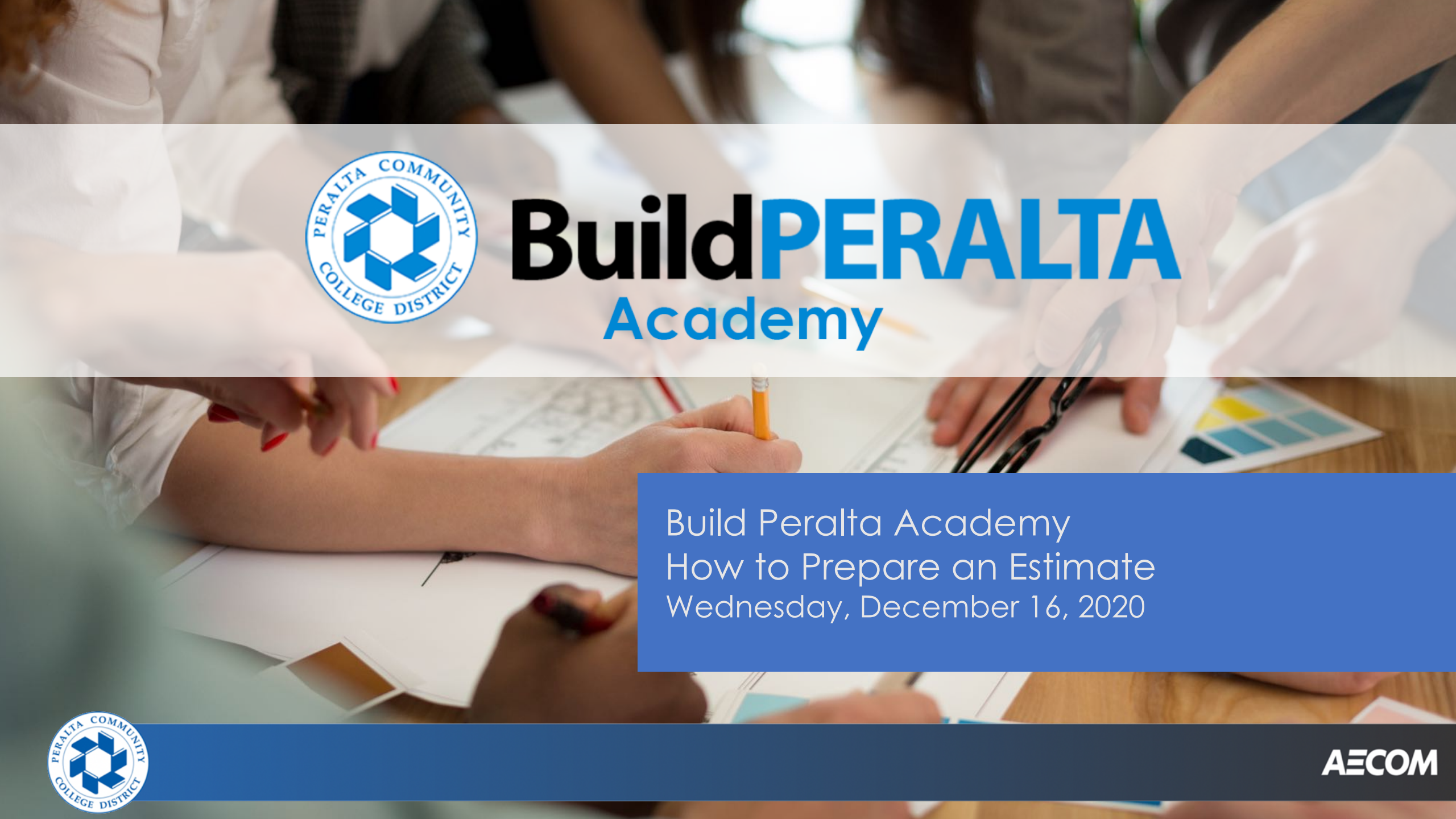

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Build Peralta Academy
How to Prepare an Estimate
Wednesday, December 16, 2020

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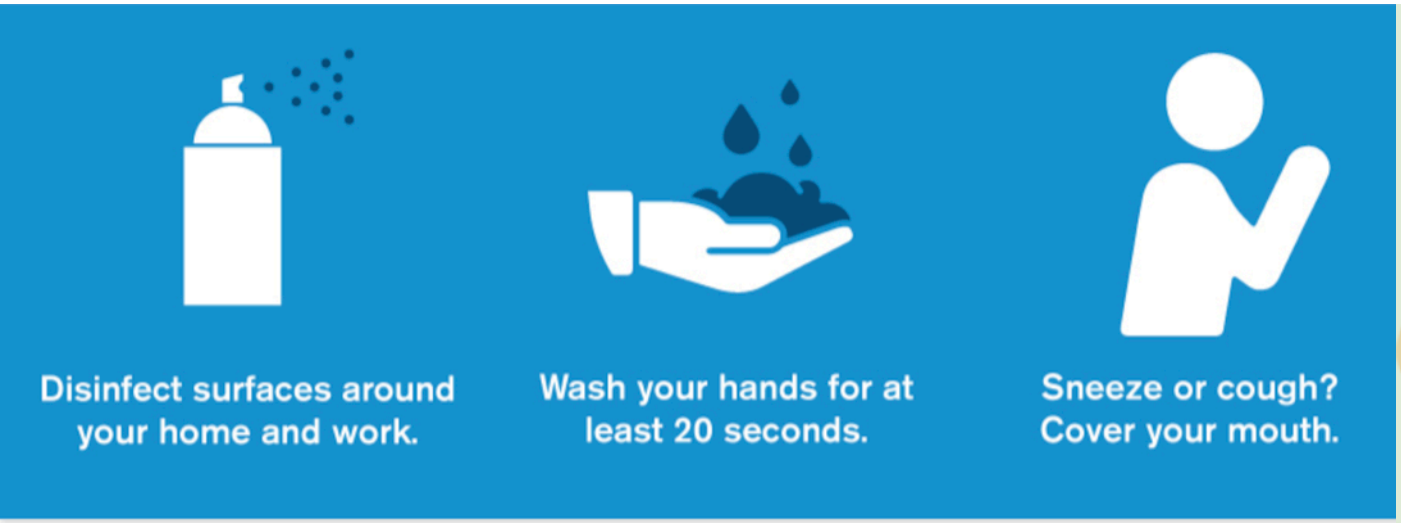
COVID-19 Safety Tips



Wear a mask. Save lives.

