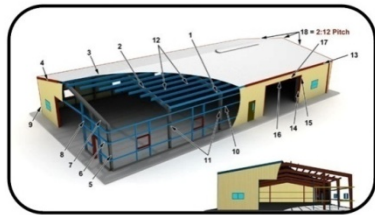
Improve productivity, an industry challenge



- Objectives:
 - Measure and verify current productivity
 - Improve productivity levels

Improve productivity, an industry challenge

- Challenges remain in identifying specific issues affecting productivity at all levels



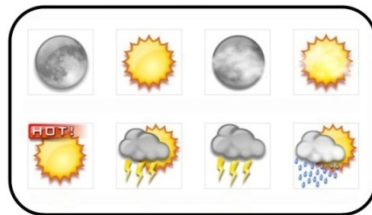
Technical



Management



Human/Labour



External factors

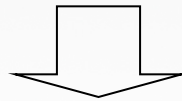


Market Conditions

How can we improve productivity?

Time & Motion:

A Time & Motion (T&M) study is a business efficiency technique that observes the time and methods (motions) to perform any type of work¹.



STEP 1: Monitor construction activities and site operations

STEP 2: Identify inefficiencies and opportunities

STEP 3: Implement changes

STEP 4: Quantify the impact

1.- Archives from Frederick W. Taylor and Frank and Lilian Gilbreth.



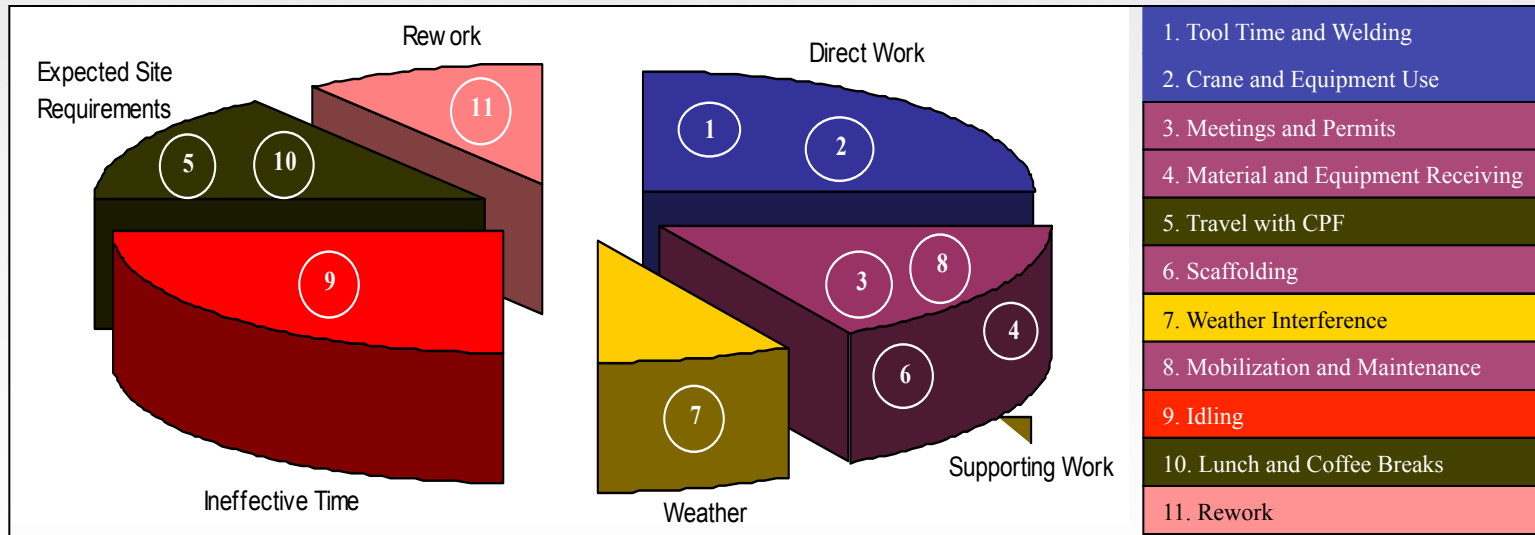
Time & Motion study

- Modern model for T&M: Remotely controlled video cameras, accessed exclusively by third party researcher
- Privacy protection is a must
- Laricina has partnered with the University of Calgary's Centre for Project Management Excellence:
 - Canada Research Chair Dr. Janaka Ruwanpura and researchers (Chandana Siriwardana)
 - Construction Visualization and Monitoring Centre(CMVC)



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Time & Motion study



What is Tool Time?

- The amount of time that workers spend in producing tangible outputs

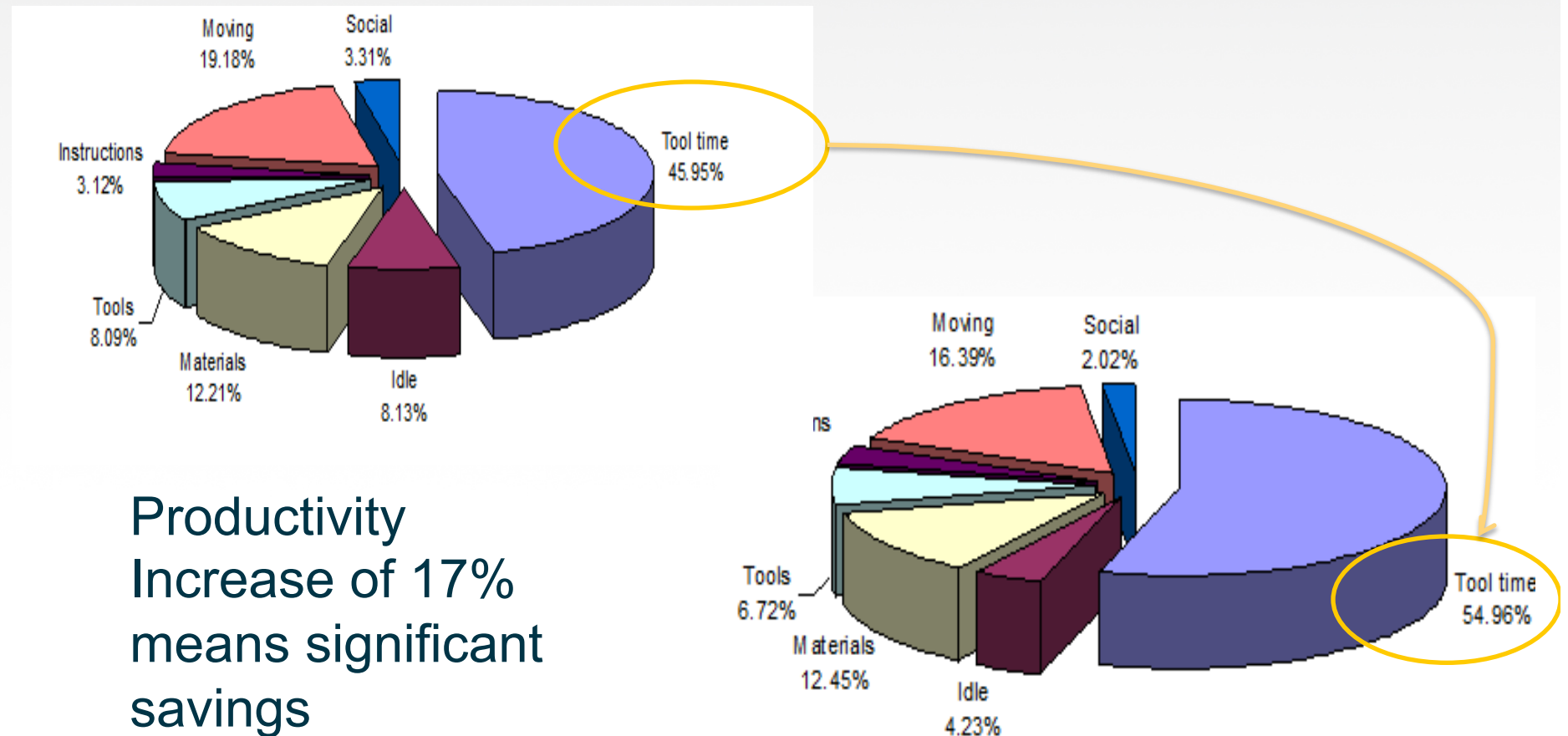
Non-Tool Time

- Supporting Time: discussions, toolbox meetings, safety etc.
- Ineffective Time: idle time, extra-socializing, searching for tools and materials



Opportunities (something big)

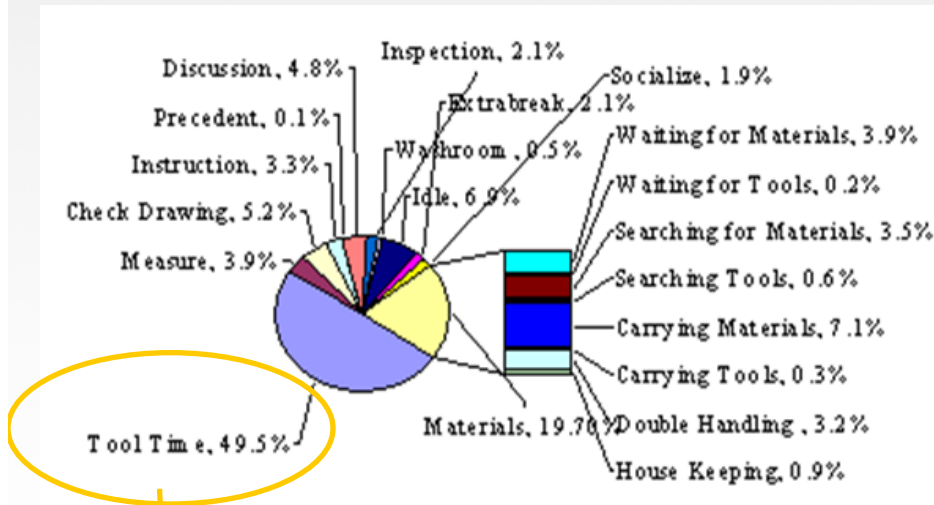
- Example 1: Applying just one process change...



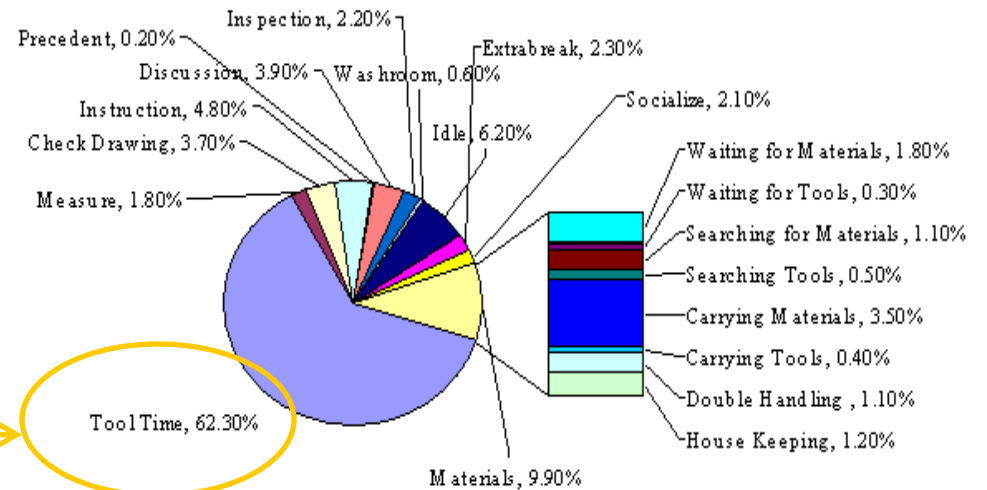
* University of Calgary(2004-2008). Results observed in Commercial construction Projects

Opportunities (something big)

- Example 2: Applying a set of new processes



Productivity Increase of 20% means even greater potential savings



* University of Calgary(2004-2008). Results observed in Commercial construction Projects



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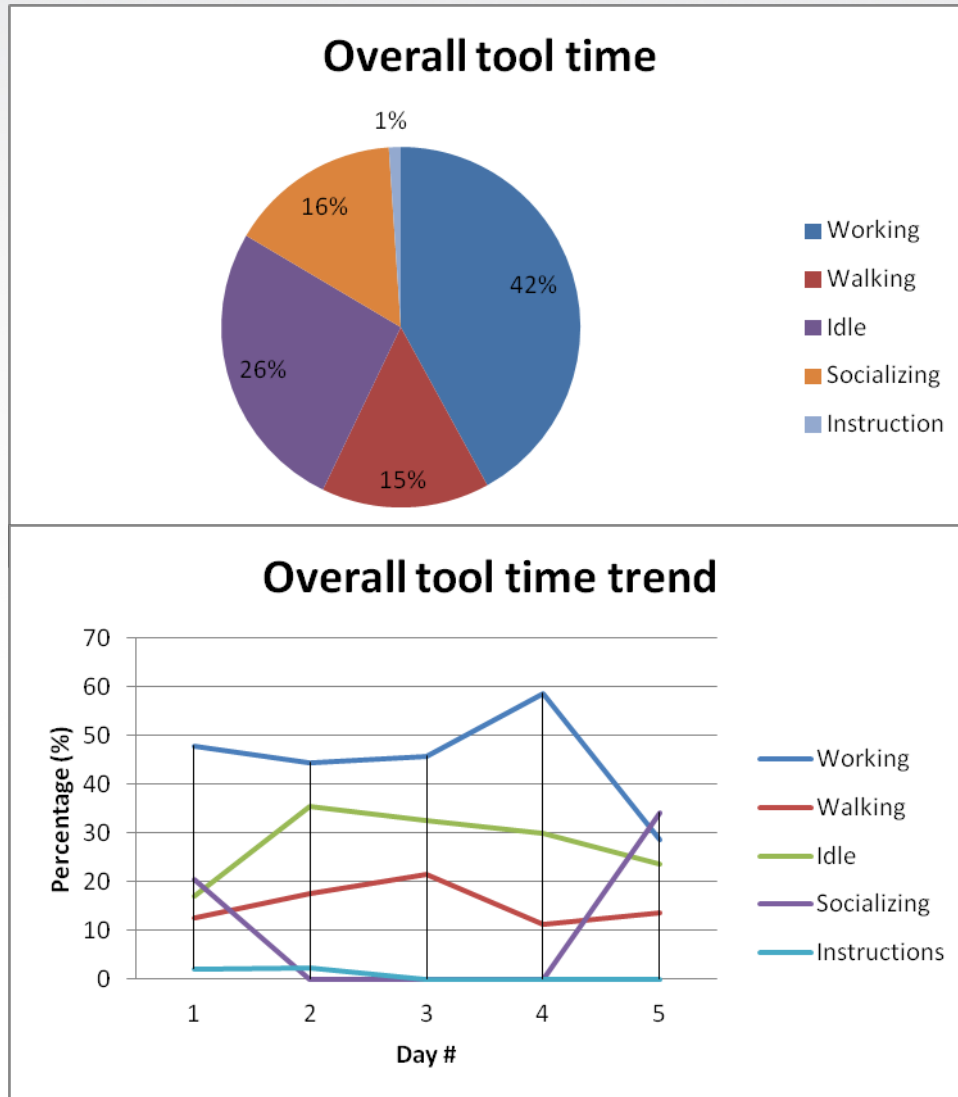
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Sneak Peek: Actual Data Analysis

Data and analysis (different days)

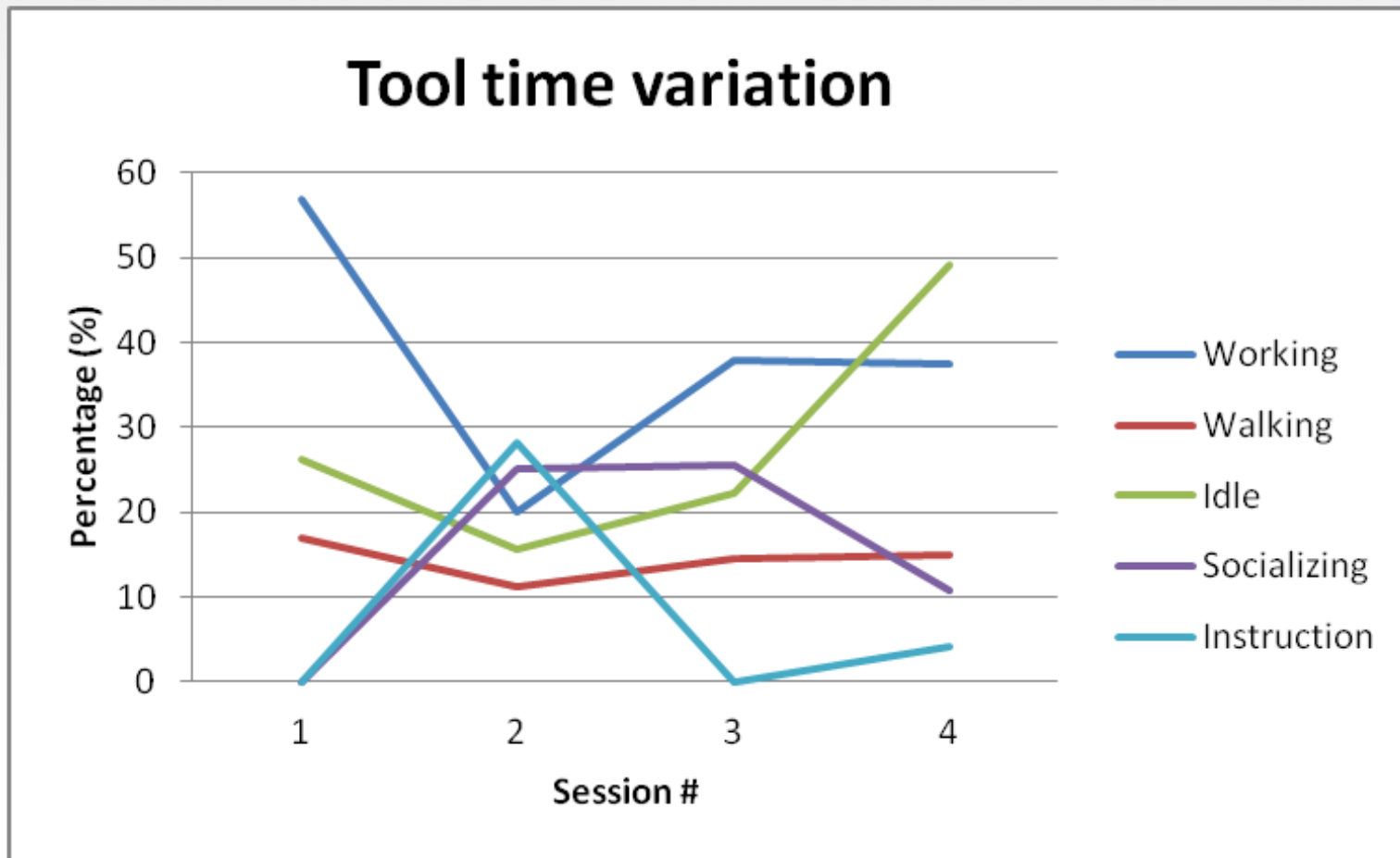


Observations

- High idling time
- Socializing and walking times are comparatively similar
- Average tool time of the 3rd day morning session and 4th day afternoon session taken for the calculation



Data and analysis (during the day)