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Agenda

- Welcome
- Introductions
- Bond Program Overview
- Commitment to Local Businesses
- Build Peralta Academy Schedule
- Course – How to Prepare an Estimate
- Survey
- Closing

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Meet The Team

Keith Kajiya

Program Manager
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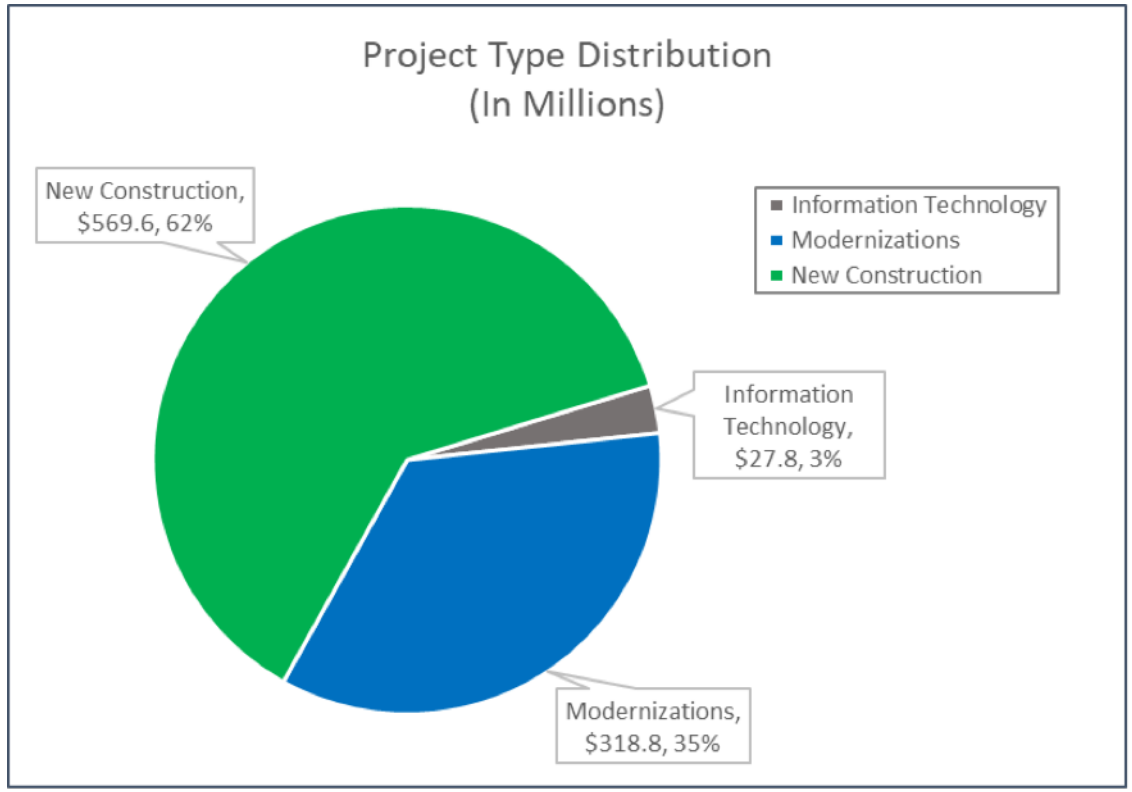
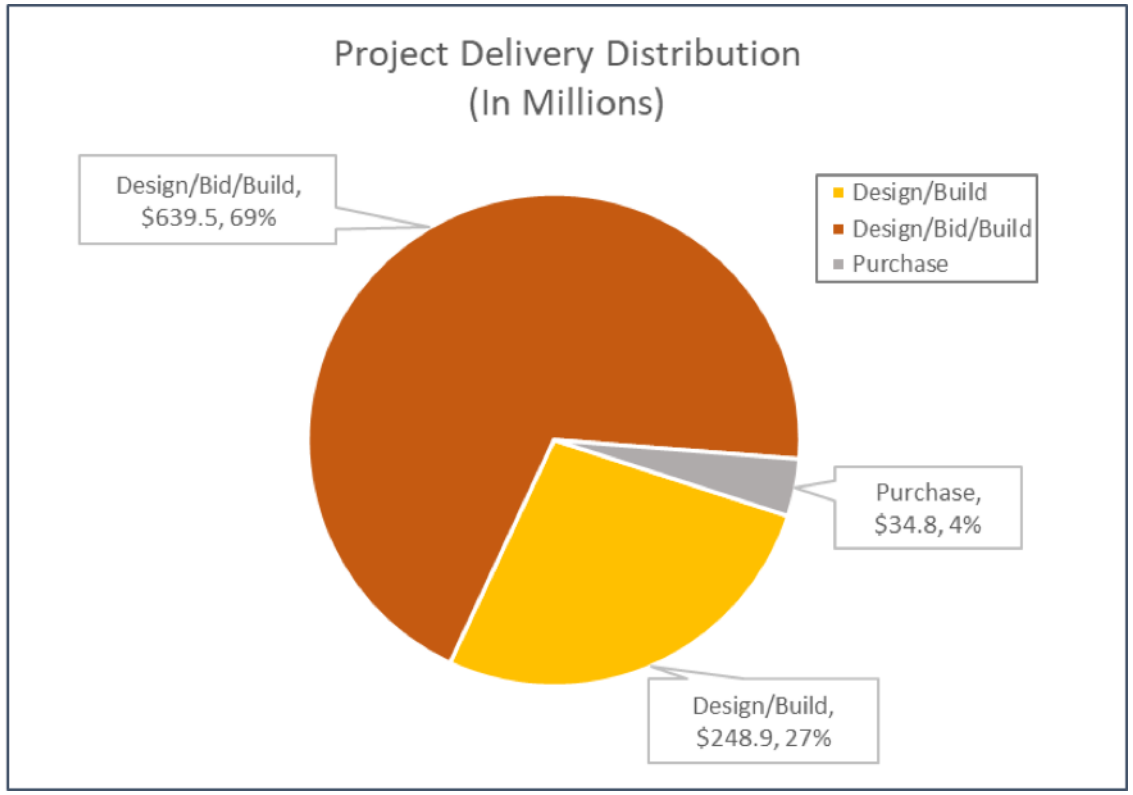
Capital Program Overview

Keith Kajiya, AECOM





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Meet The Team

Shonda Scott

CEO / Founder
360 Total Concept

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Commitment to Local Businesses

Shonda Scott, 360 Total Concept

- PCCD Small Business Policy
  - 25% Small Local Business Participation
- Certification (small business located in 6 cities in Peralta District: Alameda, Albany, Berkeley, Emeryville, Oakland and Piedmont)
  - SLBE: Revenue size has not exceeded gross annual revenue for the past 3 consecutive years
    - Construction Firms: $8.5M > under
    - Goods Non-Professional Services Firms $6M > under
    - A/E and Professional Services $3M > under
  - SELBE
    - For businesses that have not exceeded revenue of $1.5M past 3 consecutive years
- Host Outreach Meetings
- Matchmaking Sessions with Primes
- Build Peralta Academy
  - Technical Assistance Workshops

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Meet The Team

Bonnie James

CEO
BRJ & Associates

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Build Peralta Academy Course Schedule (9 Part Series – Technical Assistance Workshops)

Course Title	Description	Instructors	Date
Developing A Safety Program During COVID19 Era	Learn The Law(s) Federal OSHA has approved California's use of its version of construction and OSHA safety	BRJ & Associates - Mark Edwards Avitus Group – Bill Kane	9/30/20
How to Bid Informally and Formally including CUPCCAA	Learn how to bid informally and formally including the CUPCCAA process, pre-qualification and other PCCD contracting procedures	PCCD – Brian Slaughter AECOM - Ray Loving	10/14/20
Small Business Guide to Access Capital; Manage Profitability and Cashflow	Learn about programs and opportunities for small businesses to achieve capital/cashflow in a COVID-19 Era, including PPP loan forgiveness	SBA - Julie Clowes Summit Bank - Tom Duryea FHLB–Kevin Blackburn PCV - Adria Moss Avitus Group - Pete Maki 360 Total Concept - Shonda Scott	10/28/20
Change Management: How to Manage Scope, Schedule & Budget	Learn the principles of planning for the identification and management of changes	PCCD Program Management/ Construction Management PM Panel: AECOM, BRJ, Kitchell, Roebblen, Swinerton	11/12/20
How to Obtain Bonding/Insurance	Learn how to obtain construction bonds and insurance for major projects and how to build bonding capacity for your company	Merriwether & Williams	11/18/20
Learn more about PCCD Small Business Program and Local Small Business Certification	Learn about PCCD's small local business program and how to get certified with local agencies	PCCD - Atheria Smith City of Oakland - Ernestine Nettles Port of Oakland - Ramona Dixon 360 Total Concept - Shonda Scott	12/09/20
How to Prepare Estimate	Learn the principles of how to prepare a construction eliminate	AECOM - Peter Morris	12/16/20
Scheduling 101 - How to Prepare A Schedule	Learn the basics about project schedules: from critical path method to work breakdown structure and everything in between	AECOM - Craig Olsen	1/13/21
TBA	TBA	TBA	TBA

Meet The Expert

Peter Morris

PCC Americas Practice Leader
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How to Prepare an Estimate

Peter Morris

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Goals

The purpose of this session is to

- Present the basics of Best Practice for preparing an estimate
  - Why do the estimate
  - How to structure the estimate
  - How to develop prices, allowances and contingencies
  - How to speak truth and communicate estimates clearly

So that, you will be able to:

- Define the purpose of your estimate and design the right processes
- Develop good pricing data
- Document uncertainty and risk considerations and set mitigation strategies
- Use precise language to communicate information clearly
- Evaluate and apply appropriate contingencies, escalation and market allowances

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What is an Estimate?

What is an Estimate for?

What is an Estimate for?

"The Peralta Community College District provides **accessible**, **high quality**, **educational programs** and **services** to **meet the needs** of our **multi-cultural communities**"

Meet Community Needs

How

Accessible, High Quality Educational Programs and Services

Beautiful, State of the Art Facilities

Value Orientated Design and Construction

Value Focused Delivery Team

Why

Effective Cost Estimates

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What is an Estimate for?

An Estimate is:

- A tool to support the mission of the client
  - Deliver Success
  - Maximize Value

- A tool that allows
  - a decision maker
  - to make an informed decision,
  - within the context of their own values and opinions

- A tool for communicating complex and specialist inputs in a clear and concise manner

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What is an estimate for

Other Considerations

- Estimates are fundamentally communication tools – so they must be
  - Clear,
  - Comprehensive
  - Logical
- We have to be able to explain every number in our work
- We have to reflect the anticipated conditions

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What estimators do - essentially

We help others make decisions: we do that by converting complex inputs into user-friendly information

- Drawings
- Specs
- Standards
- Codes/Regs
- Statutes

Us

Advice

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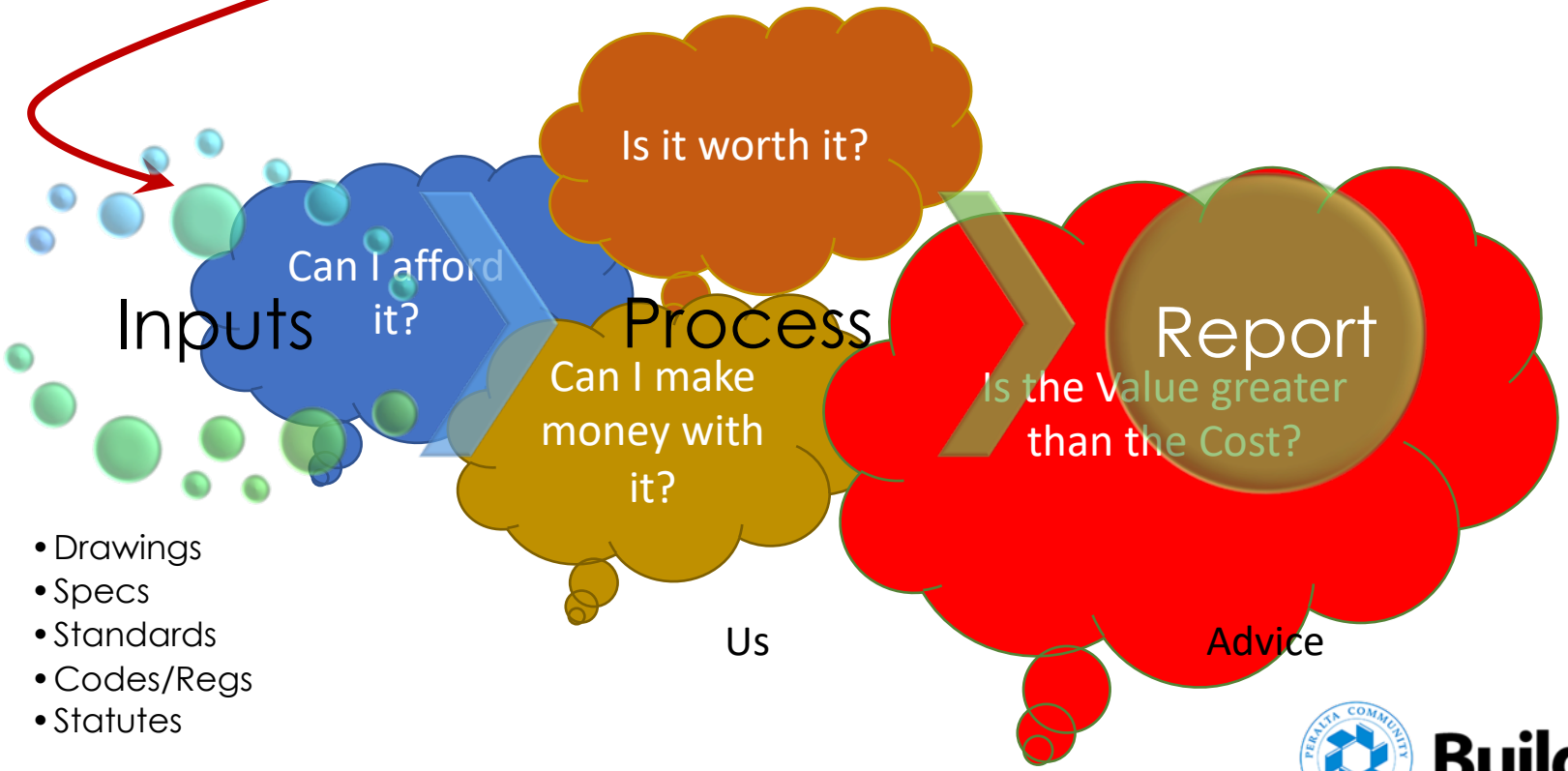
What estimators do - essentially

We help others make decisions: we do that by converting complex inputs into user friendly information



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Best Practices

Best Practice

Delivering Excellence

- Doing the Right Job
  - Understand/Confirm the instructions
  - Understand the client desires, passions, expectations

- Doing the Job Right
  - Develop the workplan – Fee distribution, tasks assignments, major steps, research, report structure
  - Establish the quality review plan and allow time
  - Work methodically and logically
  - Make sure you understand the work – discuss within the team

- Quality Review
  - Self check – Control Quantities, Triangulate, Sanity Check
  - Technical Quality Review (TQR)
  - Report review – Format, Grammar,
  - Leadership Review/Sign-off

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Best Practice

Delivering Excellence

- Government Accountability Office (https://www.gao.gov/products/GAO-20-195G)
  - Comprehensive
  - Well Documented
  - Accurate
  - Credible

Comprehensive cost estimates completely define the program and reflect the current schedule and technical baseline. They are structured with sufficient detail to ensure that cost elements are neither omitted nor double-counted. Where information is limited and judgments must be made, assumptions and exclusions on which the estimate is based are reasonable, clearly identified, explained, and documented.