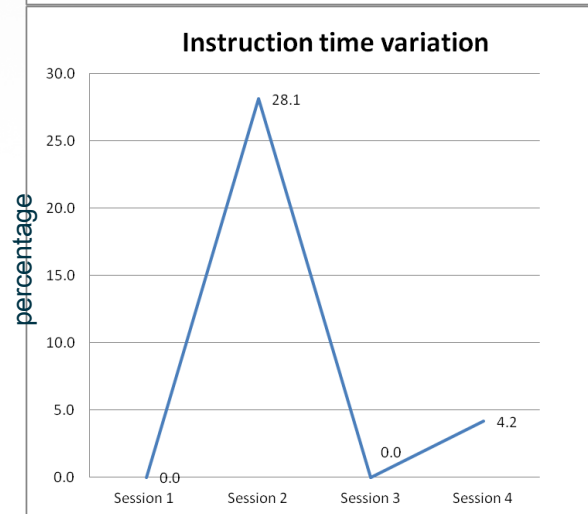
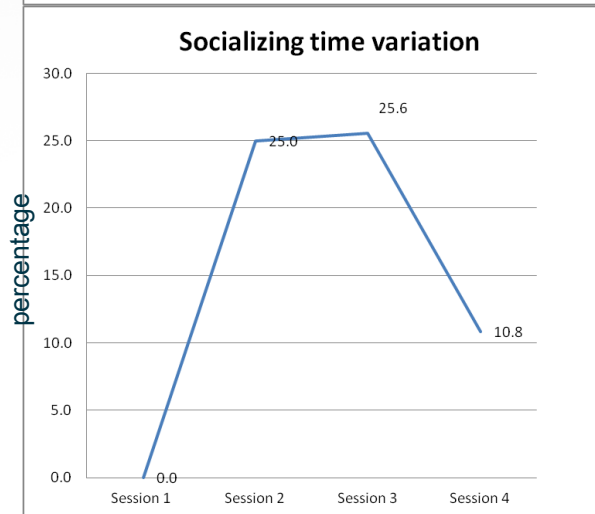
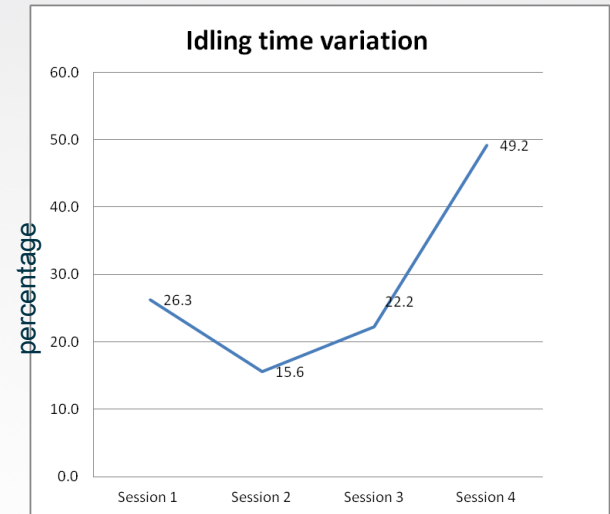
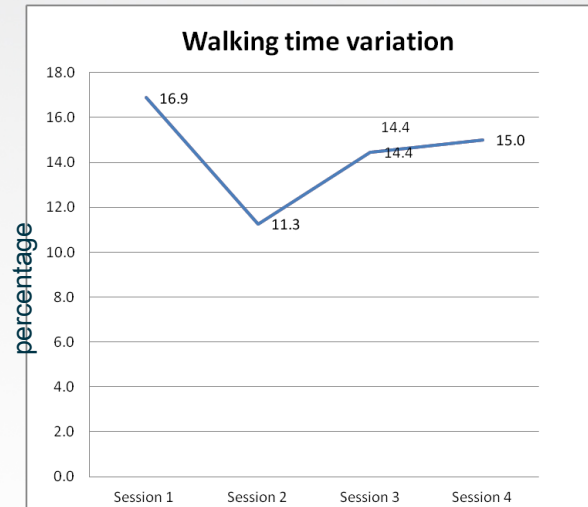
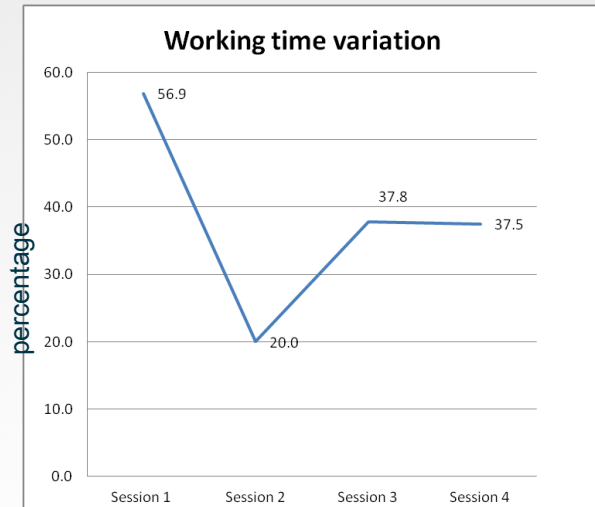


* Session are different times during the day



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Tool time variation (during the day)



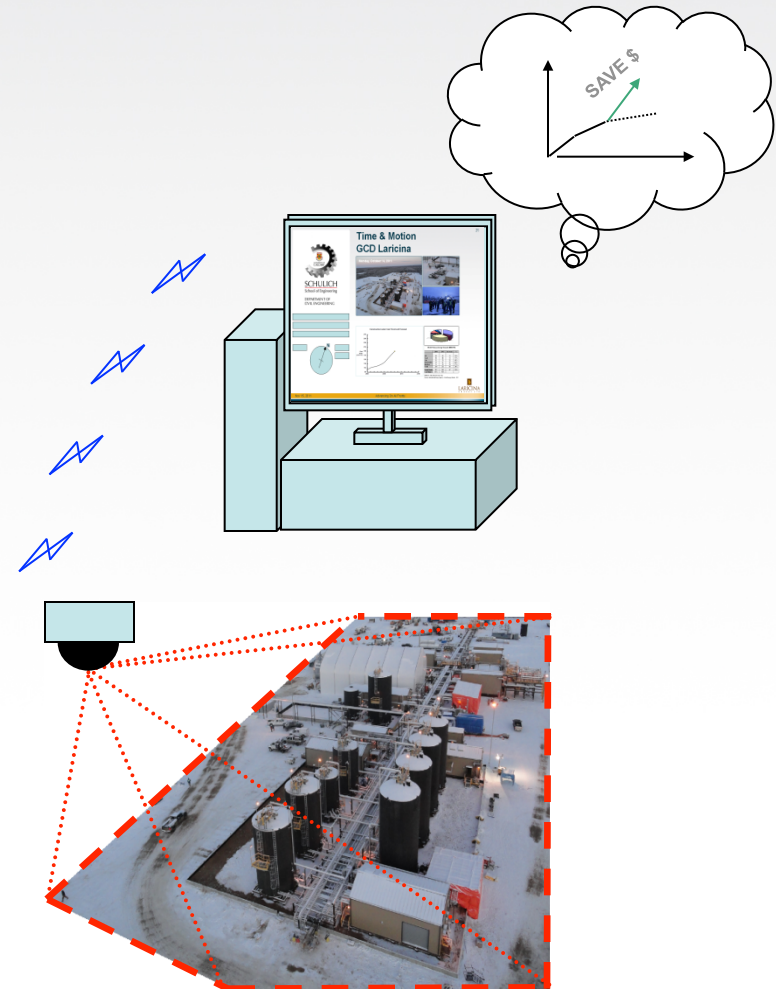
Benefits

- ***Learning and Teamwork:*** Participants (Laricina, contractors and workers) can learn more about the project execution and how they function as a team
- ***Real-time improvements:*** Tool for site management to improve in real-time and capture lessons learned
- Contractors improve and are recognized for achievements (and ***become industry leaders***)
- ***Cost-Schedule-Quality :*** T&M partners realize immediate improvements



Next Steps

- ***Laricina continues to pioneer with UofC:***
 - Early stage; collecting and validating the data. This is the first time using this model in the industry
 - This innovation is setting a precedent for industry Tool time,
 - Ability to implement change is the next challenge.
- ***Change practices in field:***
 - We are going to improve our practices, continue to observe and quantify these gains.



Questions?



Contact us

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COAA – CII JOINT INITIATIVE

IMPLEMENTATION OF WORKFACE PLANNING THROUGH ADVANCED WORK PACKAGING

COAA BEST PRACTICE XX
MAY 16, 2012

AGENDA

1. Overview of joint venture (5 min)
2. CII RT272 Phase I Background (10 min)
3. Thrust areas
 - a. *Process & Functional* (5 min)
 - b. *Contracts* (3 min)
4. Survey (30 min)
5. Q&A (30 min)
6. Wrap up (10 min)



Overview of Joint Venture

WorkFace Planning is the process of organizing and delivering all the elements necessary, before work is started, to enable craft persons to perform quality work in a safe ,effective and efficient manner.

Background

- COAA commenced development of WorkFace Planning Best Practice 2003 – 2005.
- Concentrated on Construction Phase of Project with goal of increasing Tool Time 25% by reducing Wait Times.
- Developed Rules and Scorecards
- Introduced Contract Language to accommodate WFP

Background

- Developed FIWP Templates.
- Developed and Delivered Training Courses.
- Developed Path of Construction Best Practice
- Introduced Concept for Designated Occupations
- Flowchart of WFP Process thru Project Lifetime

Background

- CWP Best Practice
- Introduced series of WFP Conferences.
- Flowchart updated to include Swim lanes:

COAA WorkFace Planning Project Integration

Background

Why is it not working?

- Productivity was not improving to extent anticipated with implementing WFP.
- Constructors who were getting high marks utilizing guidelines of COAA WFP Scorecards not consistently getting higher productivities.
- **Realization that problems were still occurring in transfer of Front End Deliverables complete, on time and in right sequence to Contractors.**

Overview of JV

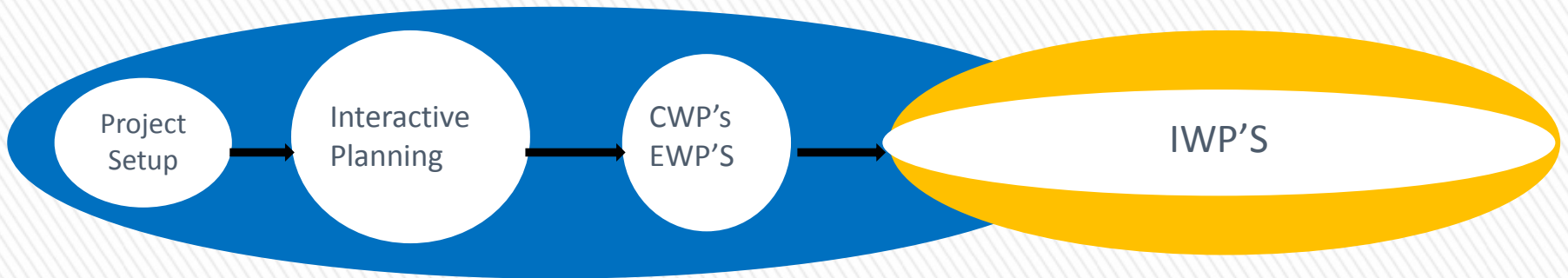
- COAA WFP Committee was given mandate to provide guidelines for Front End Processes to support the deliverables required for successful implementation of WFP on project.
- CII had just published and presented “IR 272-2 Enhanced Work Packaging” which is their latest implementation resource.

Overview of JV

ADVANCED WORK PACKAGING



WORKFACE PLANNING



Front End

Construction
Commissioning
Start Up



GOAL OF JV

- Work together to update RT-272 and COAA Best Practices and integrate into an industry standard Recommended Practice for Implementation of Advanced Work Packaging (of which WFP will continue to cover the Construction Phase as well as the Commissioning and Start Up.)
- Develop and Strengthen Processes and Procedures in the Front End to Support WFP.
- Integrate definitions, metrics and language.

GOAL OF JV

- Processes
 - Functionality (Organization)
 - Contract Language
 - Maturity Assessment
- Presentation of RT272 (joint) at the CII Annual Meeting in summer 2013



CII RT272 Phase I Background :

Enhanced Work Packaging Planning for Productivity and Predictability

RT 272 Team

Steve Autry, *ConocoPhillips*

Richard Buxo, *SNC-Lavalin*

Doug House, *Zachry Industrial Inc.*

Mark Hunter, *Bechtel*

John Hyland, *Lauren Engineers & Constructors*

Jose LaRota, *Southern Company*

Fernanda Leite, *The University of Texas at Austin*

Brendan Lynam, *Kvaerner*

***Enhanced* Work Packaging**

Sarah Meeks, *The University of Texas at Austin*

Robin Mikaelsson, *Bentley Systems, Inc*

Bill O'Brien, *The University of Texas at Austin*

Mark Parsons, *KBR*

Randy Paulson, *Progress Energy*

Sean Pellegrino, *Chevron*

Jim Rammell, *Wood Group Mustang*

Jim Vicknair, *WorleyParsons*

Implementation Learning Objectives

- Learn about work packaging across project life cycle; understand terms
- Recognize benefits of enhanced work packaging
- Understand model process for project life cycle and field implementation of work packaging
- Examine case studies
- Consider recommendations for action

Traditional Work Packaging

- Has been done on every project since the pyramids
- Is a formal/informal process of understanding and performing field work
- Is accomplished inconsistently



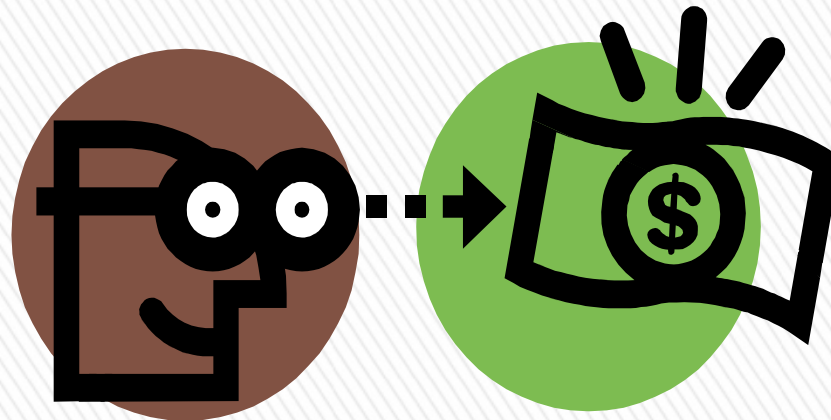
Enhanced Work Packaging

- Takes a proactive, structured approach to managing constraints at the work face
- Involves deliberate, early planning to support execution
- Holistically incorporates the full project life cycle
- Gives supervisors more field time



What's in It for Me?

- Improved productivity
- Predictable performance
- Standardized field execution practices



Construction Labor Productivity Is Key

- Direct labor accounts for 25% to 40% of construction installed costs
- Labor productivity is the cost area most influenced by engineering and construction management practices
- Increased productivity improves safety, cost, schedule, and quality

**Improved labor productivity means
improved, more predictable
performance**

Summary Benefits—Validated by Case Studies

- Cleaner, safer jobsite
- Alignment from engineering to construction
- Better craft retention
- Better turnover to commissioning/operations
- Improved project execution predictability
- Cost and schedule savings

Improvement “Opportunities” for the Industry

Current challenges:

- » Inconsistent terminology
- » Need for standardization of work packaging
- » Lack of guidelines around implementation of work packaging
- » Little documentation of work packaging practices

RT 272 Contributions: A Model for Enhanced Work Packaging

- Common Language → Definitions
- Recommended Practice Model
- Tools
- Case Studies

Definitions

Practice Model

Tools

Case Studies

Common Language → Definitions

- Work Packaging
- Work Face Planning (WFP)
- Work Face Planner
- Engineering Work Package (EWP)
- Construction Work Package (CWP)
- Installation Work Package (IWP)

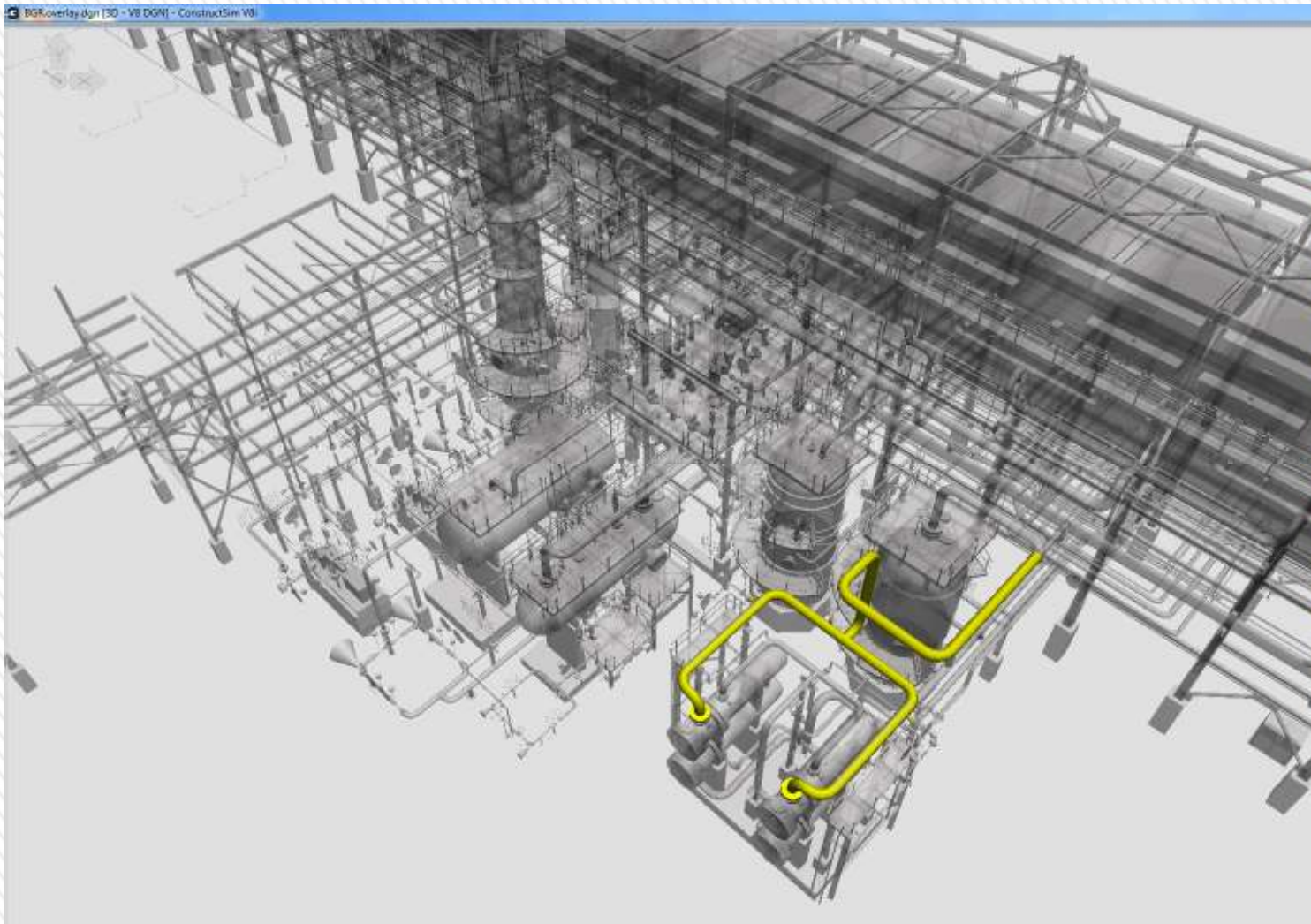
Definitions

Practice Model

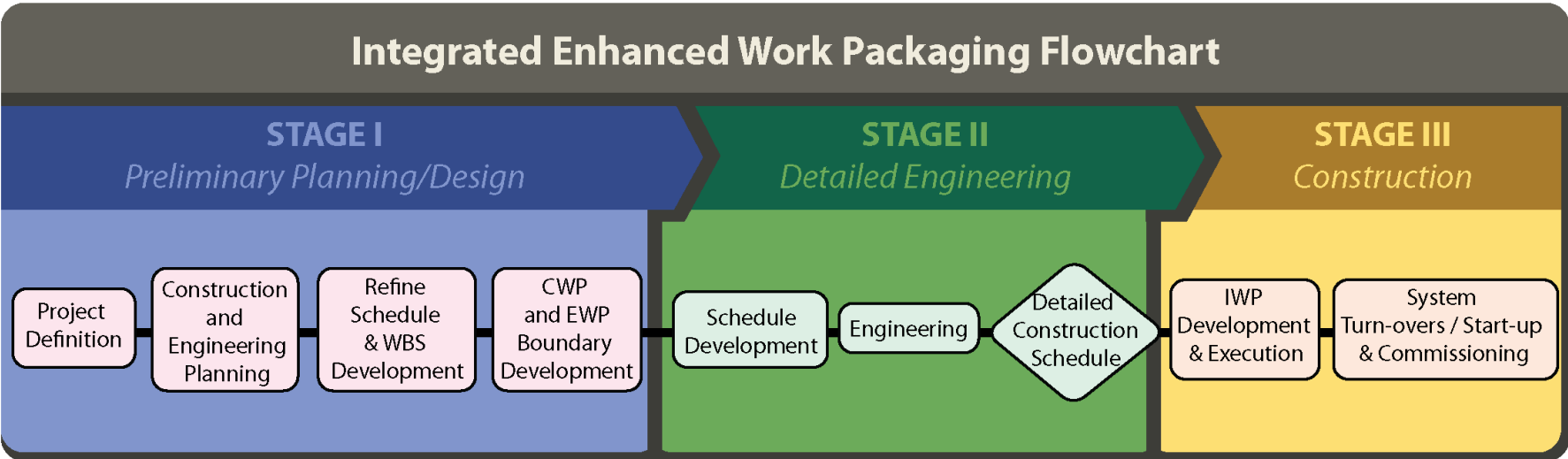
Tools

Case Studies

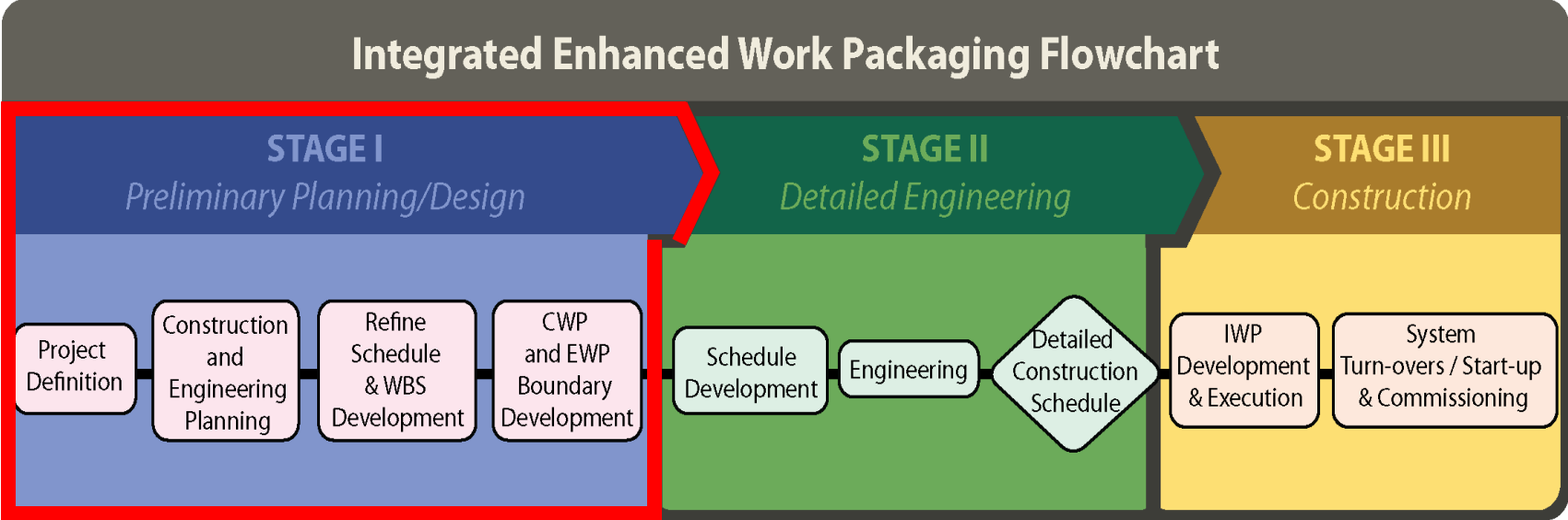
Work Package Hierarchy - ~~Project~~ Project Overall