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Best Practice

Delivering Excellence

- Government Accountability Office (https://www.gao.gov/products/GAO-20-195G)
  - Comprehensive
  - Well Documented
  - Accurate
  - Credible

Well-documented cost estimates can easily be repeated or updated and can be traced to original sources through auditing. Thorough documentation explicitly identifies the primary methods, calculations, results, rationales or assumptions, and sources of the data used to generate each cost element's estimate.

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Best Practice

Delivering Excellence

- Government Accountability Office (https://www.gao.gov/products/GAO-20-195G)
  - Comprehensive
  - Well Documented
  - Accurate
  - Credible

Accurate cost estimates are developed by estimating each cost element using the best methodology from the data collected. Accurate estimates are based on appropriate adjustments for inflation. Their underlying mathematical formulas, databases, and inputs are validated, and the resulting estimates contain few, if any, minor mathematical mistakes. They are updated regularly. Any variances between estimated and actual costs are documented, explained, and reviewed.

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Best Practice

Delivering Excellence

- Government Accountability Office (https://www.gao.gov/products/GAO-20-195G)
  - Comprehensive
  - Well Documented
  - Accurate
  - Credible

Credible cost estimates discuss and document any limitations of the analysis, including uncertainty or bias surrounding source data and assumptions. The estimate's major assumptions are varied to determine how sensitive it is to changes. Credible cost estimates include a risk and uncertainty analysis that determines the level of confidence associated with the estimate.

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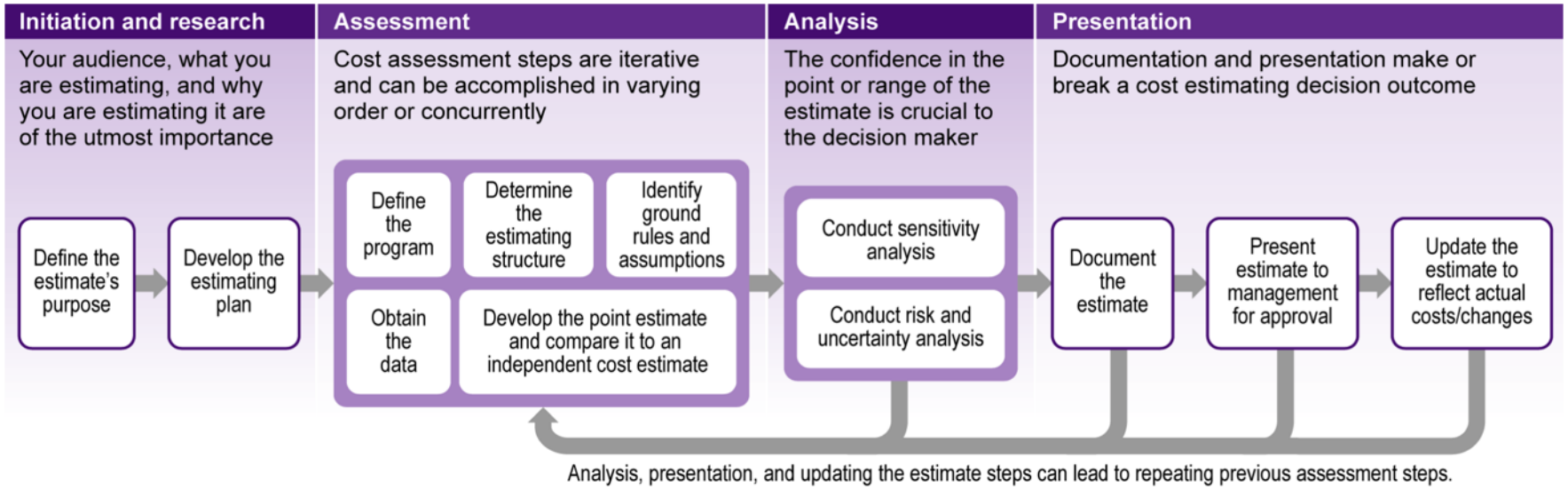
Best Practice

Delivering Excellence



Source: GAO. | GAO-20-195G

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Setting the course

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Setting the Course

Define the purpose

- Who needs the estimate?
- What do they need it for?
- What is the acceptable confidence level?
  - Confidence range
  - Nature of target (plus/minus or not to exceed)

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Setting the Course

Understand the Passion

- What is driving the project?
- Who are the stakeholders?
- What are the stories?
- What is the VALUE we are delivering?

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Setting the Course

Develop the plan

- What information is available?
- What more do I need, and how am I going to get it?
  - Who possesses it?
  - Who can make the Best Guess?
- Who do I need in my team?
  - Specialists? Engineers? Programming?
- What information do I need to bring to the table? What research do I need to do?
- What is to be included/excluded?
  - Construction cost
  - Furniture, Fittings and Equipment (FF&E), IT
  - Design, permits, inspection
  - Financing and land
  - Life Cycle Costs

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Setting the Course

Develop the plan

- What level of detail is appropriate?
- What format, and what software/tools should I use?
- Can it be done?

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Setting the Course

Establish a structure

- Format should follow purpose
  - In planning stages develop costs by function (Uniformat)
  - In detail stages develop cost by method (Masterformat)

- Detail should be "fit for purpose", especially at summary level

Establish the basis/assumptions

- Write up the basis:
  - Inclusions – what the project includes
  - Exclusions – what is excluded/estimated by others
  - Assumptions – what has been assumed – not defined
  - Uncertainty – what is the reasonable range of uncertainty

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Setting the Course

It is our responsibility

- Its up to us to:
  - ask the right questions
  - understand the vision
  - confirm our instructions
  - confirm the scope
  - set out on the right path

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Creating the Estimate: Economics of Pricing

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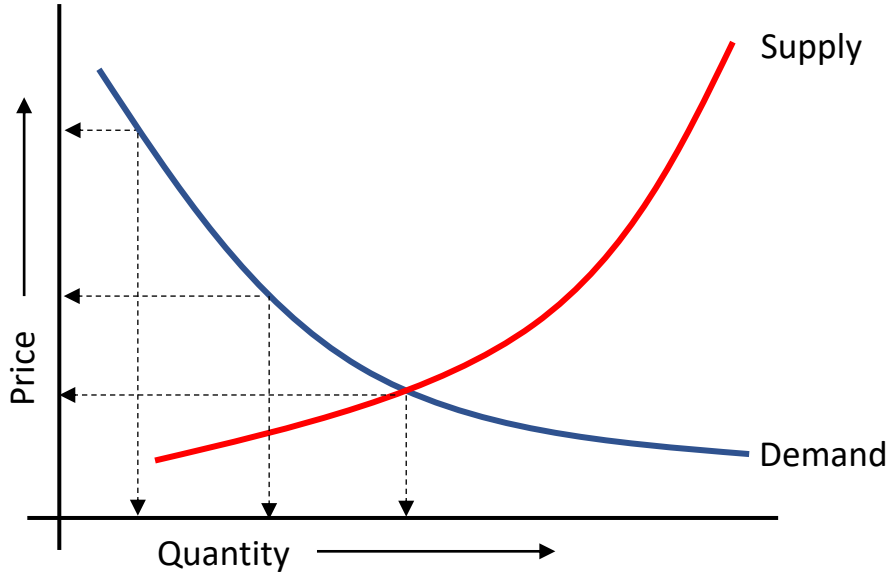
Economics of Pricing

Price:

- A bargain between a willing buyer and willing seller
- Based on offer and acceptance
- Has little to do with input costs – except to the degree it influences the offer and the mind of acceptance
- Has everything to do with the broader market and the economy
- Is driven both by real cost and perception