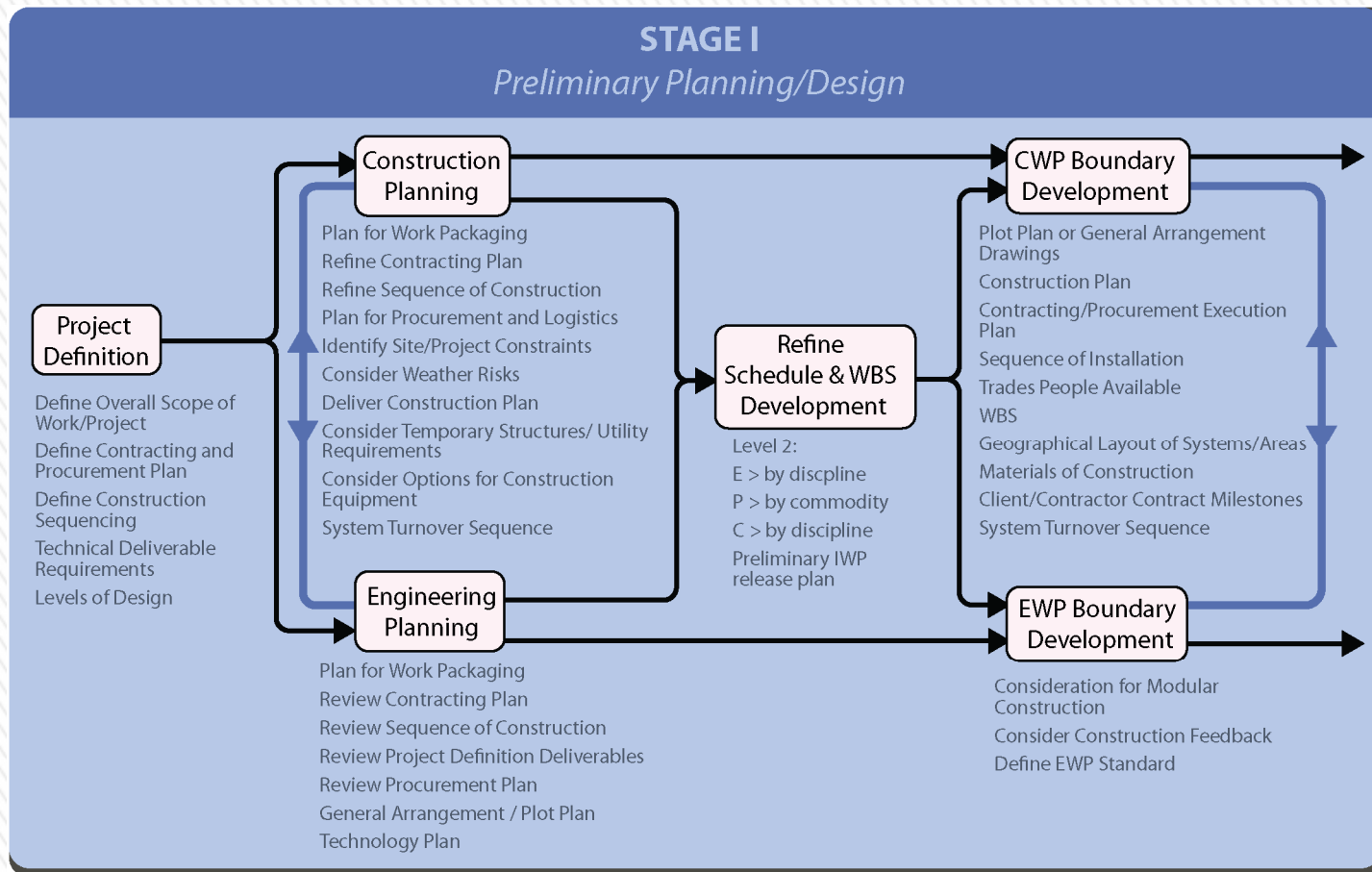
Recommended Practice Model



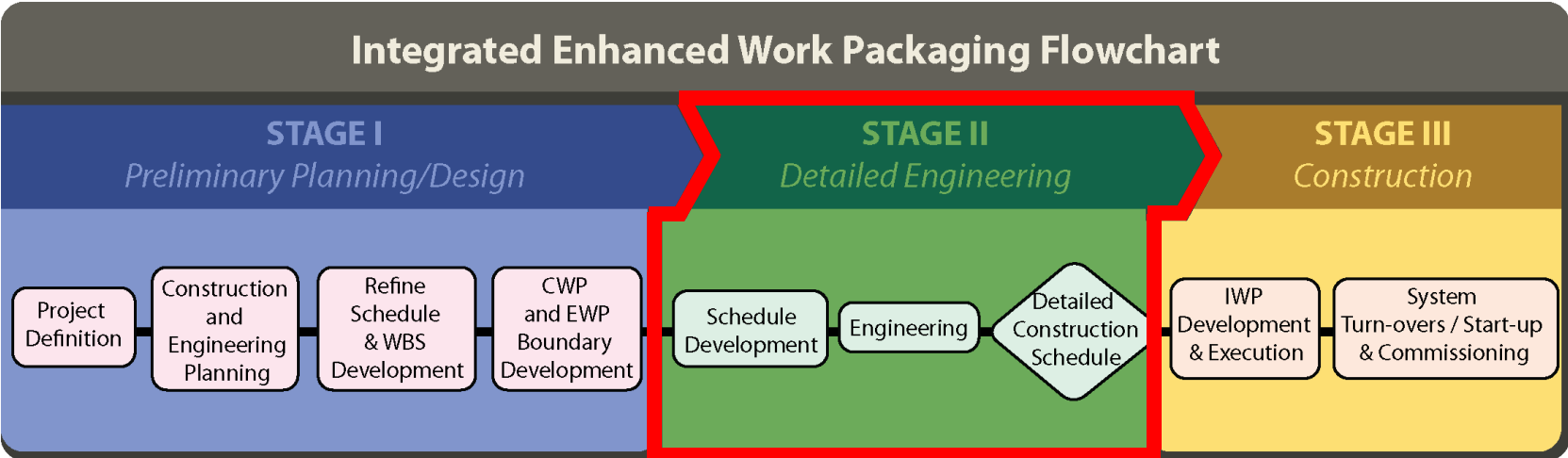
Recommended Practice Model



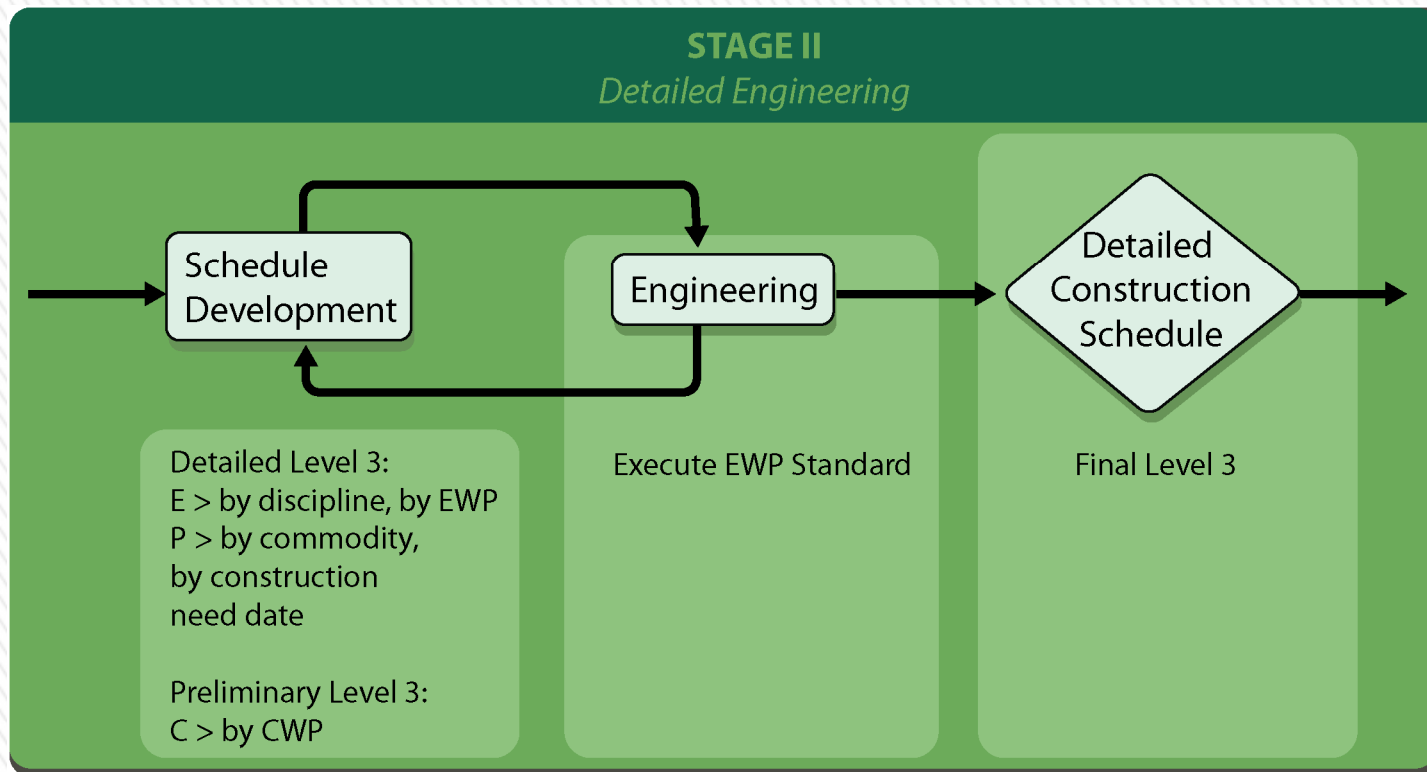
Stage I: Preliminary Planning/Design



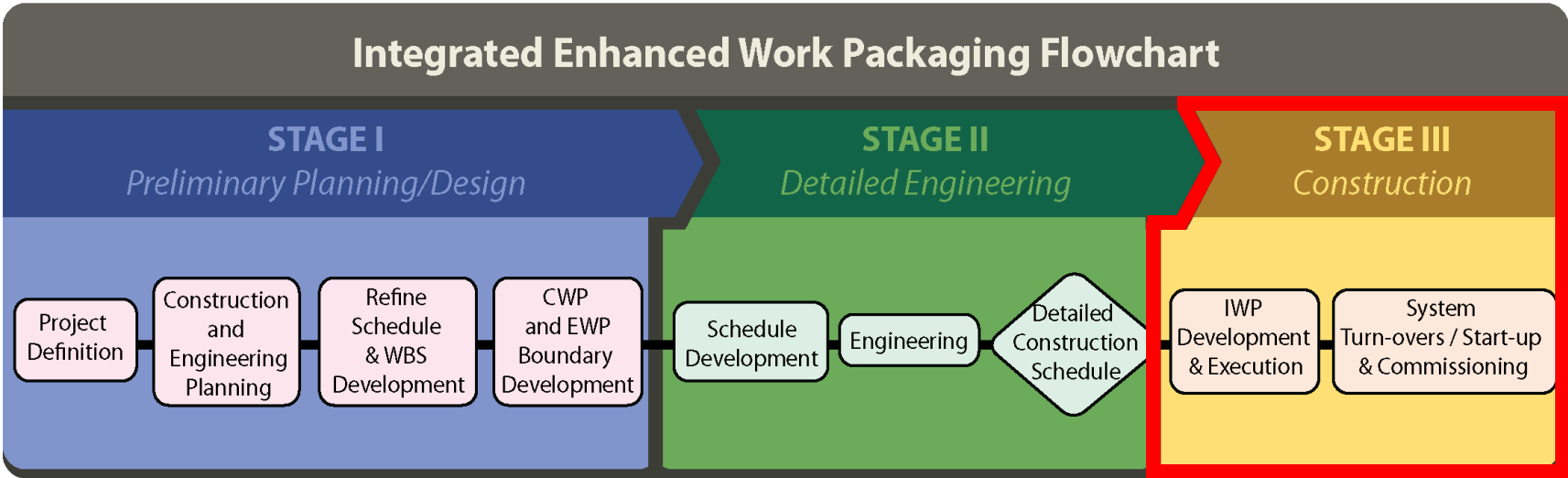
Recommended Practice Model



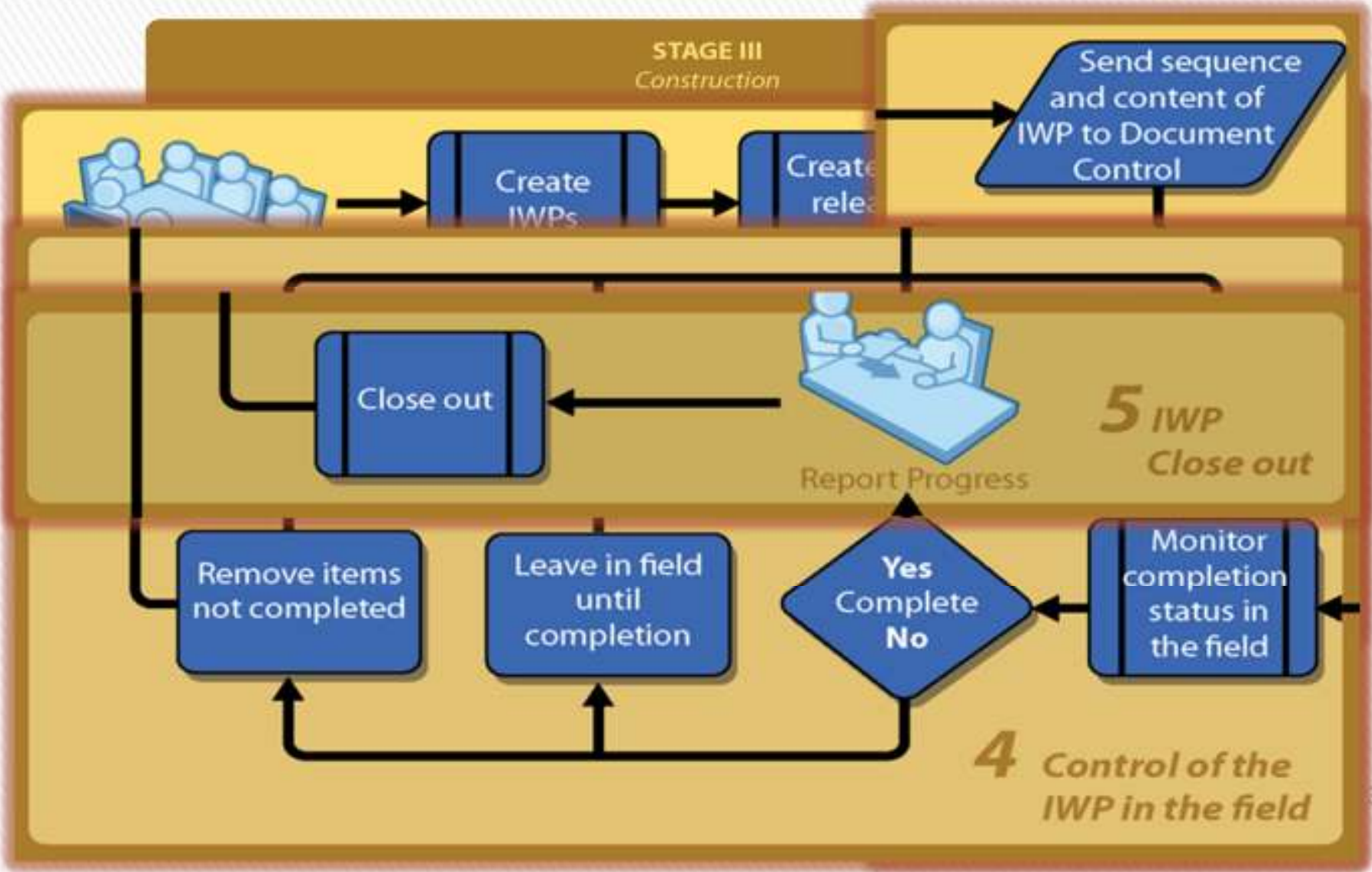
Stage II: Detailed Engineering



Recommended Practice Model



Stage III: Construction



Tools

1. Assessment Tool
2. IWP Checklist
3. Scorecard

Project: _____		SCORE					Date: _____
	Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments / Observations
IWP Check List – Piping Installation							
IWP ID Number: _____							
ITEM DESCRIPTION							
1.0	Project Definition & Planning						
1.1	Do you have early scope definition documents include construction sequencing phases and limits to support packaging of design and construction.						
1.2	Early allowance is made to develop high level divisions of responsibility to support contracting plan and procurement.						
1.3	A detailed project execution plan is developed at the earliest stages of planning and includes basic construction sequencing planning.						
1.4	Early decisions are made relevant to the level of detail required in engineering deliverables to support down-stream work packaging. Clarification: Steel design & connections, min sized piping to be incorporated in isometrics, design detail for physical raceways & conduit.						
Section 2.0 Construction							
2.1	Has a pre-fabricated piping schedule (On-site And Available For Installation)						
2.2	Does the piping schedule include required valves clearances onsite and ready for installation						

Case Studies

Ten case studies

- » Identified current practices
- » Determined ranges of implementation
- » Documented lessons learned
- » Performed validation

Several industries

- » power
- » oil & gas
- » government
- » commercial

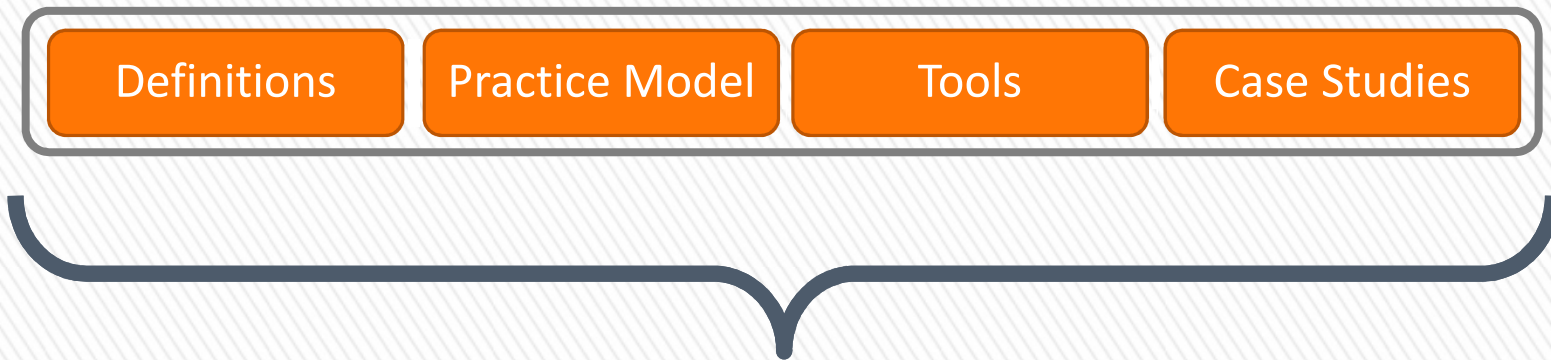
Definitions

Practice Model

Tools

Case Studies

RT 272 Contributions: A Model for Enhanced Work Packaging



Productivity & Predictability

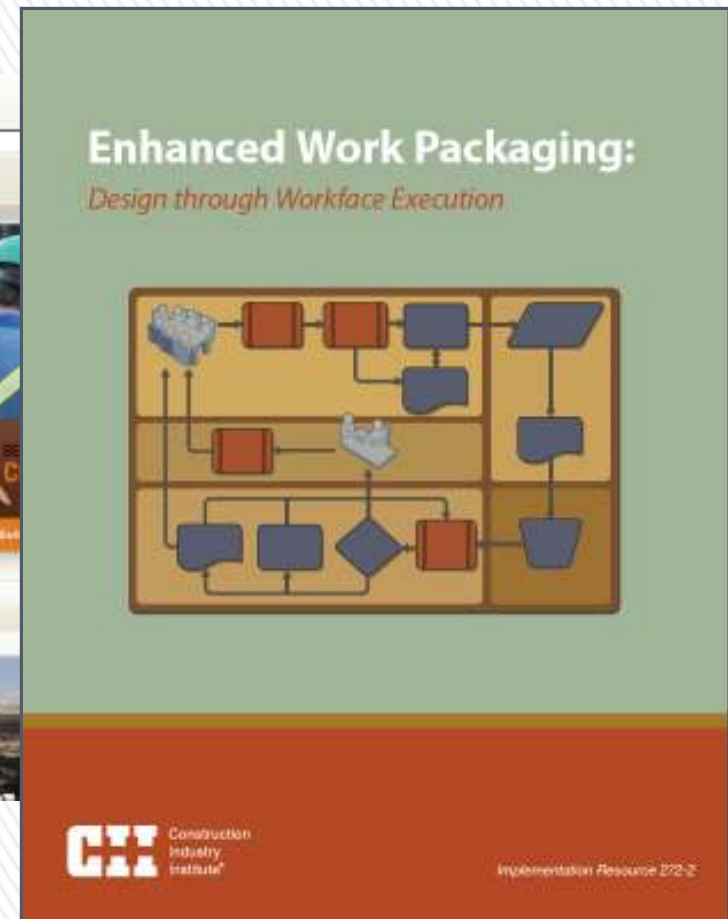
Thrust Areas:

- a. Process & Functional
- b. Contracts

Thrust Areas:

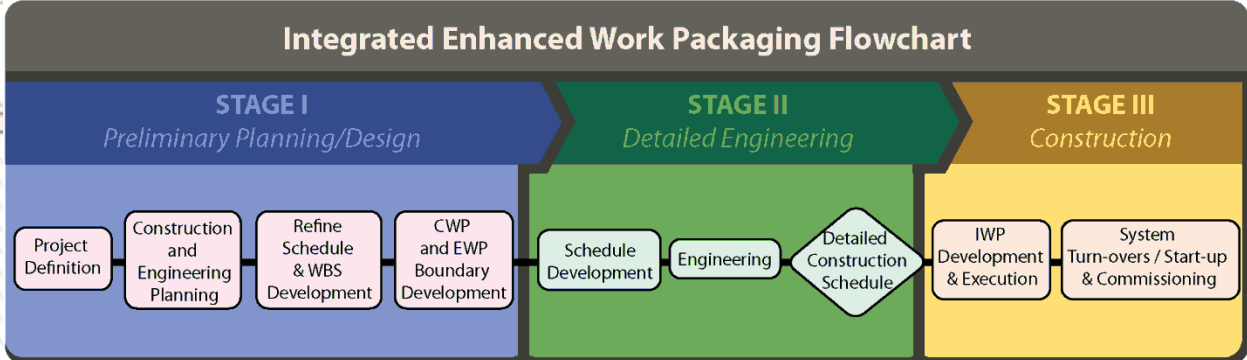
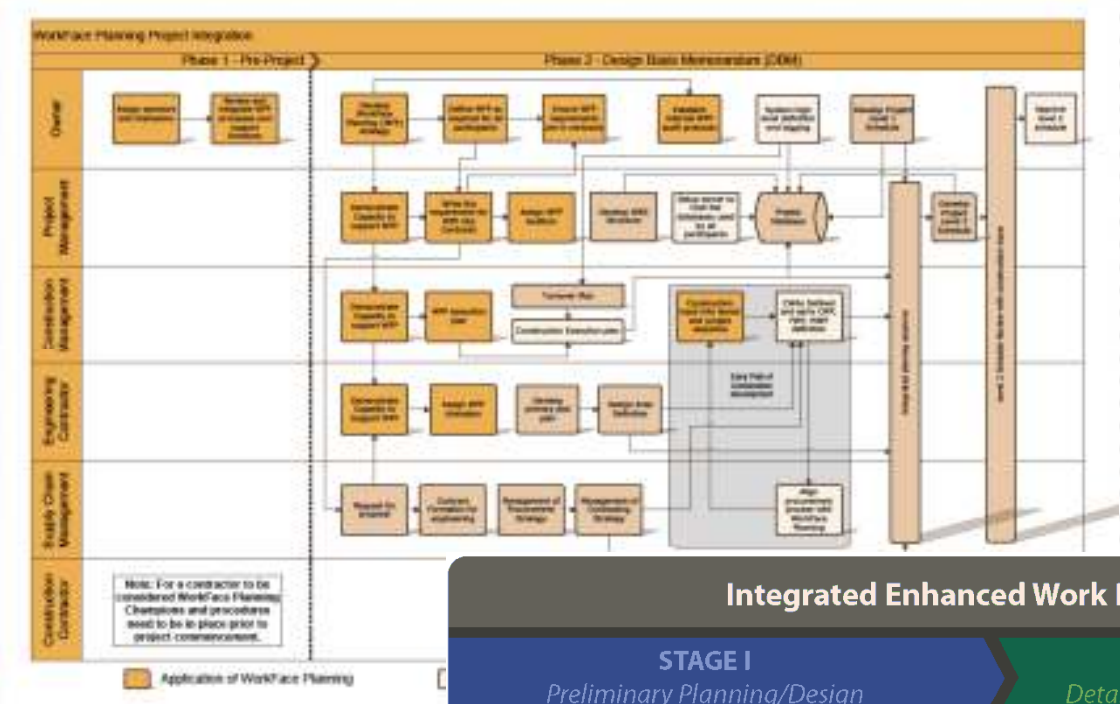
a. Process & Functional

CONSOLIDATING COAA BEST PRACTICE AND CII IR272-2



Advanced Work Packaging

COAA WFP INTEGRATION FLOWCHARTS



Advanced Work Packaging ➤

COAA & CII FLOWCHARTS

- Thorough comparison and review of:
 - COAA WorkFace Planning Integration Flowchart
 - CII WorkFace Packaging Integration Flowchart
 - COAA CWP Chart
 - CII IWP Lifecycle Chart
- Ties to organizational functional requirements
- Ties to individual capabilities and responsibilities



TEMPLATES AND GO-BYS FOR WORK PACKAGING

- CWP Template
- EWP Template
- (F)IWP Template
- Other supporting examples and templates



OTHER ENHANCEMENTS AND FOCUS AREAS

- Reviewing terminology and definitions
- Simple Project
 - Single Construction Work Area
 - Multiple CWP's & EWP's
 - Demonstrate Correlation between CWP/EWP & CWP/(F)IWP





Thrust Areas:

b. Contracts

Advanced Work Packaging

OBJECTIVE

The implementation of *Advanced* work packaging will need to be an Owner driven program. As a result it will be necessary to provide direction to contractors through bidding documents and contracts. The COAA/CII joint venture Contracts Team will:

1. Review contractual requirements and contracting strategies,
2. Suggest what issues contracts should include,
3. Determine how workFace Planning should be included in various forms of executions strategies

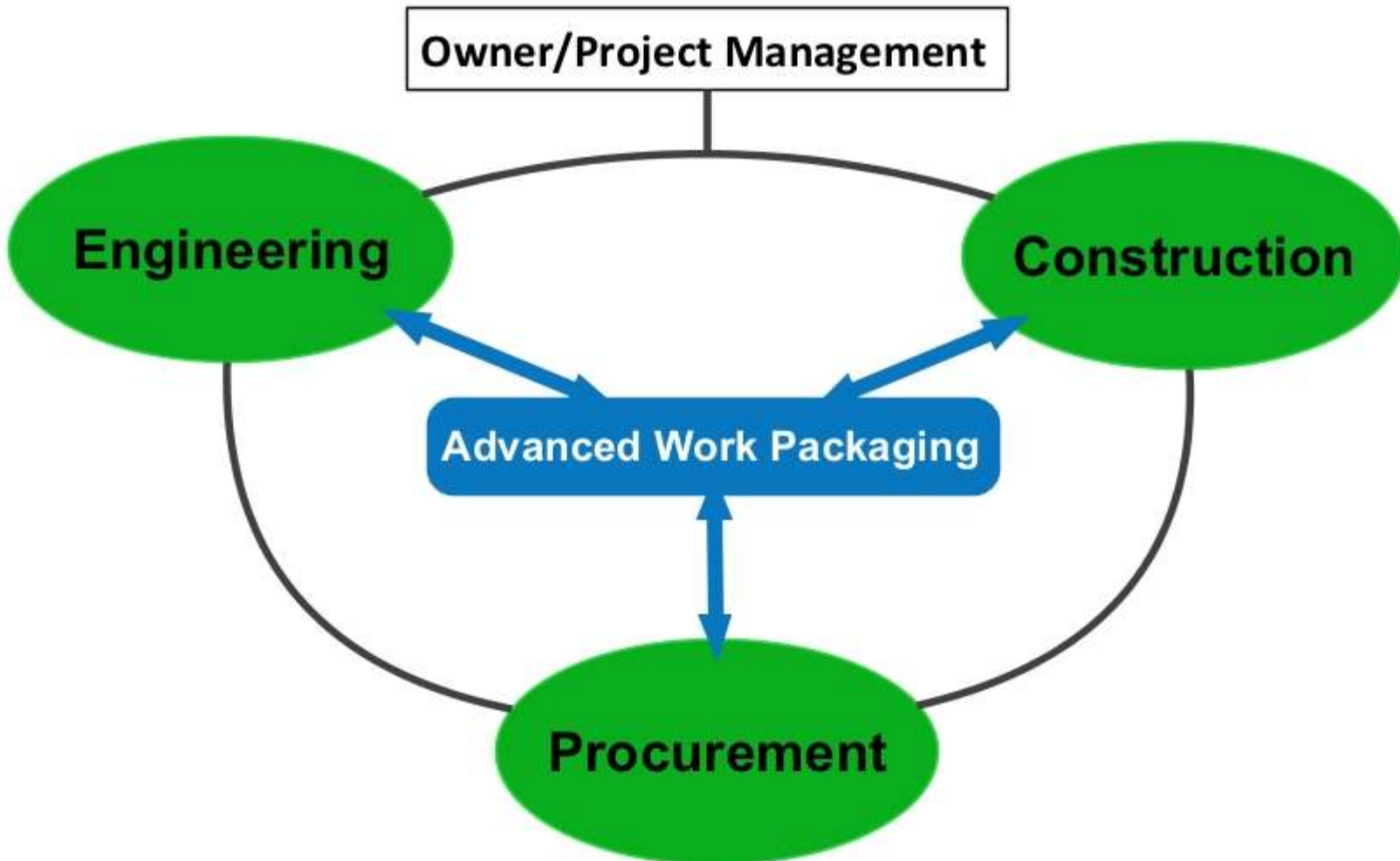
SCOPE FOR CONTRACTS TEAM

The Contracts Team will provide the following:

1. Review requirements of Advanced Work Packaging and determine those issues that would require a directive from Owner.
2. Develop a report that will provide recommendations for the application of Advanced Work Packaging in the development of bid documents or contracts for engineering, procurement and construction.



CROSS FUNCTIONAL INTERFACES



Advanced Work Packaging

ADVANCED WORK PACKAGING PLANNING: CONTRACTUAL DELIVERABLES BY STAGE

1	Owner
2	EP Contractor
3	C Contractor
4	FEED Contractor
5	EPC Contractor

Deliverables		FEED by owner	FEED by contractor	EP-C		EPC	
				Stages		Stages	
				Detailed Engineering	Construction	Detailed Engineering	Construction
Assessment	Scorecard D	1	1	-	-	-	-
	Contractor qualification scorecards	1	1	1	1,3	1	1,5
	Audit tool	-	-	-	1	-	1
	From swim lanes	-	-	1	1	1	1
Planning	Contracting	1	1	-	-	-	-
	Enhanced WP	1	4	2,3	3	5	5
	Integrative	1	4	1,2,3	3	1,5	5
	CWP	1	4	1,3	3	1,5	5
	EWP	1	4	1,2	-	1,5	-
	WBS (Aligned schedule with WBS)	1	4	1,2,3	-	1,5	-
	Organization	1	1,4	2,3	3	5	5
	Material Management	1	4	2,3	2,3	5	5
	Workface Planning (IWP Plan)	-	-	-	3	-	5
Progress measurement	by CWP	-	-	3	-	5	-
	by EWP	-	-	2	-	5	-
	by IWP	-	-	-	3	-	5

PATH-FORWARD

1. Assessment Tool
2. IWP Checklist
3. Scorecard

Project: _____		SCORE					Date: _____
	Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments / Observations
IWP Check List – Piping Installation							
IWP ID Number: _____							
ITEM DESCRIPTION							
	Initials for check						Date: _____
	Bulk Piping And Fitting Listed, Onsite And Available For Use In Fabrication						
	All Tools, Tents, Stand Available For Use In Fabrication						
	Section						
	All Pre-Fabricated (On/Off) And Available For Installation						
	All Pipe Supports, Guide Rails And Available For Installation						
	Required Valves Clear, Onsite And Ready For Installation						
	Valve Hand wheel/Actuator Identified And Marked On Drawing						
	All Inline Instruments Clear Onsite And Available For Installation						
	Inline Instrument Orientation And Marked On Drawing						
Project: _____		SCORE					Date: _____
	Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Comments / Observations
1.0 Project Definition & Planning							
	1.1 Early Scope definition documents include construction sequencing phases, and limits to support packaging of design and construction.						
	1.2 Early allowance is made to develop high level divisions of responsibility to support contracting plan and procurement.						
	1.3 A detailed project execution plan is developed at the earliest stages of planning and includes basic construction sequencing planning.						
	1.4 Early decisions are made relevant to the level of detail required in engineering deliverables to support down-stream work packaging.						
Clarification: Steel design & connections, min sized piping to be incorporated in isometrics, design detail for physical raceways & conduit.							



Survey

The questions of the survey are divided into 4 sets of questions:

- A. Participants' background
- B. WorkFace Planning knowledge and resources
- C. Perceptions of WorkFace Planning
- D. Barriers to implementation

A. Participants' background

Questions	Options
Who are you?	1 Owner
	2 Construction Contractor
	3 Engineer
	4 Vendor/supply chain
	5 Other
What is your role in the company?	1 Executive
	2 Construction Management
	3 Engineering
	4 Project management
	5 Project Controls
	6 Workforce planner
	7 Other
What is your main business?	1 Oil & Gas
	2 Mining and Metals
	3 Power
	4 Government
	5 Infrastructure
	6 Other
Where does your company do business?	1 Alberta only
	2 North America only
	3 Global

B. WorkFace Planning knowledge and resources

Questions		Options
What is your knowledge of WorkFace Planning?	1	None
	2	A little
	3	Average
	4	A lot
Are you familiar with COAA WFP documents?	1	No
	2	A little
	3	A lot
Have you ever used the COAA WFP Scorecard?	1	No
	2	Yes
Were you familiar with the CII Enhanced Work Packaging resources before today?	1	Never heard about it
	2	Heard about it but did not read it
	3	Read it

C. Perceptions of WorkFace Planning

Questions	Options
What is your experience with WFP per COAA/CII definitions?	1 Have not used
	2 I don't know
	3 Have participated in a single project
	4 Have participated in multiple implementations
Are you already implementing WorkFace Planning?	1 Yes (formal/ documented process)
	2 Yes (Informal process)
	3 No
	4 I don't know

WorkFace Planning perceived advantages

Questions	Options
Which area do you see as the biggest benefit of WFP ?	1 Predictability
	2 Communication
	3 Productivity
	4 Quality
	5 Safety
	6 Alignment between stakeholders
	7 Reduces field rework
	8 Reduced Engineering rework
Which area do you see as the biggest benefit of Advanced Work Packaging (early planning and engineering coordination with construction plans)	1 Predictability
	2 Communication
	3 Productivity
	4 Quality
	5 Safety
	6 Alignment between stakeholders
	7 Reduces field rework
	8 Reduced Engineering rework

D. Barriers to implementation

1. Significant barrier/ challenge (prevents WFP implementation)
2. Moderate barrier (limits effective WFP execution)
3. Limited barrier (can be overcome during the WFP implementation process)
4. Not a barrier

	1	2	3	4
Unknown Cost/ROI				
Too much up-front spending				
Perceived increased indirect costs				
Too difficult to understand				
Too big a culture shift; resistance to change;				
Engineering doesn't work this way (tradition/culture/competition)				
Resource capability/skills lacking in my organization				
Owners lack skills / responsiveness to make decisions				
Owner PMO				
Owners cannot drive the process				

D. Barriers to implementation

1. Significant barrier/ challenge (prevents WFP implementation)
2. Moderate barrier (limits effective WFP execution)
3. Limited barrier (can be overcome during the WFP implementation process)
4. Not a barrier

	1	2	3	4
WFP not in contract; lacks contractual clarity				
Contracts don't support integrated teams/outcomes				
Lack of definition around standard procedures				
Existing tools and systems don't support WFP processes				
Software not available				
Data and information protocols prevent data sharing				

Questions & Answers

Wrap up

Thank you!

CONTRACT
STRATEGY

GET CONTRACTOR

Yell & Bitch
@ CONTRACTOR

PROFIT \$!!!



Contract Strategy

Critical to Your Project's Success

Agenda

- Introductions
 - Safety Moment
 - Sub-committee Scope
 - Workshop Scope
- Exercise # 1
- Business Need
- Exercise #2
- Wrap-up

Our Team

- Bill Somerville, Nexen
- Randy Bignell, Bantrel
- Jason Bobier, Nexen
- John Taylor, Corporate-Commercial Lawyer
- Nicola Haig, Athabasca Oil
- Paul Bourque, Clearstream



Safety Moment



**Share the
Road!**

Committee Scope

- Develop a Best Practice for the Development and Selection of Contracting Strategies for Capital Projects
- Encourage Owners and Contractors to Utilize the Recommended Best Practice

Our Objective

- To improve capital project execution through the use of a (Contracting Strategy) best practice that will facilitate the selection of the appropriate contract, which is designed to increase the probability of:
 - achieving project goals; and
 - successfully completing the project

Workshop Scope

- Communicate our objectives, scope and work done to date; and
- Obtain your feedback and support

Exercise #1 Industry Check-up

- Have you ever been on a project that went completely sideways?
- Was it the other guy's fault?
- Were you slightly, slightly, slightly to blame?
- Could the project have been planned, set up, and contracted in such a way to improve the project's outcomes?

Business Need

Research has shown that if undertaken at the *beginning* of a project:

- Effective risk assessment; and subsequent
- Contract Strategy including:
 - Assignment of Contract Scopes;
 - Interfaces Split; and
 - Contract Terms

Will have a better chance of being

- Fit for purpose
- Flexible
- Able to accommodate and react to project “bumps in the road”

Who is IPA?

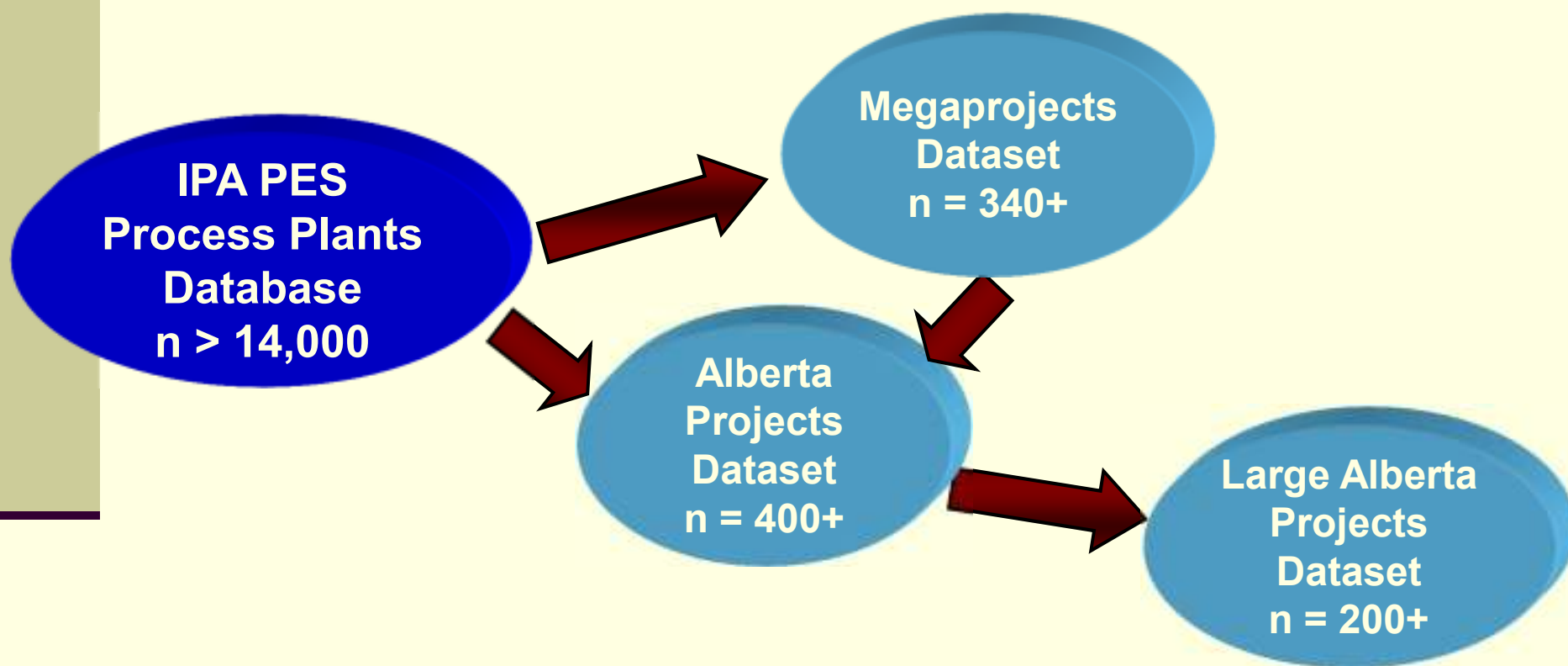
- Founded in 1987 to provide a unique project research capability for the chemical process, petroleum, minerals and manufacturing industries
- Offices in US, The Netherlands, Australia, United Kingdom, Brazil, Singapore, and China
- Over 200 staff members
- Devoted exclusively to the analysis of capital projects as a field of empirical research
- The entire focus is from the owner's perspective

Clients Represented in the IPA Databases

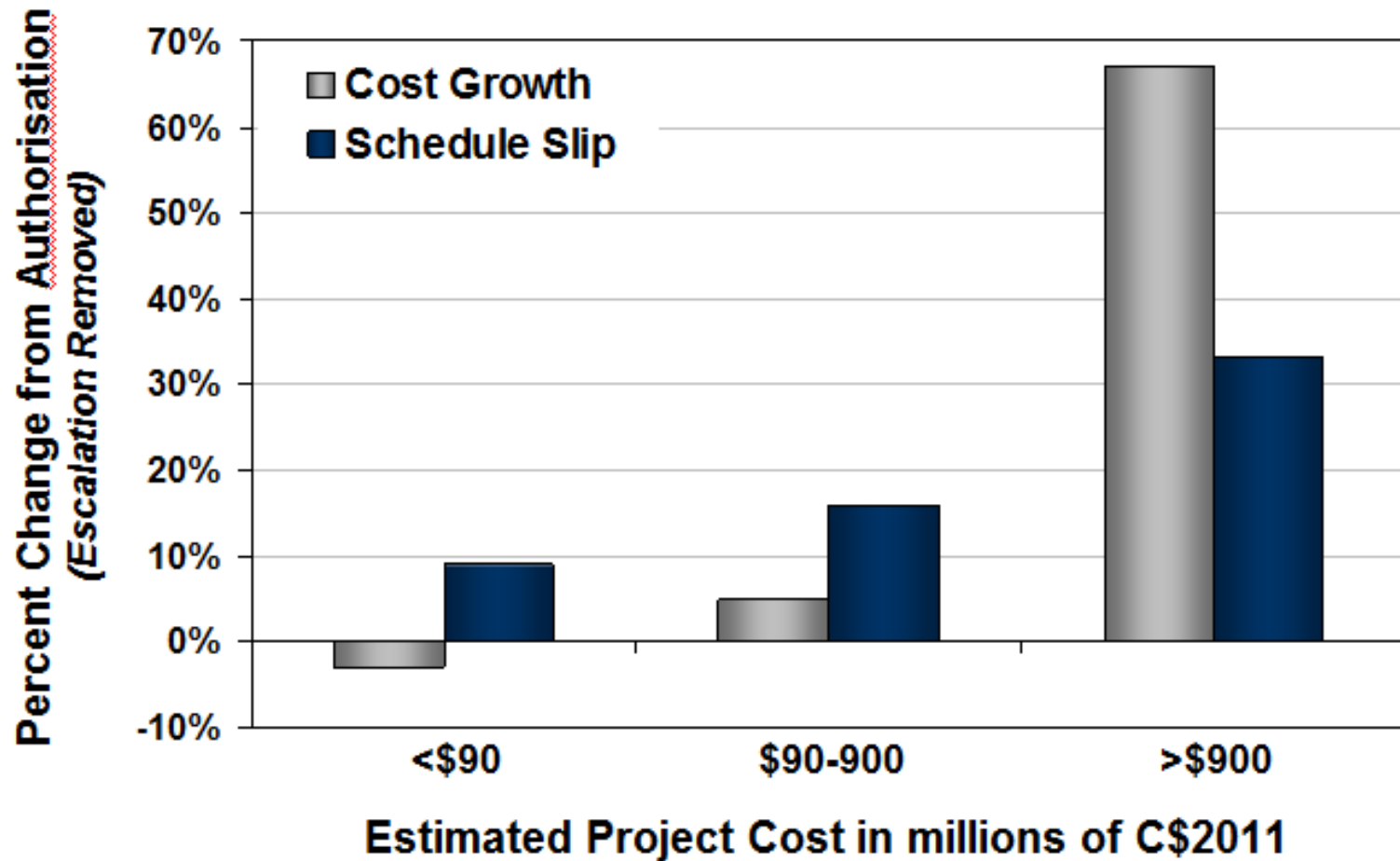
Abbott Laboratories	CITGO	GS Caltex	Northwest Redwater	Saudi Aramco
Abitibi-Consolidated	Clark Refining & Marketing	Hess Corporation	Nova Chemicals	Schering-Plough
ADNOC	CNRL	Hoffmann-La Roche	Novartis	SECCO
Agip KCO	Codelco	Honeywell	Nycomed Amersham	Shell
Agrium	Colonial Pipeline Company	Husky Oil	Numinco	Singapore Refining Co.
AIOC	Cominco	ICI	OMV	Solutia
AIR Liquide	Condea Vista	IMC Global	Opti Canada	Solvay
Air Products	ConocoPhillips	Imperial Oil	Orica	Southern Company
AKZO Nobel	Copesul	Incitec	Origin Energy	Southern Natural Gas
Alcan	CRI	Invista	Owens Corning	Staatsolie Suriname
Alcoa	CSR	JGC	Pacific Energy Partners	Star Petroleum Refining Co.
Allegheny Industries	CYTEC	JACOS	Pasadena Refining	Statoil
Alyeska	De Beers	Johnson & Johnson	PDVSA	Stepan
Anadarko Petroleum	Department of Defense (US)	Kimberly-Clark	PEMEX	Suncor Energy
Anglo Platinum	Department of Energy (US)	Kinder Morgan	PEQUIVEN	Sunoco
Arkema	Dofasco	Koch Industries	Petrobras	Suzano Petroquimica
AstraZeneca	Dow Chemical Company	Kodak	Petrochina	Syncrude
Atlantic LNG	DowCorning	Kraft	Petro-Canada	TransCanada
Australian Paper	DSM	Kumba Iron Ore	Petronas	Tengiz Chevron
AVR	DuPont	Kuwait Nat'l Petroleum	Petroleum Development Oman	Tesoro
AWE	Eastman Chemical Co.	Lasmo	Pfizer (formerly Pharmacia)	Total
Basell	Ecopetrol	LTV Steel	Pillsbury	Union Carbide Corp.
BASF	Edison Company	Laricina Energy	Pioneer Natural Resources	US Gypsum
Bayer	Eli Lilly & Co.	Lukoil	Portland Pipeline	US Steel
BC Hydro	Enbridge	Lundin Malaysia	Potlatch	Vale
BG	EnCana	LyondellBasell	Praxair	Valero
BHP Billiton	Eni Petroleum	Malaysian Refining Co.	Procter & Gamble Co.	Votorantim Metais
Bluescope Steel	Entergy	Marathon Petroleum	PTT Exploration & Production	Wacker
Bluewater	ExxonMobil	Marathon Oil	Qatar Petroleum Co.	Wellman
Borealis	Evonik Degussa	MeadWestvaco	Quimica Fluo	Weyerhaeuser
Braskem	Falconbridge	Merck & Company, Inc.	Repsol YPF	Woodside
British Nuclear Group	Flint Hills	Methanex	Rhodina	Wyeth
BP	Florida Power & Light	Motiva	Rio Tinto Alcan	Xstrata
Bristol-Myers Squibb	FMC Corporation	Mineração Rio Norte	Rohm & Hass	
Caltex	Gaz De France	Murphy Oil	SABIC-IP	
Cargill Inc.	Genentech	NAOC	Samarco	
Chevron	General Electric	Nederlandse Aardolie Mj.	Sanofi Pasteur	
Chevron Phillips Chemical	Georgia Pacific	Newmont Gold	Santos	
China Three Gorges Project	Gerdau	Nexen	SAPPI	
Development Corp.	GlaxoSmithKline	Noranda	Sasol	

Alberta Clients

Good Sample of Alberta Projects



Alberta Projects Are Historically Unpredictable

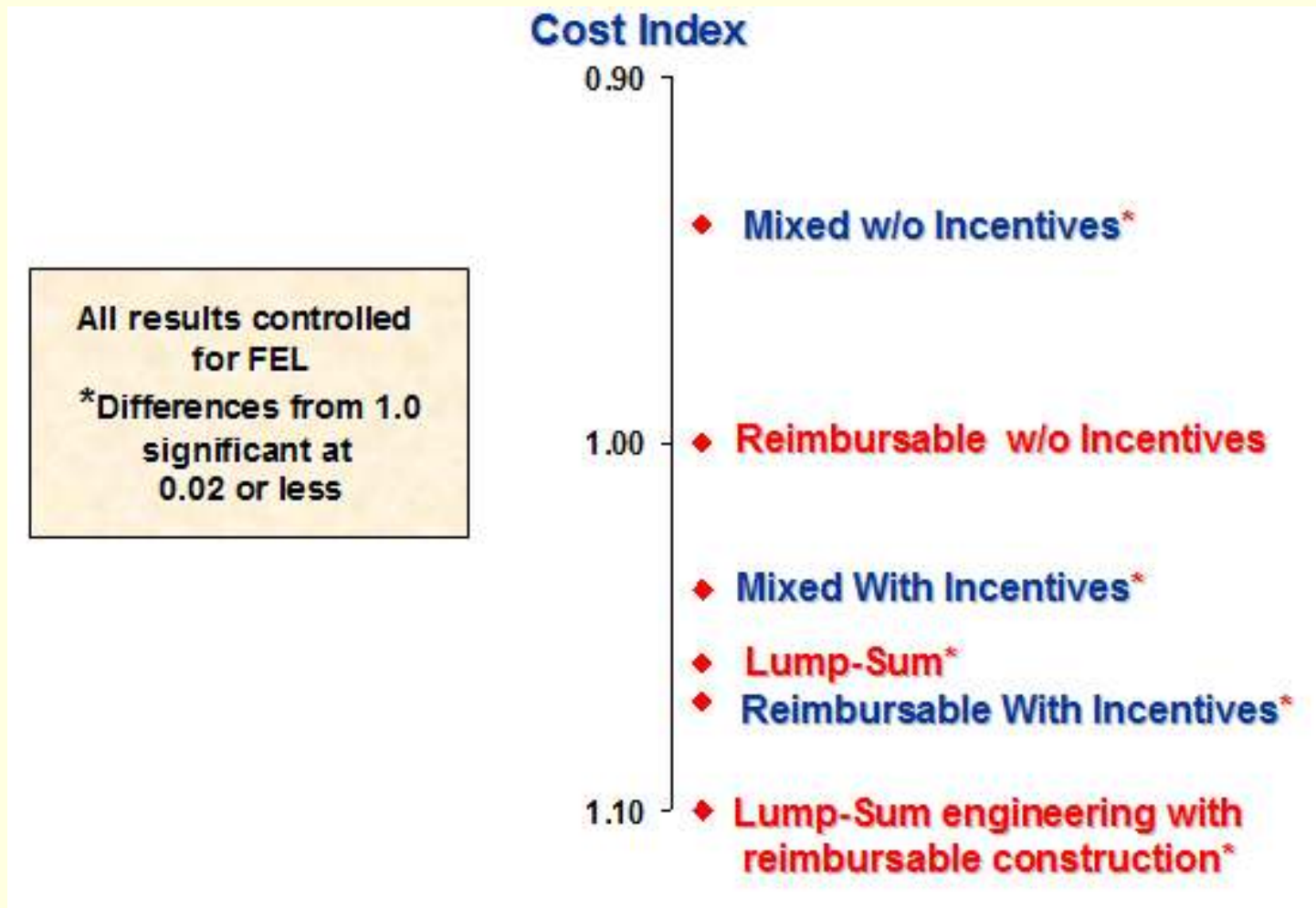


* Based on 173 projects completed in Alberta between 2000 and 2010

Contracting in Perspective

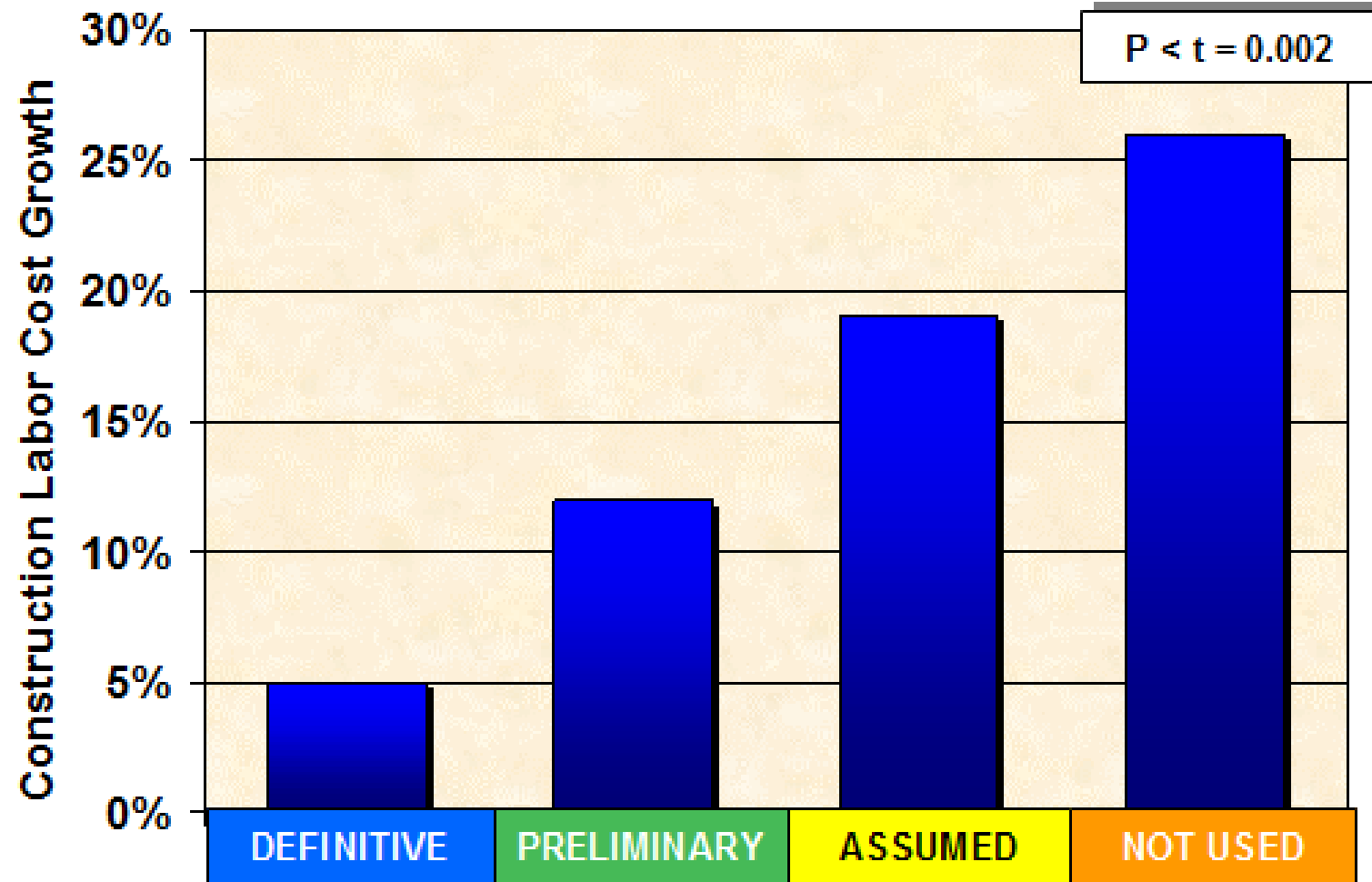
- Contracting strategy is an integral part of effective project execution planning
- Good” contracts never substitute for solid fundamentals
- Contracts are a second-order issue for projects
 - Clarity of the business objective is much more important
 - Owner team development and Front-End Loading are much more important

Cost Performance by Contract



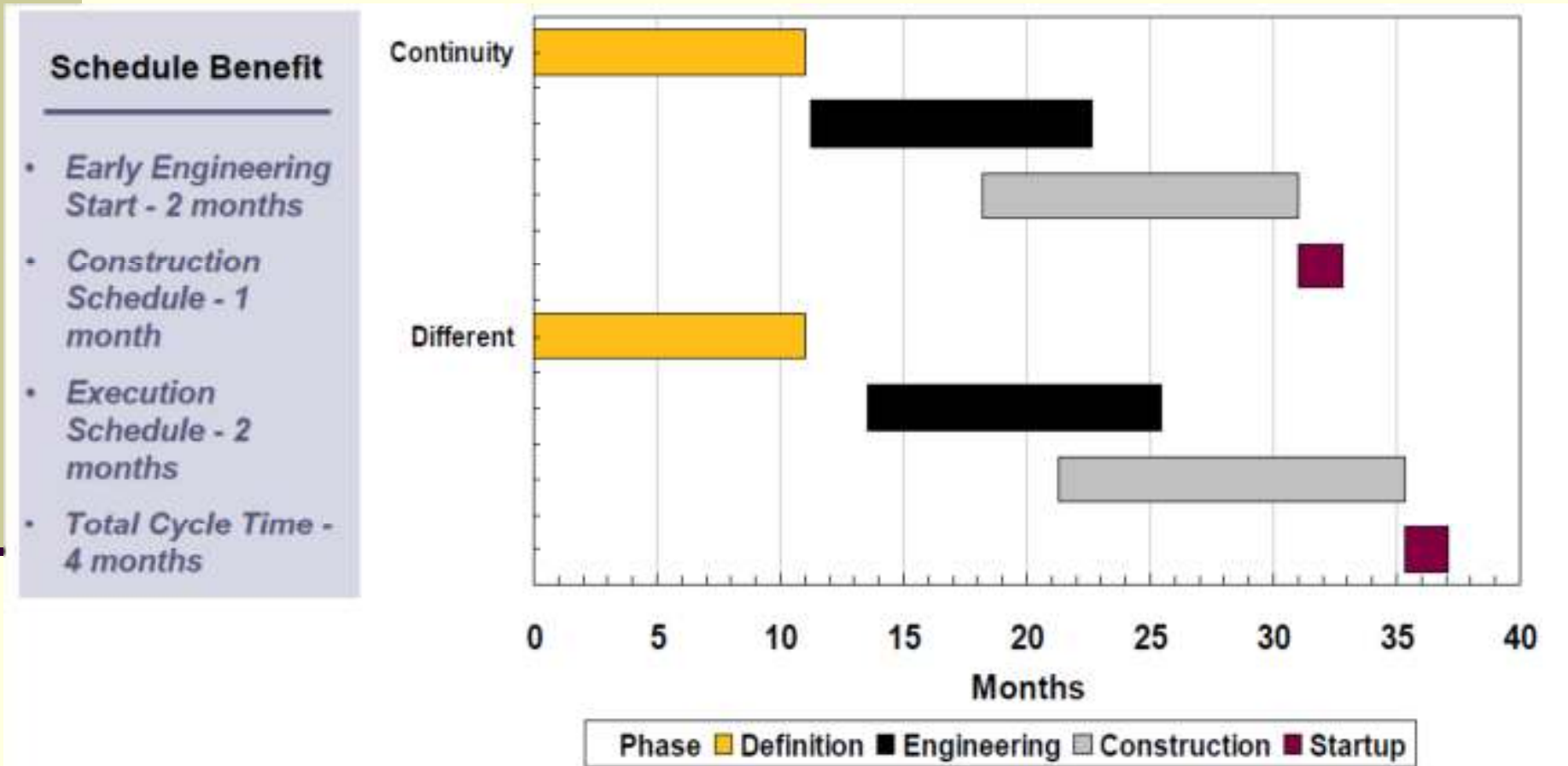
Source: Independent Project Analysis, IBC 2004, *Contracting in Time and Place*

Impact of Not Understanding Local Labour Availability



Source: Independent Project Analysis, IBC 2006, *Effective Construction Labour Strategies*

Contractor Continuity Can Provide Earlier Completion Dates



Strategy Selection Can Impact Project Results

- Selection of contract type can impact cost effectiveness; mixed strategy is best
- Local labor availability, and knowledge of availability, can impact strategy decisions; less knowledge leads to field labor growth
- Using the same contractor for FEED and execution can provide faster cycle times

Therefore...

There is no substitute for fundamentals and the “best” contracting strategy is *not* a silver bullet; however, it is an important element of execution planning and project success.

Contract Strategy Defined

- A Contracting Strategy is a project deliverable (typically produced by a multi discipline project team) that is aligned with and supports the project's:
 - Goals;
 - Objectives;
 - Key success factors;
 - Project execution strategy; and
 - Capabilities of the contractor supply market

Contract Strategy Defined

- The contracting strategy clearly defines and allocates a project's:
 - Scope of work and interfaces;
 - Roles and responsibilities;
 - Risks and mitigation strategies; and
 - Compensation model

Exercise #2 Table Discussion

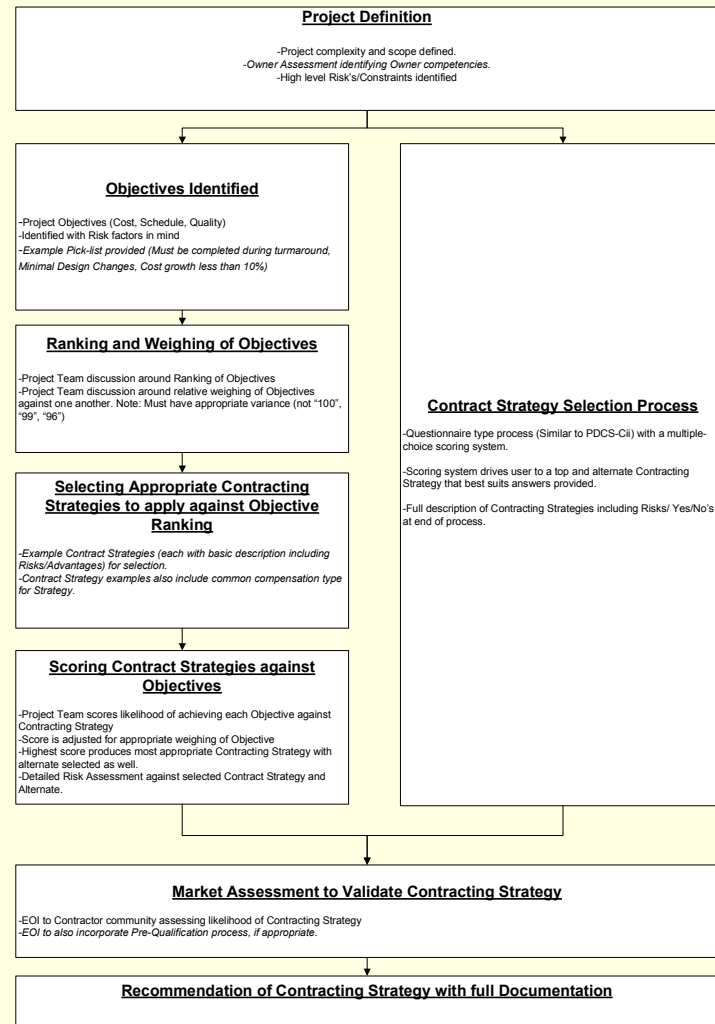
1. Are we on the right track?
2. What do you do for contract strategy development? Is it documented?
3. Is it part of your project planning/execution process? When is it done?
4. Did we miss any key issues or criteria?

Discuss at your tables for 10 min > report back

Draft Work to Date

Process Flow Chart

- Left-Full Project
- Right-Fast Track



Draft Work to Date

Strategy Definitions Table

Example 1 – EPC Lump Sum – Not usually done in Alberta unless for small value projects with a well defined off the shelf scope. Key Drivers to choose this contract strategy – well defined scope / price predictability / not schedule driven / availability of resources /low technical complexity / Owner comfort with role.

Roles	Risks allocated to the Owner	Risks allocated to the Contractor	Compensation and Variants	Performance summary
<p>Owner engages engineer and prepares the project brief, schematic design, developed design and contract documentation.</p> <p>Usually a competitive bid but can be a single source negotiated Lump Sum where limitations in availability of Contractors or a preferred Contractor is an issue.</p> <p>Contractor carries out the detailed engineering, procurement and construction either on its own or with</p> <ul style="list-style-type: none"> - Sub-contractors - JV partners - Consortium partners - Alliance Partners <p>Relationship between parties is potentially adversarial.</p> <p>Typically mentality is 'your gain is my loss'.</p>	<p>That the basic design meets the project brief. Owner should undertake due diligence to ensure that the design can be built within the budget. Tenders should be called after EDS design is complete as without sufficient scope definition the Contractor (and their Subcontractors) may require to include a prohibitive premium to the overall EPC lump sum thus exceeding Owner budget.</p> <p>That the contract documentation reflects the design (unless design endorsement required) and that the contract documentation is complete, unambiguous, accurate and suitable for the purpose of the execution of the project through E, P and C.</p> <p>Final cost is highly dependent upon quality of contract documentation prepared by the Owner and the impact of variations leading to additional cost / delayed completion.</p>	<p>Generally the risk rests with the Contractor in terms of cost and schedule overruns, quality issues requiring rework and availability at the tendered cost the resources for the duration and various stages of the work.</p> <p>Quality - Materials and workmanship are in accordance with the contract documentation.</p> <p>Schedule - Completion of the execution of the E, P and C phases will be within the allocated time.</p> <p>Cost - That the cost of execution will be within the adjusted contract sum.</p> <p>Interfaces - Interface risk between the phases must be effectively managed without cost or schedule impact.</p>	<p>The accepted lump sum becomes the contract sum, subject to adjustment for variations to the contract documents and claims.</p> <p>A Contractor may be required to offer an "all-in" schedule of rates in lieu of a lump sum. Where the quantities are "known" this effectively becomes a Lump Sum.</p> <p>Convertible Lump Sum – Initially a reimbursable compensation contract until the engineering is at a stage where the Contractor can clearly ascertain its forecast cost to complete the project and take the risk on future potential changes and thus offer a lump sum without including a prohibitively large risk factor.</p>	<p>Predominantly used for projects where there is a high degree of certainty about project scope and requirements.</p> <p>Success is highly dependent upon the adequacy, completeness and accuracy of the contract documentation.</p> <p>Will normally deliver the lowest initial contract sum following tender call, but not necessarily the lowest final cost.</p> <p>Not well suited to fast tracking the project.</p> <p>Not well suited when there is new technology or high technical risk unless contractor is a specialist in the field.</p> <p>Not well suited where there is a lack of availability of resources or experience in managing such types of contract – from both an Owner and Contractor standpoint.</p>
Tender process, cost and payments	Scope	Design/quality	Time	Generic contracts & Administration
<p>Usually competitively tendered or where market conditions allow a negotiated firm price (usually where specific technology expertise involved). Lump Sum tendering is an expensive process for Contractors to ensure all risks are adequately priced. Gaps in back to back lump sums for its sub-contractors require added qualifications or risk premium.</p> <p>The accepted lump sum becomes the contract sum, subject to adjustment for variations and claims. Contractor paid on a regular basis for work completed, up to the value of the adjusted contract sum.</p>	<p>Scope is precisely specified in the contract documents.</p> <p>Scope can be varied, but not beyond the original intent of the contract documents. Any variations will normally give rise to a contract sum adjustment and extension of time.</p>	<p>Quality of materials and workmanship is fully specified in the contract documentation. Choice of Subcontractor/ vendors rests with Contractor (with owner approval) and quality performance based on Contractors pre-qualification system.</p> <p>Depending on level of completion of design when Tendered the Contractor may have limited input into the design & 'constructability' of the project.</p> <p>Warranty period of 12 months or more, depending on nature of project. Often Contractors scope is extended to provide Commissioning and Operations start-up support.</p>	<p>Design and documentation must be completed before construction can commence, making it potentially the longest duration procurement strategy available.</p> <p>Most delays will give rise to claims for extensions of time for the completion of construction.</p>	<p>Difficult to control time and cost outcomes where contract documentation is inadequate or variations are needed. Claims are common.</p> <p>Owners usually provide their own in house contracts.</p> <p>Contract administration is complex and may involve a large amount of change management.</p>

Draft Work to Do

- Develop Owner Self Assessment process
- Update flow chart with feedback
- Complete strategy alternative table (definitions, pros/ cons)
- Risk Evaluation and Allocation guidelines
- Complete list of Contracts Strategy Considerations

Wrap-up



- Workshop Recap
- Feedback Form
- Anyone interested in joining the committee, please come see one of the committee members!

Comments

Bill Somerville at:

william_somerville@nexeninc.com

or

Randy Bignell at:

bignellr@bantrel.com

Thank You!



Your Participation Was Appreciated



CONSIDERATION OF SOME GENERAL CONDITIONS IN BID DOCUMENTS

W.J. Kenny – Miller Thomson LLP
Chris Hustwick – Suncor Energy Services Inc.
Evan Johnston – The Churchill Corporation
Dale Bercov – Syncrude Canada
Jennifer Brusse – Kiewit Energy Company
Steve Richards – PCL Constructors Inc.
Jan Derdiger – Capital Power Corporation



Consequential Damages:

- Contractors:
 - Consequential damages are to be excluded and avoided
 - Industrial assets are huge money generating assets, and a contractor cannot take the risk of an owner's loss of revenue
 - Three common carve-outs to consequential damage exclusion:
 - Breach of confidentiality
 - Breach of intellectual property
 - Willful misconduct
 - To the extent of available insurance maybe a carve out as well
- Owners:
 - Start from the position no exclusion will be given, but concede if requested, subjected to the three carve outs above and gross negligence
 - Available Insurance: If contractor is including insurance in the rates, owner should have access to this insurance
 - Gross Negligence: Is not defined in first instance, difficult to define
 - US Exception: Government entities, depending on industry and area, will not agree to accept exclusion of consequential damages



Warranty provisions including rework, rip and repair, fitness for purpose, latent defects and more:

➤ Contractors:

- Term of Warranty: (What the market will bear, 12 month period after substantial or mechanical completion, plus another 12 months for anything performed during warranty period) 24 month ultimate period
- In a cost reimbursable model owner pays for rework
- Exclusions to Warranty: Not responsible for wear and tear, improper operation, maintenance or repair, failure to comply

➤ Owners:

- Warranty: expect contractor to be responsible for repairing their own work and repair aspects
- EPC or Engineering: warranty period should be tied to date of initial operations (18 months – reasonable warranty period)



Indemnity, including indemnity against liability assumed under contract and for third party liability:

➤ Contractors:

- Will provide indemnity for third party claims
- Concern is extending indemnity to cover losses of owner if incurred under contracts with others

➤ Owners:

- Indemnities: Most difficult legal concept
- If contractor has caused a third party claim, it should be the contractors responsibility (Seeking full indemnity from contractor for any 3rd party claim)
- Contractor to take responsibility for the work of its sub-contractors
- US: Recovery for legal expenses; covered by indemnity
- US: Indemnifying the owner for treating the contractor's employees as third parties (Employee who gets injured can either be covered under Worker's Compensation or sue employer; some jurisdictions can do both)



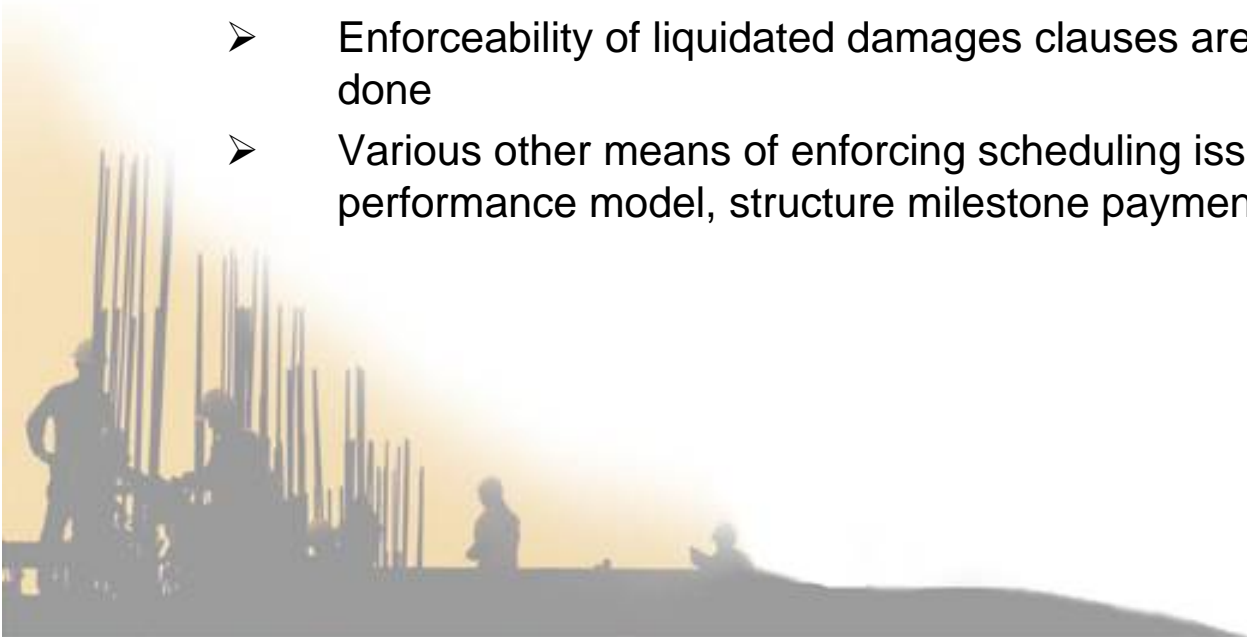
Liquidated Damages:

➤ Contractors:

- Prefer not to include liquidated damages
- Willing to accept in lieu of consequential damages
- Providing a realistic pre-estimate of damages not easy
- A maximum liability is created

➤ Owners:

- Enforceability of liquidated damages clauses are a concern; but can be done
- Various other means of enforcing scheduling issues; fee for performance model, structure milestone payment dates





Dispute Resolution:

➤ Contractors:

- Should you build in mediation? Yes, provided it is structured (has to have a professional mediator and structured process)
- Arbitration or Litigation? In Arbitration; you can choose who will decide your dispute
- Full document production: Yes, but not as extensive as litigation
- Questioning, Discovery? Yes, but more limited
- General quicker; less rules and formality

➤ Owners:

- Mediations: Produce Settlements, does not produce a final and binding answer
- Arbitration is confidential, whereas Litigation involves filing documents in court (becomes available to public)
- Absence of rules in arbitrations is a con; therefore Litigation may be preferred
- US: New organization (JAMS International) moves faster than Arbitration



Change order mechanism including change in conditions:

➤ Contractors:

- Should not agree to forego compensation if no C.O. in writing issued unless owner prejudiced – need to include in contract
- Both parties should understand the change mechanism in the contract
- Do not waive your right to compensation by proceeding with the work without an agreed upon price for change, and schedule alteration
- Set out method of evaluation (clear to both parties regarding payment)

➤ Owners:

- Change management has to be clear and practical
- Cost reimbursable model: contractor will probably have different risks or issues
- Notice is very important: ensure that contractor has obligation to make the changes known to the owner
- Get as much finality when a change is executed as possible; do not leave impact to be determined later



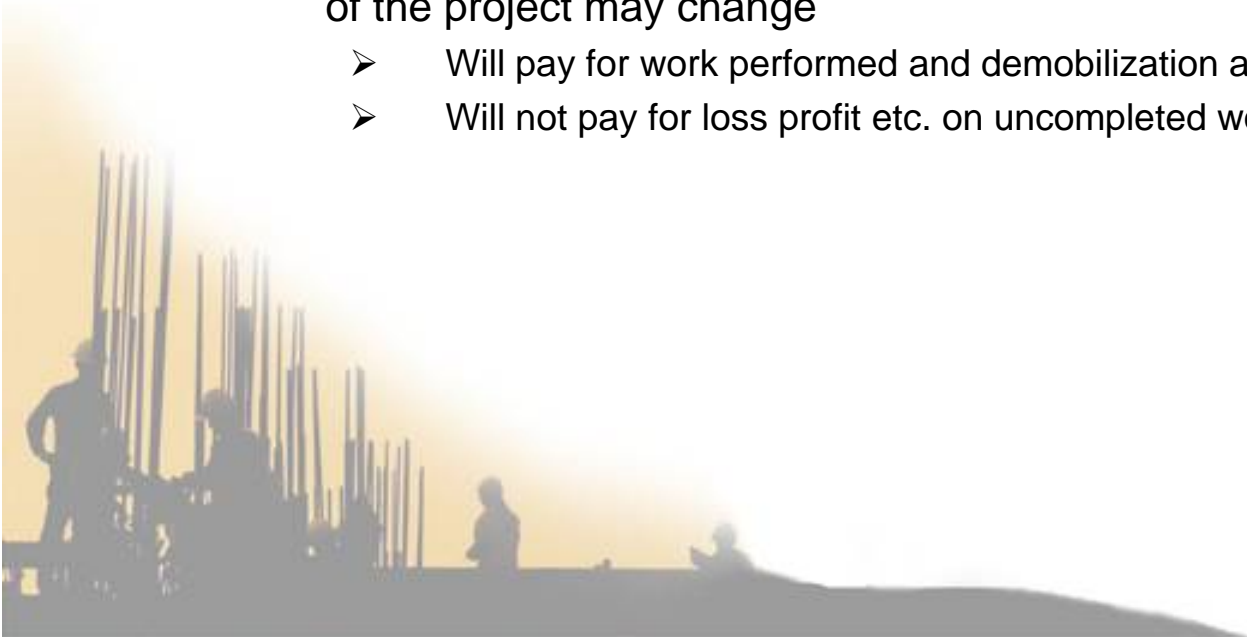
Suspension/termination for convenience:

➤ Contractors:

- Need to be paid for all costs of suspension or termination, including cost of committed orders and long term leases for project fees of rented equipment

➤ Owners:

- Require right to suspend or terminate for convenience as the economics of the project may change
 - Will pay for work performed and demobilization and repatriation
 - Will not pay for loss profit etc. on uncompleted work





Notice Provisions:

➤ Contractors:

- Avoid “immediately”, instead use x days
- Waiver of rights should be tied to prejudice of owner

➤ Owners:

- Ensure the notice provisions are workable
- Notice of change is critical, and all costs should be included on change order





Confidentiality:

➤ Contractors:

- Depending on the vendor, may require proprietary designs to be protected
- Be careful of the obligations you have made to that vendor

➤ Owners:

- Have a provision that says everything the owner gives the contractor is confidential
- Contractors will ask to make this reciprocal (Disagree: Design should be available for owners to send to others if required)
- OEM's want their drawings to be confidential; clarity should be made on this (full life cycle costs on equipment, not just capital costs for equipment)
- Want right to use drawings etc. to have others repair, rebuild and expand



Delay by either party:

➤ Contractors:

- Delays: May be tied to liquidated damages at the end of the contract
- Schedule risk:
 - Ensure you have entitlement for anything beyond your control
 - Ensure contractor owns the float in the schedule

➤ Owners:

- Either party should assume responsibility for repercussions of the delay that they cause
- In the event of a delay: work together practically (if there is another scope of work that can be worked on, make use of time and do so)
- Requests for C.O. in the field, make sure any scheduled time is included



Force Majeure:

➤ Contractors:

- Excuses performance during event of FM

➤ Owners:

- List events that **are** Force Majeure
- Today's Force Majeure clauses are much more general and should be specific





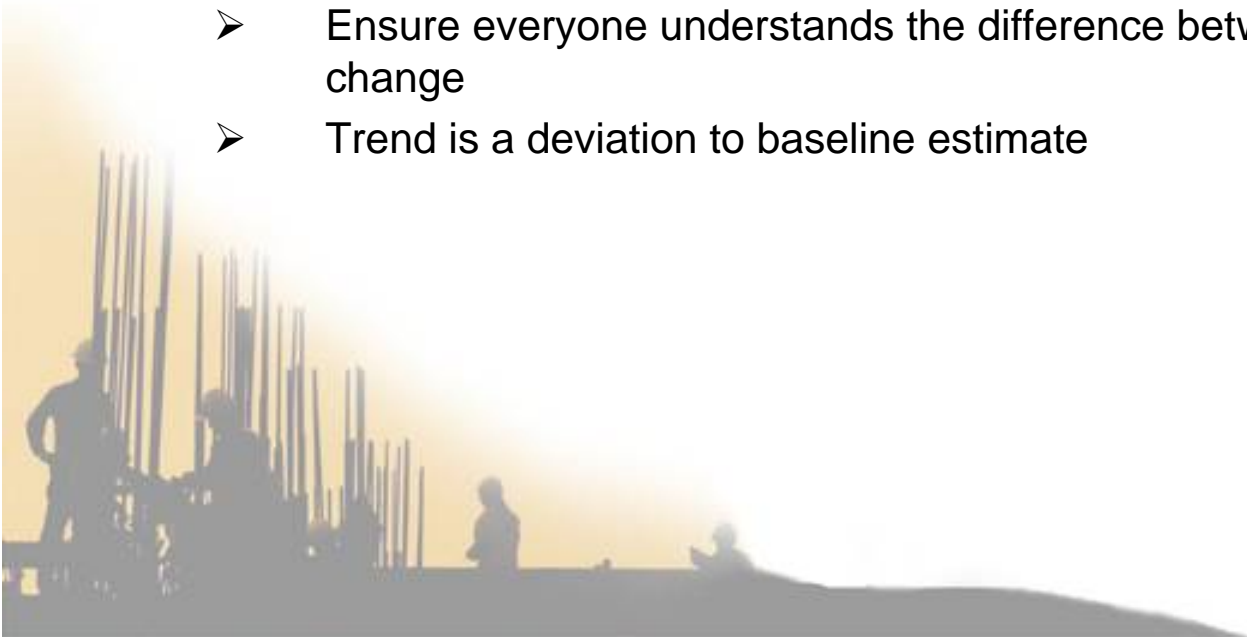
Requirement for change order to increase contract price in the case of a reimbursable arrangement:

➤ Contractors:

- If contract calls for a C.O. above a certain price, ensure owner is obligated to rescue C.O. or contractor has right to stop work when price ceiling reached

➤ Owners:

- Ensure everyone understands the difference between a trend and a change
- Trend is a deviation to baseline estimate





Entitlement to government rebates, including WCB, EI and tax refunds:

➤ Contractors:

- Need clarity on who is entitled to rebate

➤ Owners:

- Depends if contract is true reimbursable contract or simply paid at agreed rates; where true reimbursable all rebates accrue to owner





Canadian Model Best Practice Review

COAA Best Practices Conference Canadian Model Best Practice Review

May 16, 2012





Workshop Ground rules

Please:

- put your cell phone on silent or vibrate, and
- Please avoid side conversations.





Sean Evans

- Chairperson for the COAA Canadian Model Best Practice for Alcohol and Drug Guidelines and Work Rule

Dr. Randy Leavitt

- Dr. Randy Leavitt is Vice President of Pharmaceutical, Forensic and DNA Services at Maxxam Analytics.

Neil Tidsbury

- President of Construction Labour Relations

Philip Ponting

- Partner in McLennan Ross practicing administrative law with the major focus on employment law.



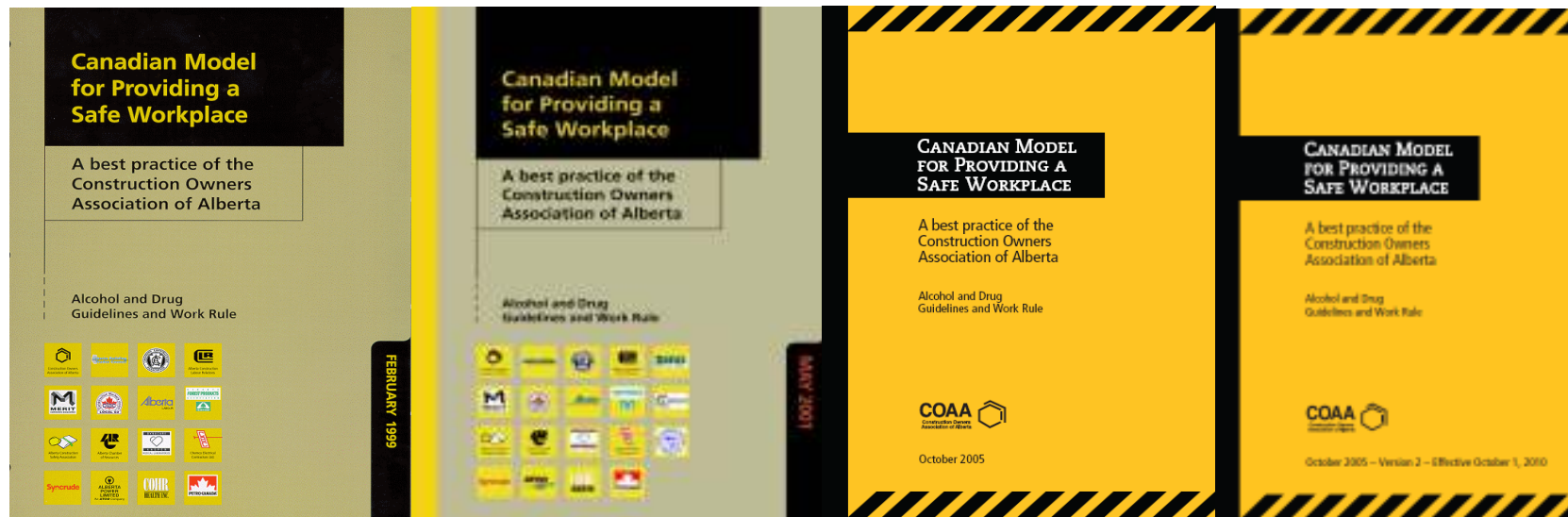
Canadian Model Best Practice Review

COAA Best Practices Conference **Canadian Model Best Practice Review** **~ Canadian Model Review Team ~**

Sean Evans

Enbridge

Canadian Model History



Development of the Model has been an evolving process since 1999

The Model has been updated and revised to reflect the state of law and industry needs with versions published is 1999, 2001 and 2005

The most recent version of the Model was published as an Addendum in October 2010



Canadian Model Review Team Members

Sean Evans - Enbridge

Wayne Prins – Christina Labour Association of Canada

Paul DeJong – Progressive Contractors Association Canada

Richard Wassill – Local 222

Bob Blakely – Building Trades

Jim Corson – CNRL

Stephen Kushner – Merritt Contractors

Tom Gondek – Suncor

Hal Middlemiss – NWR Partnership

Neil Tidsbury – Construction Labour Relations

Mark Rice – Alberta Government

Ivan Krissa – Stuart Olson



Canadian Model Review Team Subject Matter Experts

Maxxam Analytics

McLennan Ross LLP

DynaLife Dx

Gamma - Dynacare

CannAmm Occupational Testing Services

Dr. Brendan Adams

Canadian Model Review Team Focus Areas

- Address the “variations” in the application of the model.
- Examine the use of POCT devices in industry.
- Explore the possibilities of establishing IITF’s in Alberta.
- Better define the self help / self assessment requirements.





Canadian Model Best Practice Review

COAA Best Practices Conference Canadian Model Best Practice Review

Pending Changes to DOT Drug & Alcohol Regulations:

Implications for Canadian Model Stakeholders

Presented by Dr. Randy Leavitt

Maxxam Analytics

CANADIAN MODEL FOR PROVIDING A SAFE WORKPLACE

A best practice of the
Construction Owners
Association of Alberta

Alcohol and Drug
Guidelines and Work Rule

Why are there various levels or standards for testing for alcohol? For example, if the level for impaired driving is 0.08 grams of alcohol in 210 litres of breath, why does this model use 0.04 grams of alcohol in 210 litres of breath as cause to suspend a driver from driving at the time without further disciplinary action and a level of 0.04 grams of alcohol in 210 litres of breath as cause for suspension and disciplinary action.

Why are we using the United States Department of Transportation (U.S. DOT) standards for testing of Canadian workers?

The U.S. DOT standards are a rigorous set of procedures and protocols for employment-related drug testing. They were developed to ensure fair and reliable testing of workers covered by the United States mandatory drug

testing legislation. Canada, of course, has no mandatory drug testing. The U.S. DOT standards have been mandated for the COAA Best Practice (Canadian Model for Providing a Safe Workplace) to ensure quality testing and legal defensibility of results.

Where can a copy of the U.S. DOT standards be obtained?

Copies of the standards may be obtained from laboratories that are certified to perform testing under the U.S. DOT standards. Alternatively, the standards can be found on the Internet.

Can the company test me for other drugs besides those listed, or test for other medical purposes?

A company may choose to test for other drugs but these should be stated in the

The U.S. DOT standards have been mandated for the COAA Best Practice (Canadian Model for Providing a Safe Workplace) to ensure quality testing and legal defensibility of results.

a retest on the split portion of the original specimen, normally at the donor's expense, at the same laboratory or an alternative certified laboratory. This request must be made within 72 hours of the employee being notified by the MRO that the first test was found to be positive.

What are "reasonable grounds"?

In a case where an employee is caught distributing, possessing, consuming or using alcohol or drugs at work, an alcohol and drug test is not required to establish a breach of the standards. The act itself constitutes a breach of the standards set by the guidelines.

Appreciating that there may not always be direct evidence of a breach, and recognizing that early detection of safety concerns before the occurrence of an accident or incident is the hallmark of effective safety and loss management, testing is encouraged in cases where there are "reasonable grounds" for a supervisor or leader to believe that an employee may have consumed or used alcohol or drugs at work or may be under the influence of alcohol or drugs.

"Reasonable grounds" for believing that an employee may be in breach of the standards concerning detectable levels of alcohol or drugs can arise in two general situations.



Why US DOT?



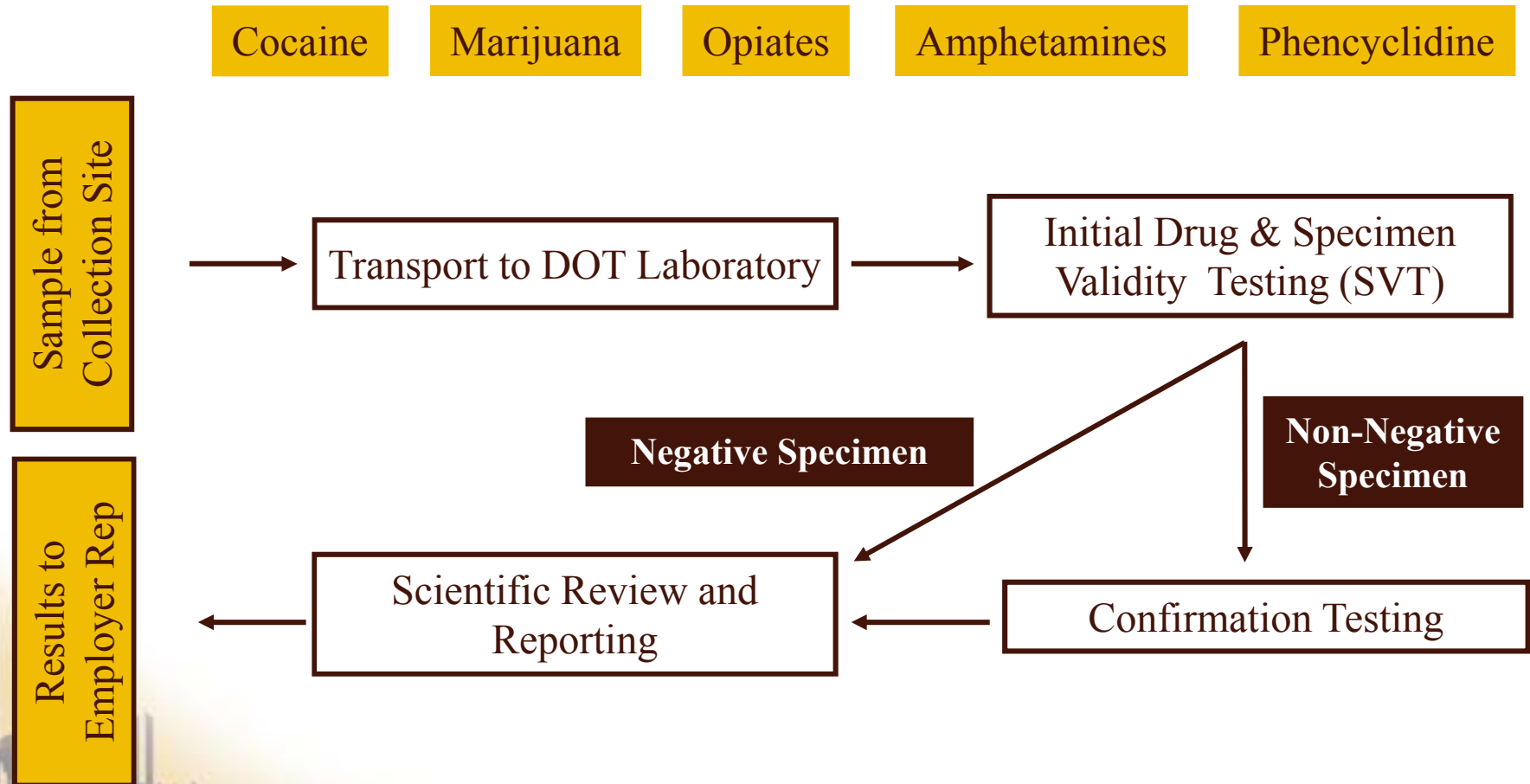
DOT establishes rules (49 CFR Part 40) on drug and alcohol testing:

- Specimen Collection
- Drugs/concentrations to be tested
- Specimen validity tests
- What scientific procedures to use when testing
- Standards for certification and review of laboratories

$$\begin{array}{ccc} \text{Scientific Accuracy} & & \\ + & & \\ \text{Forensic Integrity} & = & \text{Legal Defensibility} \end{array}$$



DOT Analytical Strategy





April 2004 Proposed Changes

1. Addition of heroin and ecstasy (MDMA) to initial test suite
2. Lower cutoff concentrations for cocaine and amphetamines
3. ~~Oral fluid, sweat and hair as alternative matrices~~
4. ~~Point of Collection Testing Devices — Quick Tests~~
5. Certification of Instrumented Initial Test Facilities (IITF)
6. Additional standards for collectors, collection facilities and MRO's

Notice of Final Revisions Nov. 2008 → Implementation Oct 2010

“HHS believes that the addition of alternative specimens to the Federal Workplace Drug Testing Program would complement urine drug testing and aid in combating the risks posed from available methods of suborning urine drug testing through adulteration, substitution, and dilution.”

Since 2009...Scientific Research in OF

Analytes/cutoffs

SVT/validity

Collection

Collection devices

Testing Methodology

Laboratory Capabilities



January 2012 HHS approved...

- (1) inclusion of oral fluid as an alternative specimen in the Mandatory Guidelines for Federal Workplace Drug Testing Programs.
- (2) addition of additional Schedule II prescription medications (e.g., oxycodone, oxymorphone, hydrocodone and hydromorphone) in the Mandatory Guidelines for Federal Workplace Drug Testing Programs.





COAA
Construction Owners
Association of Alberta

Oral Fluid Test Suite

Drugs	Canadian Model (Oct. 2010)		SAMHSA PROPOSED	
	Initial Test Cutoff	Confirmation Test Cutoff	Initial Test Cutoff	Confirmation Test Cutoff
Marijuana Metabolites (THC)	4	2	4	2
Cocaine Metabolites	20		15	
Cocaine		8		8
Benzoyllecgonine		8		8
Opiates	40		30	
Codeine		40		15
Morphine		40		15
Heroin Metabolite (6-AM)	4	4	3	2
Synthetic Opiates			30	
Hydrocodone				15
Hydromorphone				15
Oxycodone				15
Oxymorphone				15
Phencyclidine	10	10	3	2
Amphetamines	50		50	
Amphetamine		50		25
Methamphetamine		50		25
MDMA (Ecstasy)	50		50	
MDMA		50		25
MDA		50		25
MDEA		50		25



Expected Timelines

Jan 2012

HHS Approval for OF and Synthetic Opiates
Development of program elements
(cutoffs, collection standards, MRO guidelines)

Late 2012

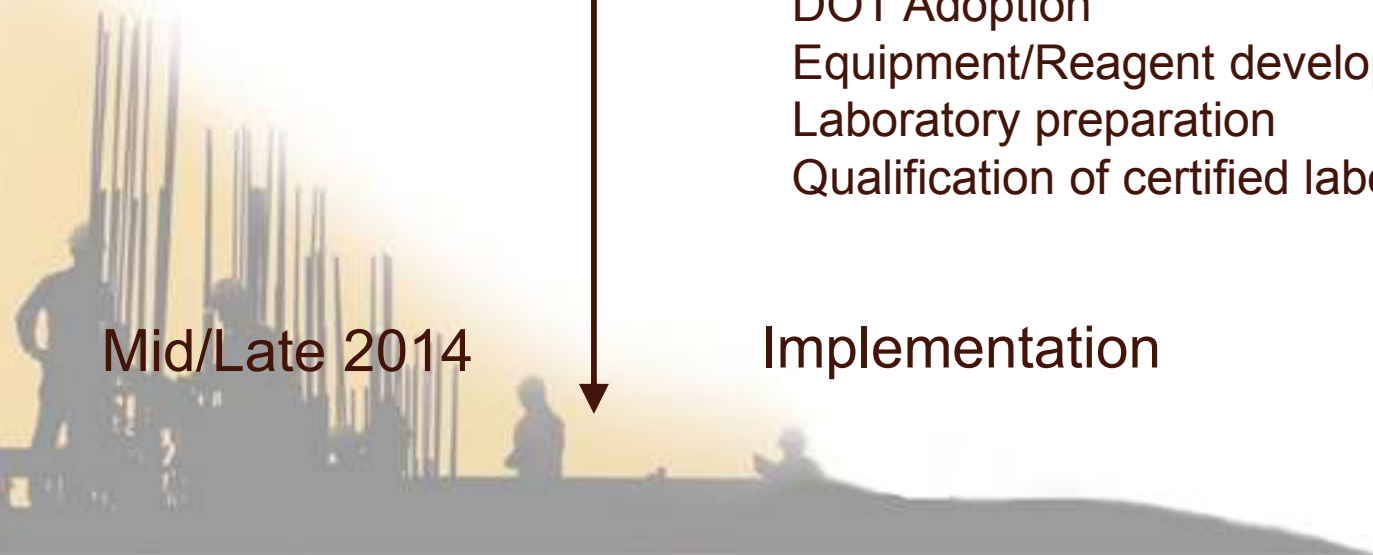
Draft Mandatory Guidelines
Public comment
Revisions
Regulatory approvals

Mid 2013

Final Mandatory Guidelines in Fed. Reg.
DOT Adoption
Equipment/Reagent development and manufacture
Laboratory preparation
Qualification of certified laboratories

Mid/Late 2014

Implementation





Implications of Required Changes

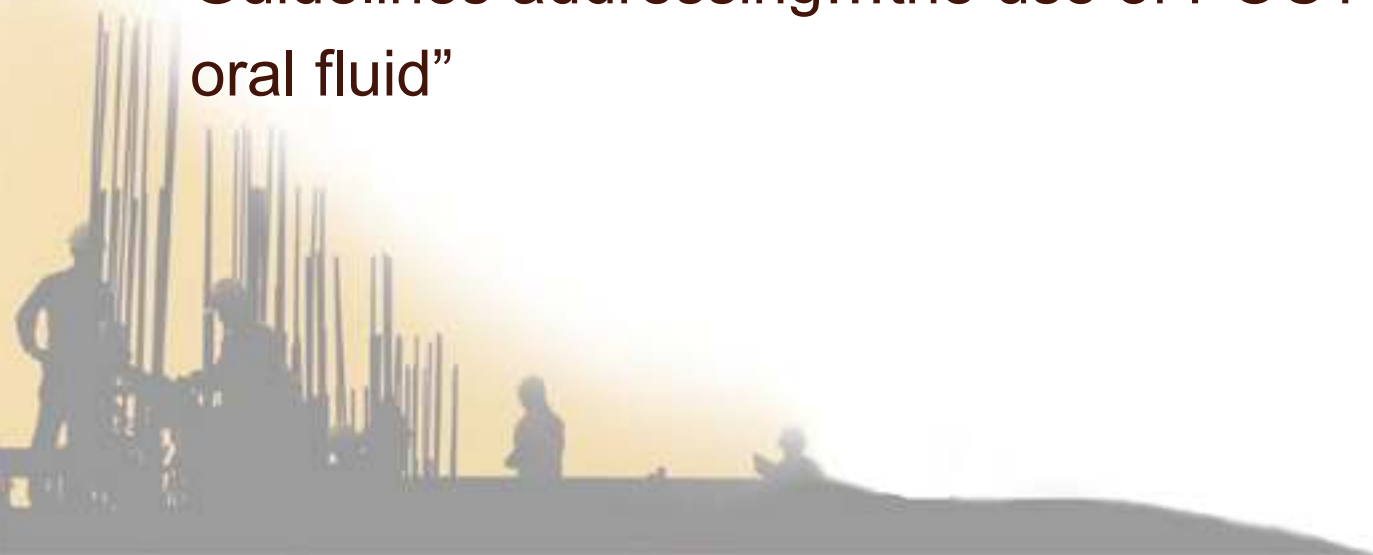
- Longer detection times compared to current Canadian Model
- Increased costs for drug testing programs
- Longer turnaround times





Addendum – Point of Collection Testing

- “The scientific, legal, and public policy information for drug testing...using POCT devices...is not as complete as it is for the laboratory-based urine drug testing program”
- “HHS anticipates issuing further revisions to the Mandatory Guidelines addressing...the use of POCT devices for urine and oral fluid”





Canadian Model Best Practice Review

COAA Best Practices Conference Canadian Model Best Practice Review

~ Canadian Model Status ~

Presented by Neil Tidsbury
Construction Labour Relations

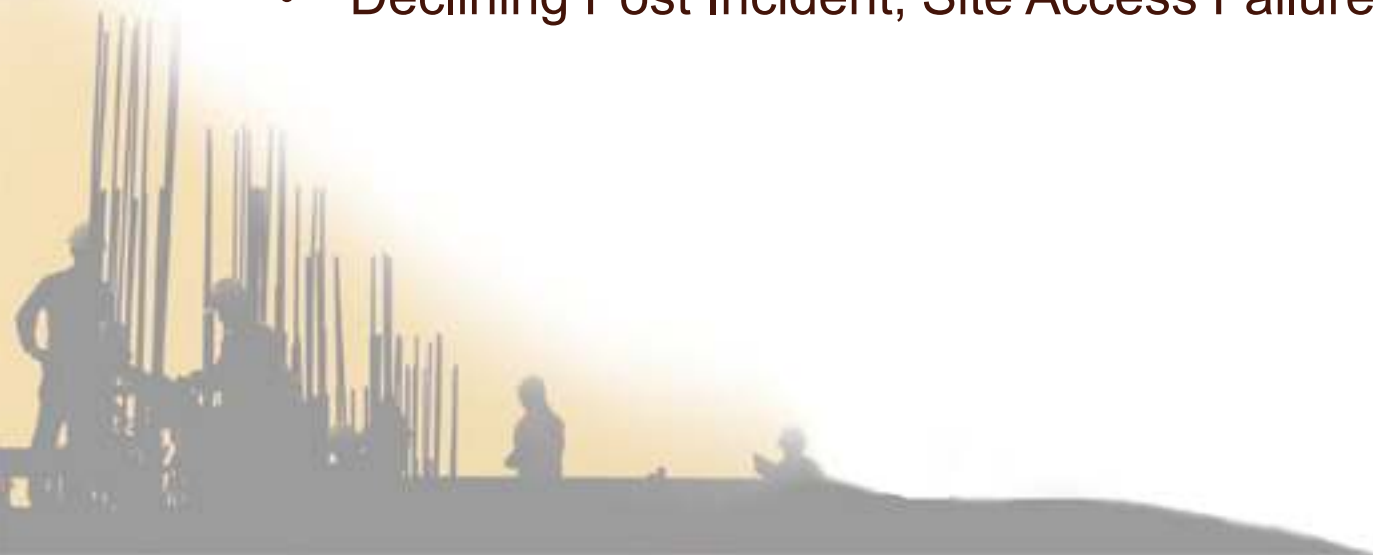
13 Years of Application: What Have We Got?

- Model Policy and Practice Envied Nationally
- Recognized Leadership
- Comprehensive Training
- Medical Assessment, Treatment, Re-Deployment Model
- Application by Agreement



13 Years of Application: What Are Recent Trends?

- Low and Declining Reasonable Cause Frequency
- Challenge of Workers Intervening With Co-Workers
- Propensity for “Short Cuts”
- Declining Post Incident, Site Access Failure Rates



13 Years of Application: What Do We See?

- Acceptance of Policy By Workers
- BUT Evidence of Cavalier Treatment
- Reliance on POCT
- Site, Camp Rules and Administration
- Policy “Variations” and Breaches



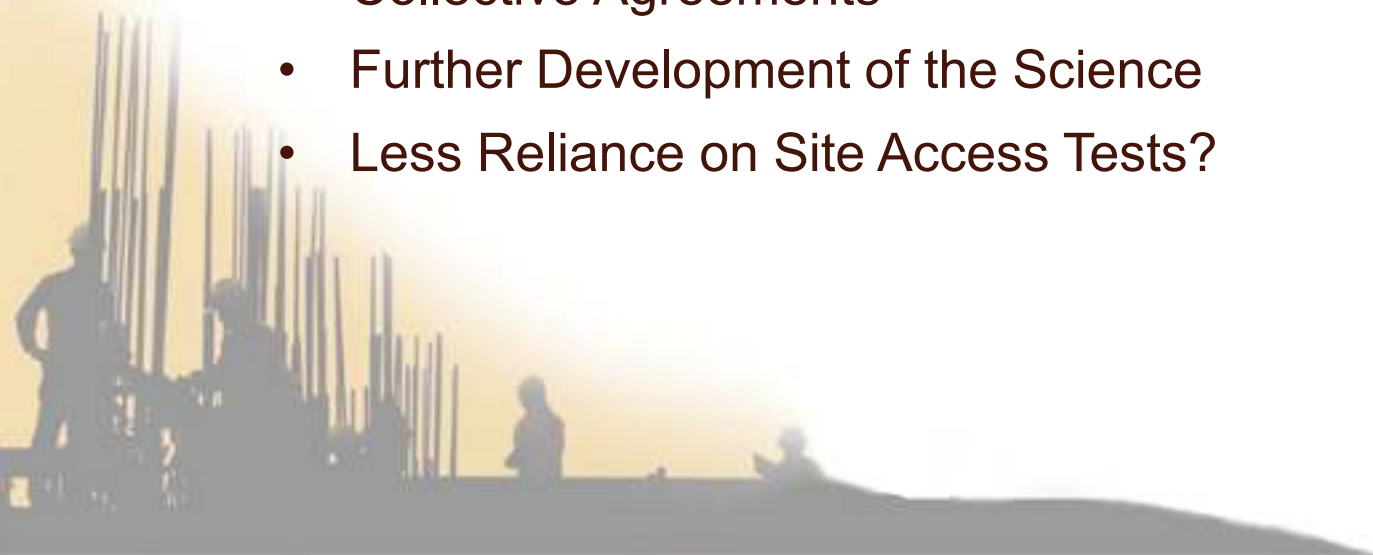
13 Years of Application: What Do We Need?

- Test Result Turnarounds Improving
- BUT Need to Further Improve to Preserve Policy
- Rigorously Follow Policy
- Collaboration in Application



13 Years of Application: What's Next?

- D&A Risk Reduction Pilot Project
- Potential for Challenges
- Perception of Disability
- Privacy
- Collective Agreements
- Further Development of the Science
- Less Reliance on Site Access Tests?





Canadian Model Best Practice Review

COAA Best Practices Conference Canadian Model Best Practice Review

~ Legal Review ~

Presented by Philip G. Ponting
McLennan Ross LLP

City of Thunder Bay v. Amalgamated Transit Union Local 966, Arbitrator Marcotte, 212 LAC (4th) 414

1. Last Chance Agreement
2. 12 year employee, Transit Operator moved to Service Technician under Last Chance Agreement and random tested under agreement
3. Grievor – after taking some random test says no as believes Technician position is not safety sensitive position although agreed Operator position was.
4. Over 2 year period Employer accommodated Grievor on 4 separate occasions for rehabilitation, some for long periods of time to attend treatment facilities.

City of Thunder Bay v. Amalgamated Transit Union Local 966, Arbitrator Marcotte, 212 LAC (4th) 414

5. Decision:

- a) Based on wording of Last Chance Agreement testing tied to employment not to employed in specific position
- b) Without random testing employer would have no means to ensure Grievor does not present health & safety concern to himself and co-workers.
- c) By not participating in random testing, Arbitrator agrees that Grievor has been accommodated to point of undue hardship
- d) Discharge upheld.

Government of Province of Alberta v. Alberta Union of Provincial Employees, Arbitrator A. Sims, Q.C.

1. Privacy concern – while not Drug & Alcohol, lessons to be learned.
2. Maintenance Enforcement Program believes fraudulent cheques are being issued.
3. Subsequently learns that responsible parties were outside government services.
4. But in investigating Government Special Investigations Unit does credit check on program employees to see if any in financial difficulty.

Government of Province of Alberta v. Alberta Union of Provincial Employees, Arbitrator A. Sims, Q.C.

(cont'd)

5. Once heard of checks being made, complaint filed with Privacy Commission. Investigation says destroy records produced by investigation but no need for formal inquiry.
6. Government does and apologizes to all affected employees.
7. Grievance filed for damages using Wolser & Parry Sound decision for basis of arbitration for jurisdiction.
8. Arbitrator says has jurisdiction
9. Awards damages in amount of \$1,250.00 per employee

Government of Province of Alberta v. Alberta Union of Provincial Employees, Arbitrator A. Sims, Q.C.

(cont'd)

5. Says damages awarded based on:
 - a. Employer conduct intentional to point of reckless
 - b. Employees privacy invaded without law justification dealing with private concerns of employees
 - c. Invasion highly offensive causing distress, humiliation or anguish

Irving Pulp & Paper Ltd. v. Communications Energy and Paperworkers Union of Canada Local 30

- Decision Court of Appeal of New Brunswick, 2011 NBCA 58
 - 1) Going to Supreme Court of Canada
 - 2) Irving operated Kraft paper mill on banks of St. Johns River where it empties into the Bay of Fundy and is contiguous to Reversing Falls.
 - 3) Irving unilaterally institutes a policy of random alcohol testing for safety sensitive position.

Irving Pulp & Paper Ltd. v. Communications Energy and Paperworkers Union of Canada Local 30

(cont'd)

4. Arbitration Board upholds grievance saying Irving failed to establish that the mills operation posed a sufficient risk of harm to outweigh employees right of privacy
5. Court of Queen's Bench quashed award saying decision unreasonable because Board said basis of its decision was Irving had not adduced sufficient evidence of pre-existing alcohol problem. Court said sufficient to show that workplace has "the potential for catastrophe".

Driving Pulp & Paper Ltd. v. Communications Energy and Paperworkers Union of Canada Local 30

(cont'd)

6. Court of Appeal uphold Court of Queen's Bench.
 - a) Not difficult to support contention mill qualifies as an inherently dangerous workplace as would a chemical plant
 - b) Evidence of existing alcohol problem not required to support policy

THANK YOU!

Any Questions?



Construction Owners Association Best Practices Conference

Alberta's Drug & Alcohol Risk Reduction Pilot Project

Agenda

- Background
- Eligibility for pilot
- Current status
- Application process
- Implementation
- Next steps
- Questions

Background

- DARRPP began as a working group with representatives from government, industry, labour
- Intent was to address confusion resulting from Human Rights, Privacy, and Safety requirements
- Several years of work occurred resulting in DARRPP, which has been designed to address safety concerns, while complying with Human Rights and Privacy requirements
- DARRPP is a best practices A&D model, which includes:
 - A&D testing including random testing for safety sensitive positions
 - A medical assessment model
 - Case management, follow-up and return to work provisions

Eligibility for Pilot

- Organizations in oil sands operations and heavy industrial construction and maintenance industries may participate in the pilot
- This includes owner companies, contractors and labour organizations
- Organizations that have applied the Canadian Model or similar policies should be well positioned to participate in the pilot project
- Costs for pilot handled on a cost sharing basis

Current Status

- 5 information sessions have been held between Dec 2011-April 2012, with about 200 attendees
- Currently working with a group of owners on implementation strategies
- Anticipate owner announcements of participation in June, with implementation staged over the 3& 4Q 2012
- Owners will expect contractors to implement a similar program
- Extensive, detailed communication plan and tools have been developed and will be available to all participating organizations

Application Process

- Fill in on-line application form, located on DARRPP website
 - Will be reviewed by DARRPP Administrator (can be one application for multiple organizations provided program is common)
- Purpose of application form is:
 - to ensure pilot participants have policies and processes in place that are consistent with the practices identified in the DARRPP principles and guidance documents
 - so that there is basic consistency in process among pilot participants to facilitate data collection and evaluation processes

Evaluation & Audit

- Evaluations will be prepared for completion in July 2013 and July 2014 and will be shared with government and participants of the pilot project
- Evaluations will consist of a report which includes:
 - Analysis of data submitted by all participants in the pilot
 - Summaries of organizations key progress, learning's and challenges
- The audit process is still being developed but an audit will be conducted by an external auditor to ensure robust programs and practices are in place, which are consistent with best practices as per DARRPP

Implementation Options

- Some sites are likely to implement a centralized “site” testing model, for random testing which can be used by contractors, potentially using data from the swipe card system
 - Third party testing provider would arrive at the site on a periodic basis
 - Names of workers in safety sensitive positions (at work that shift) would be generated from the swipe card system and a random list drawn
 - The TPA would administer A&D tests, and processes would be followed as per the COAA model, including lab processing, MRO review, SAE assessment, case management, treatment, follow-up
 - Testing results would go only to the contractor or case manager, not to the owner

Implementation Options

- Another options being considered is that each contractor would make their own arrangements for random testing of their workers
- Contractors would then need to:
 - Make arrangements with a testing TPA, as well as SAE, case management, EAP, etc.
 - Provide a list of names of workers in safety sensitive positions, along with contact info, site working at, etc.
 - Set up a schedule for testing with the testing TPA
 - Testing would be administered as per COAA standards and all other processes would occur such as lab testing, MRO, SAE assessment, case management, follow-up, etc.

Implementation Options

- Will also need to:
 - Apply for the pilot – application will be on DARRPP website
 - Update policy – if not using COAA
 - Determine which workers are in safety sensitive positions
 - Communicate changes to workers
 - Train supervisors
 - Gear up your infrastructure – EAP, etc
 - Have a mechanism in place to provide necessary data

Next Steps

- Communication plan & package for participants being finalized for implementation in 2Q 2012
 - Extensive package will be provided to participants including:
 - Press release, video, brochure for employees, PowerPoint overview, media contact plan, tool box talks based on interviews from experts, posters & stickers available
 - Web site being set up for communications documents, DARRPP documents, application process and data collection
 - Theme is “Good to Go”
 - Companies will apply for pilot, finalize policies and plans and likely implement in 3Q, 2012; contractors likely to implement late fall 2012

Questions For You

- What would assist contractors in being ready to implement this pilot?
 - Are workshops needed on how to implement random testing?
- Would a centralized, site based testing process work for your organization or would it be better for each contractor to set up their own testing process?
- What else would be useful or helpful?

QUESTIONS/OPEN DISCUSSION

Good to go.

**Alcohol and Drugs
have no place
in our workplace.**

Alberta's Drug and
Alcohol Risk Reduction
Pilot Project

Brochure

Front Cover

Good to go.

Alcohol and Drugs have no place in our workplace.

Alberta's Drug and Alcohol Risk Reduction Pilot Project



Inside Gatefold

When you think about improving workplace safety, alcohol and drug testing is a good thing. Good for work. Good for life. Everyone needs to be good to go.

Alcohol and Drug Testing at Work:

What it means to you.

Random workplace alcohol and drug testing has been proven to significantly reduce risks, prevent serious injuries, and help workers with alcohol and drug dependencies get treatment. It's been used in other places for many years, but it's new to Alberta's energy and construction industries, so it raises many questions. In this brochure we hope you'll find some of the answers.

Alcohol and drug use has been proven to increase fatigue, reduce alertness and slow reaction time. In an industrial work environment, these effects can only increase the risk of incidents, injuries and death.



Back Cover

What do I do if I have an alcohol or drug problem?

If you have an alcohol or drug problem, we urge you to get help, and this is the right time to do it. One of the benefits of random testing is that it prompts people who have serious alcohol or drug problems to take themselves for evaluation and treatment. All participants in DARRPP have Employee Assistance Programs that include counseling from first party professionals who protect the privacy of employees who use these services. If your home or work life is being affected by alcohol or drugs, don't be afraid to ask for help - for your own sake, and for those who live and work with you. Protecting your health and safety - and your privacy - is what workplace alcohol and drug programs are all about, and that includes DARRPP's random testing pilot.

What do I do if I am aware of a friend, co-worker or family member who may be having an alcohol or drug problem?

First of all, be careful about making any assumptions about the other person's situation. However, if you are concerned, take the opportunity to talk to the person and suggest that, if they need assistance, they should contact the Employee Assistance Program. If you believe that someone you work with is in an unsafe condition, you must advise the supervisor immediately so that the worker does not become involved in a safety incident.

We all want to work in a place where we arrive on the jobsite as ready and alert as we can be, so we can all go home in one piece. In the end, it all comes down to asking yourself a simple question:

Are you good to go?

Good to go.

Alcohol and Drugs have no place in our workplace.

Alberta's Drug and Alcohol Risk Reduction Pilot Project

For more information visit www.DARRPP.ca.

Good to go.

Alcohol and Drugs have no place in our workplace. | Alberta's Drug and Alcohol Risk Reduction Pilot Project

Signage and Stickers



Good to go.

**Alcohol and Drugs
have no place
in our workplace.**

Alberta's Drug and
Alcohol Risk Reduction
Pilot Project

Back-up Documents

Case for random testing

- Opportunity to take proactive action re: safety
 - Potential for serious incidents/fatalities
 - Random testing is an effective deterrent
 - Federal Transit Administration random testing stats 1995-2008
 - Alcohol 1995 .25% positive; in 2008 down to .15%
 - Drugs 1995 1.76% positive; in 2008 down to .82%
 - In Alberta heavy industry, alcohol & drug testing positive rates are generally much higher than the FTA's 1995 rates so considerable room for improvement
 - 2010 site access failure rates 2.5 – 5%; post incident 5 – 10%; reasonable cause 30-65%

Case for random testing

- Random testing is an effective deterrent cont'd:
 - Random testing in Alberta:
 - 1996 positive rate 2.08, 2010 down to .87 (similar to FTA stats)
 - US random alcohol testing data among motor coach drivers
 - 1995 mandatory alcohol testing implemented for motor coach drivers (also had overall testing program)
 - As of 2006, prevalence of alcohol involvement in fatal crashes decreased by 80%

Case for random – Toronto Transit

- In 2007 serious incident – “Lytton subway work car fatality” – operator of work car had measureable levels of THC in his system – level indicated drug likely used during his shift – operator killed, two crew members seriously injured, other crew members traumatized – lengthy absences
- In 2008, TTC staff recommended changes to Fitness for duty policy including random testing – approved by the commission except for random testing
- In 2010, policy changes were implemented
- August, 2011 bus crash killed a passenger; in Oct, police charged the driver with criminal negligence causing death & possession of cannabis
- One week later, Oct 19, 2011 TTC announced random testing was approved by the Commission for implementation

Requirements

- Implement a comprehensive A&D program that includes the following:
 - Random testing in addition to the testing program already in place in your organization
 - An A&D program that meets or exceeds the standards of the Canadian Model and complies with the DARRPP guidance and/or principles document
 - A medical model for assessment, treatment, case management
 - Commitment to adhering to all relevant legal requirements associated with the implementation and administration of an A&D program including:
 - Compliance with Human Rights legislation regarding workers assessed as having a disability
 - Compliance with Privacy Legislation regarding the A&D testing process and access to A&D related information

Requirements

- Comprehensive A&D program cont'd:
 - A program tied to defensible standards tailored to the environment in which the testing will occur
 - Limit random testing to positions defined as safety sensitive and demonstrate a reasonable approach in this evaluation process

Human Rights Implications

- Workers who test positive must be assessed, and if dependant, must be offered treatment, rehabilitation, return to work similar to employees with other disabilities
- Workers who test positive and who do not have a disability may be offered treatment and/or handled through the organizations discipline processes
- The Human Rights Commission has confirmed that they are not involved in:
 - whether and when A&D testing is done
 - How positive test results are handled by organizations when the worker is assessed as not being dependent

Privacy Implications

- A&D testing data, including names of those tested, results, etc. must be protected. Examples of potential issues are:
 - Owner companies having data or requesting data or taking action regarding contractor workers
 - Sharing lists or names of “inactive” workers or workers who have had positive tests between owner companies or owners and contractors