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Economics of Pricing

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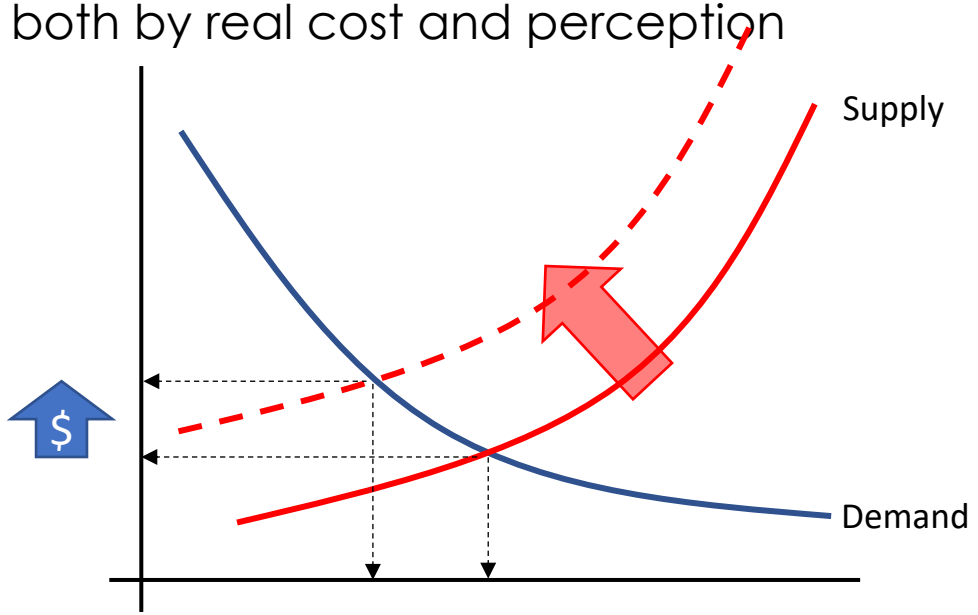

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Economics of Pricing

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- Is driven both by real cost and perception

There is no such thing as an objective price

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Economics of Pricing

Supply Pricing:

- Input Cost/Cost of Production
  - Variable Cost
  - Fixed Cost
  - Profit

Pizza
Flour
Water
Yeast
Cheese
Sauce
Pizza Oven
Staff/Benefits
Utilities
Storefront
Risk
Cost of Capital
Reward

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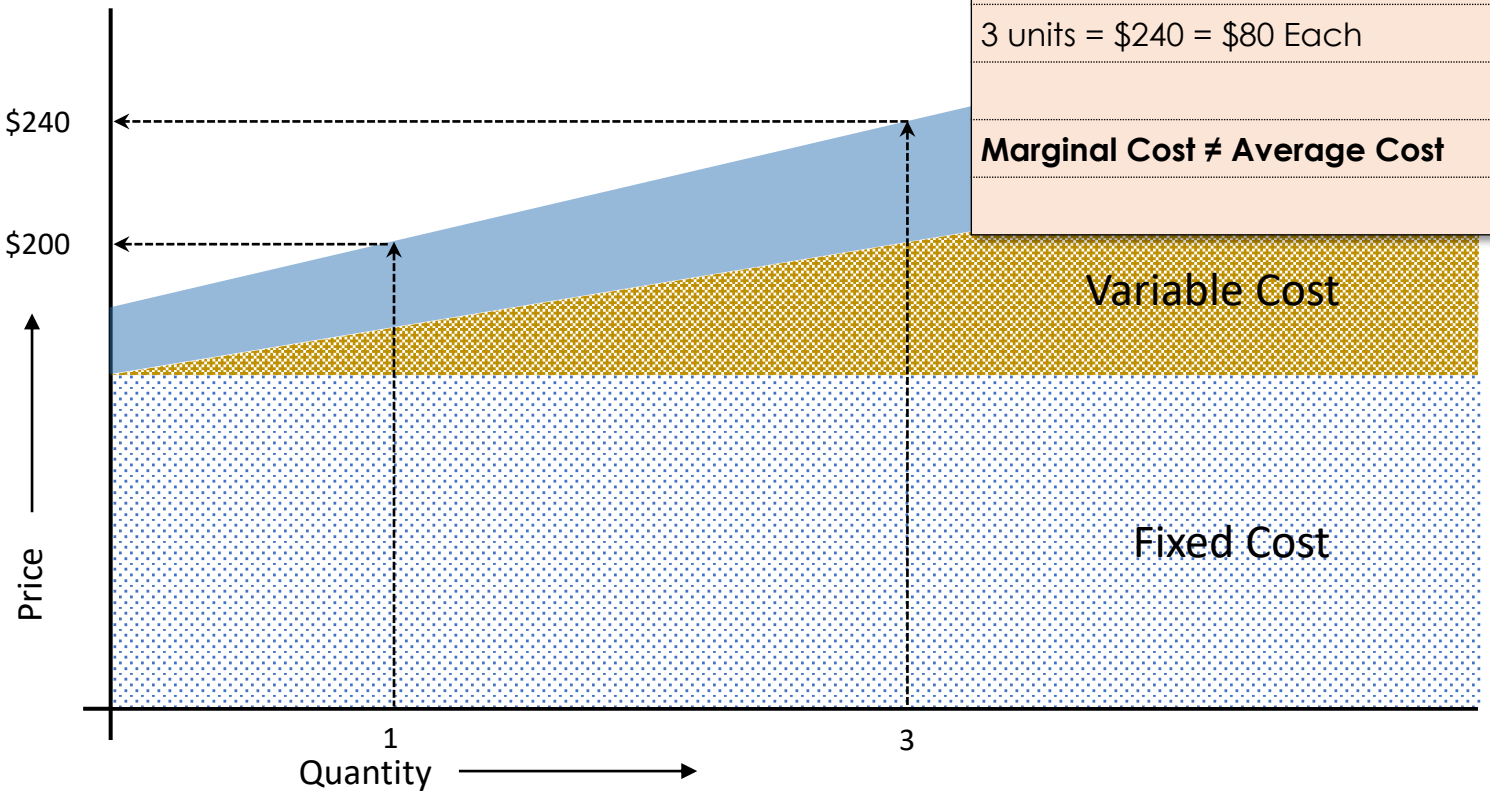
Economics of Pricing

Supply Pricing:

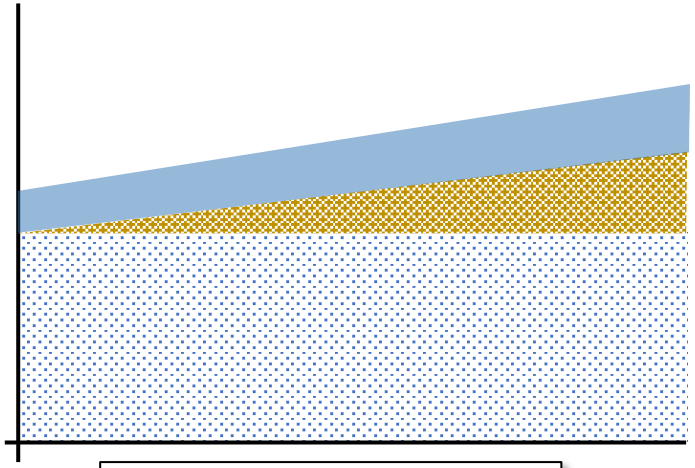
- Input Cost/Cost of Production

Average Cost
1 unit = $200 = $200 Each
3 units = $240 = $80 Each
Marginal Cost ≠ Average Cost



Economics of Pricing

Supply Pricing:

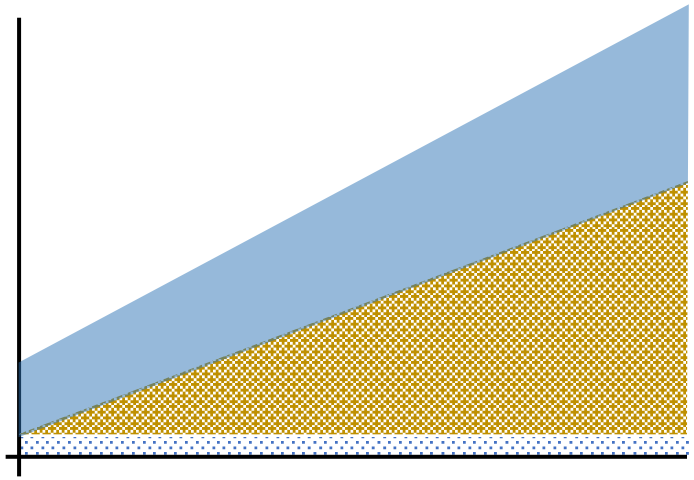


High fixed cost
Low Marginal cost

$/unit not very relevant

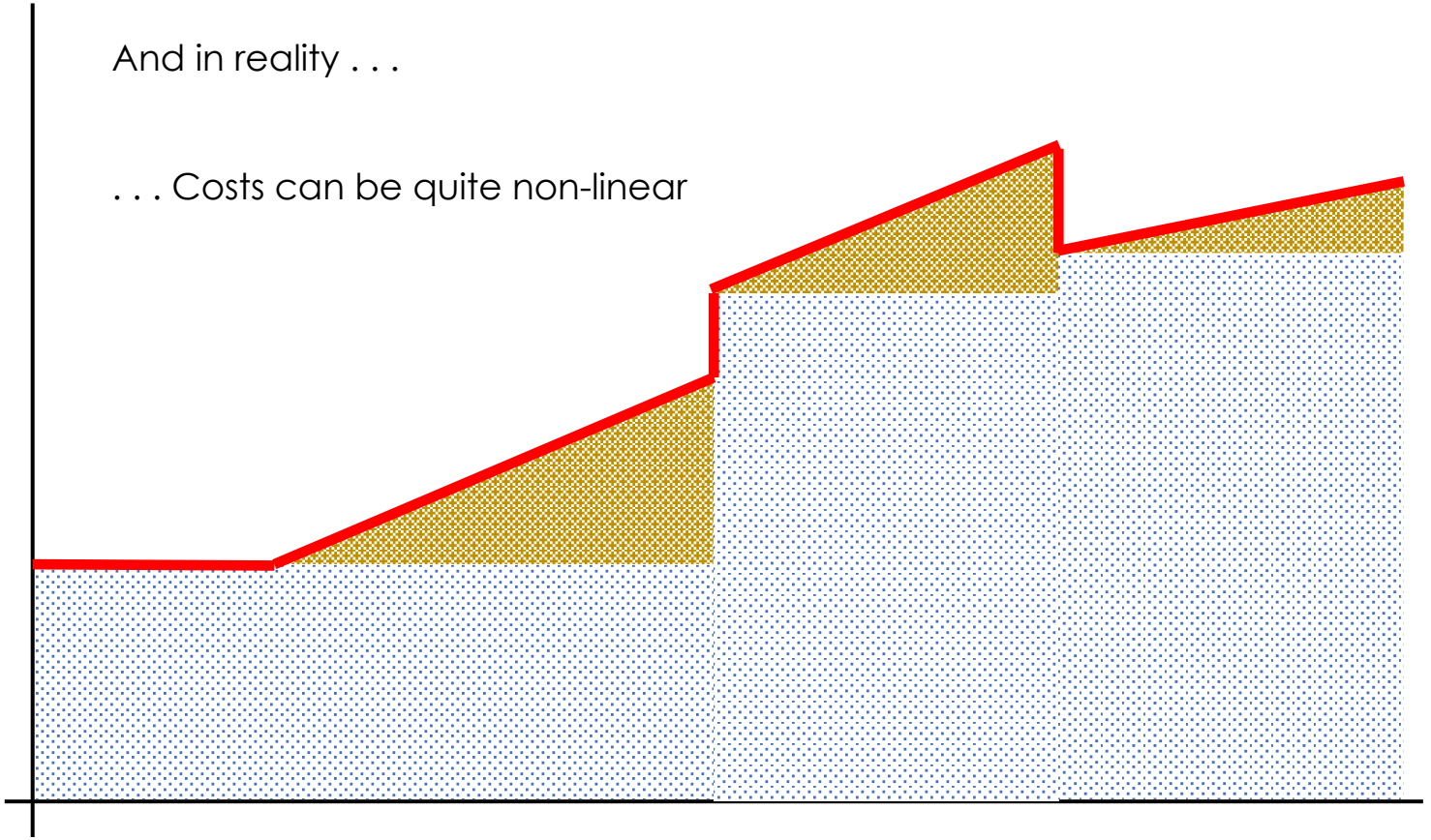
Low fixed cost
High Marginal cost

$/unit is meaningful



Economics of Pricing

Supply Pricing:



Economics of Pricing

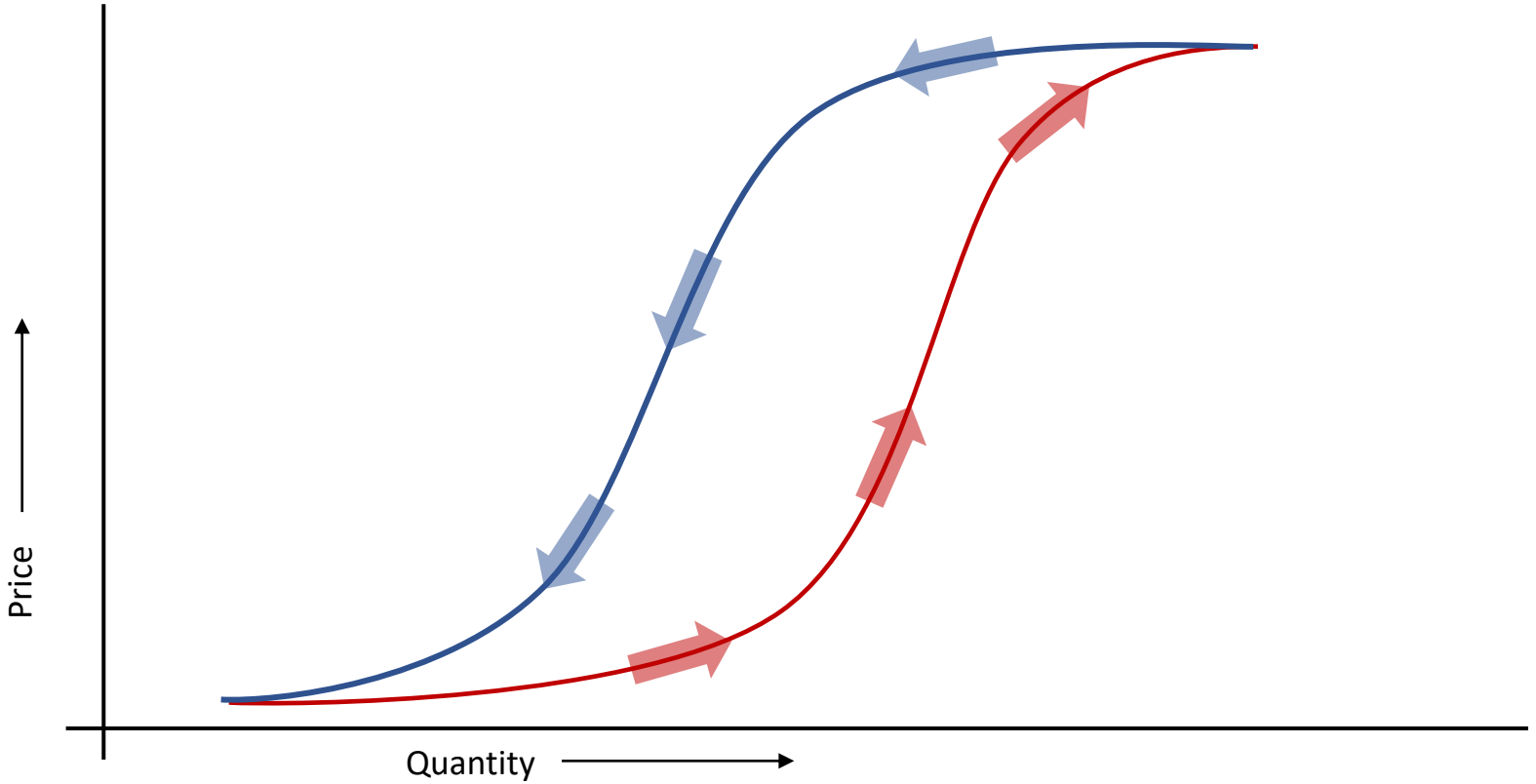
Supply Pricing:

- Average Cost ≠ Marginal Cost

Economics of Pricing

Supply Pricing Hysteresis:

- Hysteresis is defined as the dependence of the state of a system on its history. – Rate of change of cost depends on direction of change



Economics of Pricing

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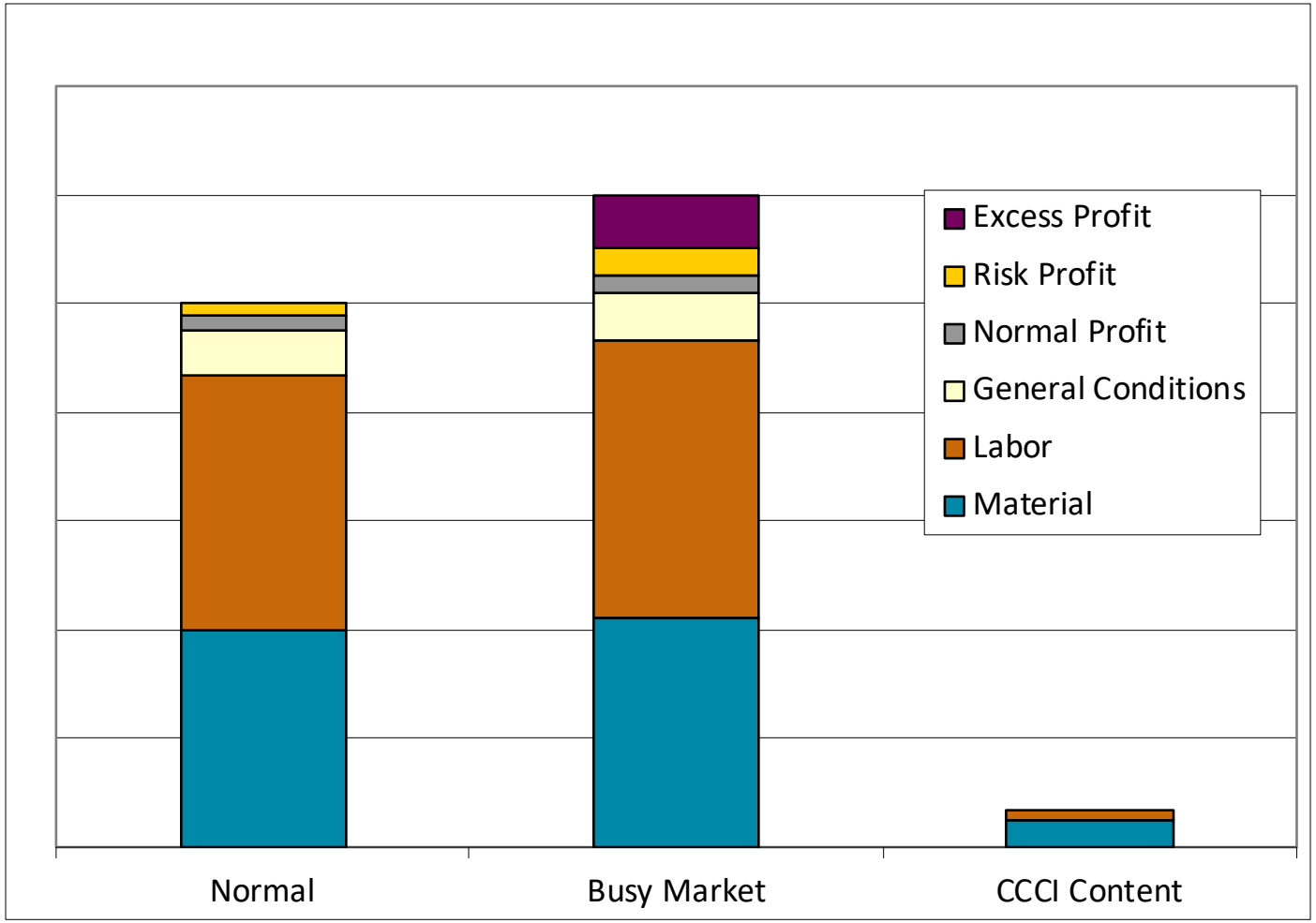
Market Elasticity:



Economics of Pricing

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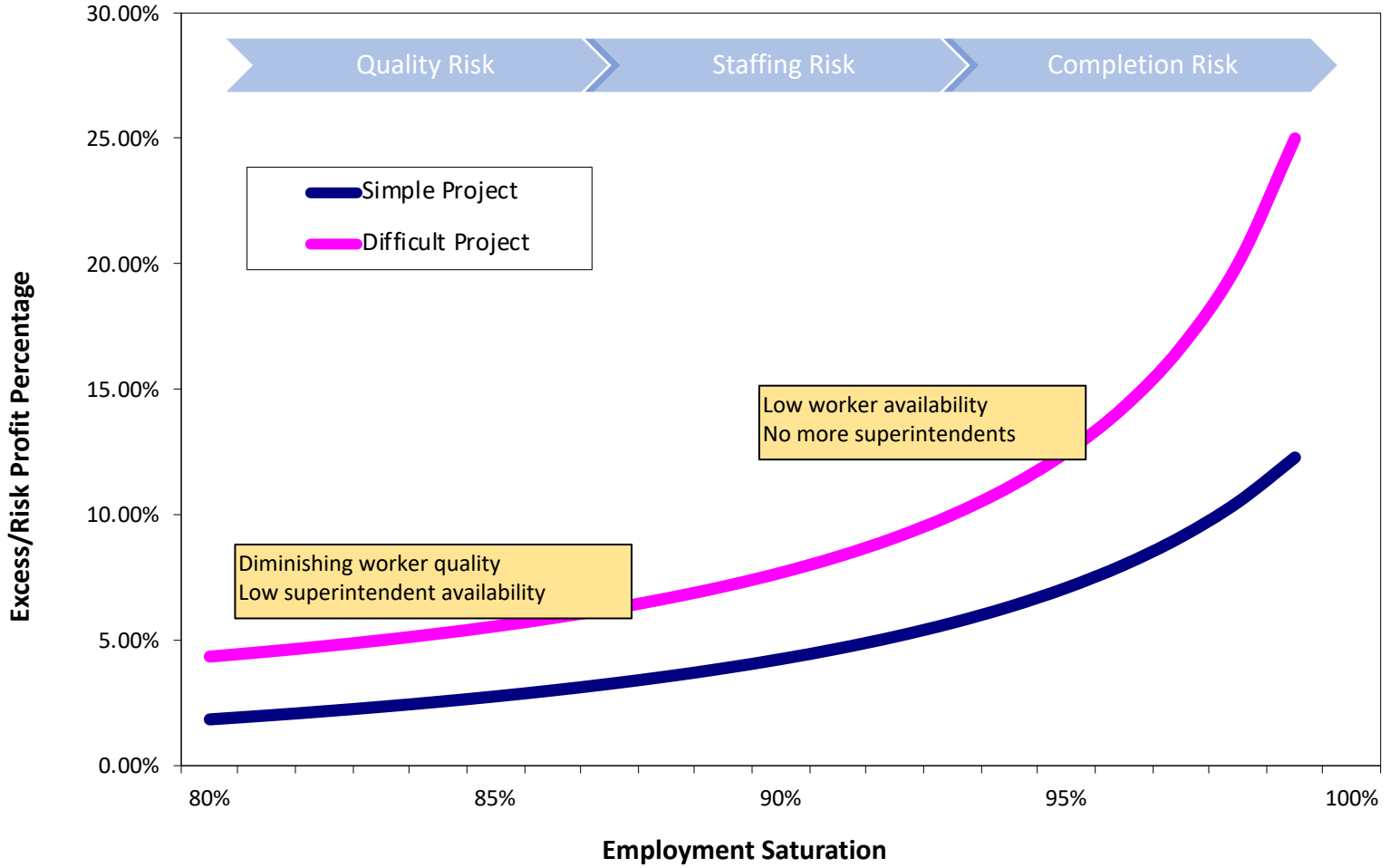

Creating the Estimate: Practice of Pricing

Practice of Pricing

An estimate is:

- A judgment based on considerations of probability
- Our individual professional opinion – even if our opinion is that a published price is right

We need to understand:

- Condition of construction
  - How will it be built?
  - What is the market?
  - How many bidders?
- Even if we are using lump sum prices or parametric models

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Principles of Pricing

Cost Build-Up: Direct Cost

- Labor
  - Direct "Value Added" labor
  - Required non-value-added: safety, supervision, staging, travel
  - Correlated labor costs: Worker's comp, PRTI, dues, etc.

- Material
  - Material incorporated
  - Temporary material: formwork, shoring, protection
  - Waste, attic stock, etc.

- Equipment
  - Equipment, tools, machinery: hoists, excavators, trucks
  - Mobilization/Demobilization/Idle Time
  - Usually limited to direct trade equipment

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Principles of Pricing

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Cost Build-Up: Mark-Ups

- General Conditions/Requirements
  - Cost of running the project
  - CSI Division 01
  - Largely defined by the Specifications or Contract (READ the Specs!)

- Overhead (Field and Home Office)
  - Cost of running the business
  - Depends on bidders
  - Not project specific, but project dependent

- Profit
  - Cost of running the risk

Fee is a term often combining Home Office Overhead and Profit – sounds less rapacious

Practice of Pricing

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Input Cost: Labor

- Labor Productivity – crew hours per unit
- Labor Cost - $/hour

Productivity Considerations	Labor Cost Considerations
Access (height, obstructions)	Direct cost (crew mix)
Material staging	Payroll tax (FICA/FUI/SUI) – deduction caps
Site congestion	Workers' Compensation Ins. – experience rating
Overtime inefficiencies	Benefits – health, pension, vacation
Economies of Scale/fussiness	Union dues/apprenticeship fund
Distance from gate to worksite	Supervision
Security/Badging	Truck and Tools
Worker parking	
	Burden Rate is usually around 60% - 80%

Practice of Pricing

Input Cost: Material and Assemblies

- Material Direct Cost

- Fabrication, shop drawing, assembly
- Transportation
- Sales Tax, duties, tariffs
- Waste

- Complexity/economy of scale
- Hoisting and rigging
- Mill-run / fabrication schedules
- Bulk units / short order charges
- Volume discount
- Prompt payment discount
- Special handling / storage / weather protection

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Practice of Pricing

Input Cost: Equipment

- Equipment Direct Cost
  - Rental / Purchase / Owned Equipment cost recovery

- Set-up and breakdown
- Sales Tax
- Fuel and supplies
- Sale proceeds

- Minimum usage periods

Practice of Pricing

Input Cost: General and Special Conditions (Division 1)

- Site Management Staff
- General Labor – clean-up, safety, material management
- Site Office and Equipment
- Temporary facilities – toilets, storage, etc.
- Utilities, lighting, water, etc.
- Central Use Equipment – crane, lifts, dewatering, etc.

- Inspections / testing
- QA/QC
- Insurances
- Payment Bond
- Performance Bond / Subguard

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Principles of Pricing

Cost Build-Up: Contractor Overhead (Field and Home Office)

Cost of Running the Business

- Cost of running business
  - Accounting
  - Legal
  - Business Management
  - Bidding/Marketing

- Can be based on site or at home office
  - Usually depends on project size: Smaller projects have lower field and higher home office
  - Can be calculated on Gross Revenue or Net Service Revenue (NSR)

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Principles of Pricing

Cost Build-Up: Contractor Profit/Fee/Margin
Cost of Running the Risk

- Profit is the reward for taking risk and return on Equity Capital
- Usually depends on project size: Smaller projects have higher relative risk, and higher relative profit
- Can be calculated on Gross Revenue or Net Service Revenue (NSR)

Principles of Pricing

Cost Build-Up: Other Special Conditions/Requirements

- Labor
  - Overtime
  - Phasing
  - Productivity
- Material
  - Shipping
  - Special Handling
  - Offsite Fabrication
- Equipment
  - Workforce Housing

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Practice of Pricing

Cost Build-Up: Special Costs/Premiums

- Fees & Taxes
  - Gross Receipts Tax/Sales Tax/HST
  - Fees: Permits, Entitlements, Mitigations
  - Operations Maintenance Support Information (OMSI)

Practice of Pricing

Input Cost: A few other considerations . . .

- Prevailing wages, DVBE/MBE, 8a,
- Added GC – compliance reporting, logs, offices for owner
- Maintaining existing operations – flagging, safety, temporary accommodation
- Limit on working hours or activity (noise, flight paths, etc.)
- Sewer fees
- Cleaning, sterilization, validation, certifications
- Market capacity, elasticity

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Practice of Pricing

So - How do we build prices?

We don't build from the bottom up every time – but . . .

1. Start with what we can: historic cost data, pricing book, price lists, supplier quotes, etc.

2. Apply thought

3. Discuss / Peer conversation

4. Document for record and QA process

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Creating the Estimate: Managing Uncertainty

Managing Uncertainty

Basic Principles

- Identify
- Evaluate
  - Characterize
  - Quantify
- Plan
  - Mitigate
  - Contingency
- Implement and monitor

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Managing Uncertainty

For estimating purposes

- Identify
  - What might change the outcome of an estimate?
- Evaluate
  - By how much? And in which direction? And how skewed?
- Plan
  - What do we believe will be reduced by management/mitigation?
  - **What still needs to be covered by Contingency?**
- Implement and monitor
  - Is there a plan for ensuring performance

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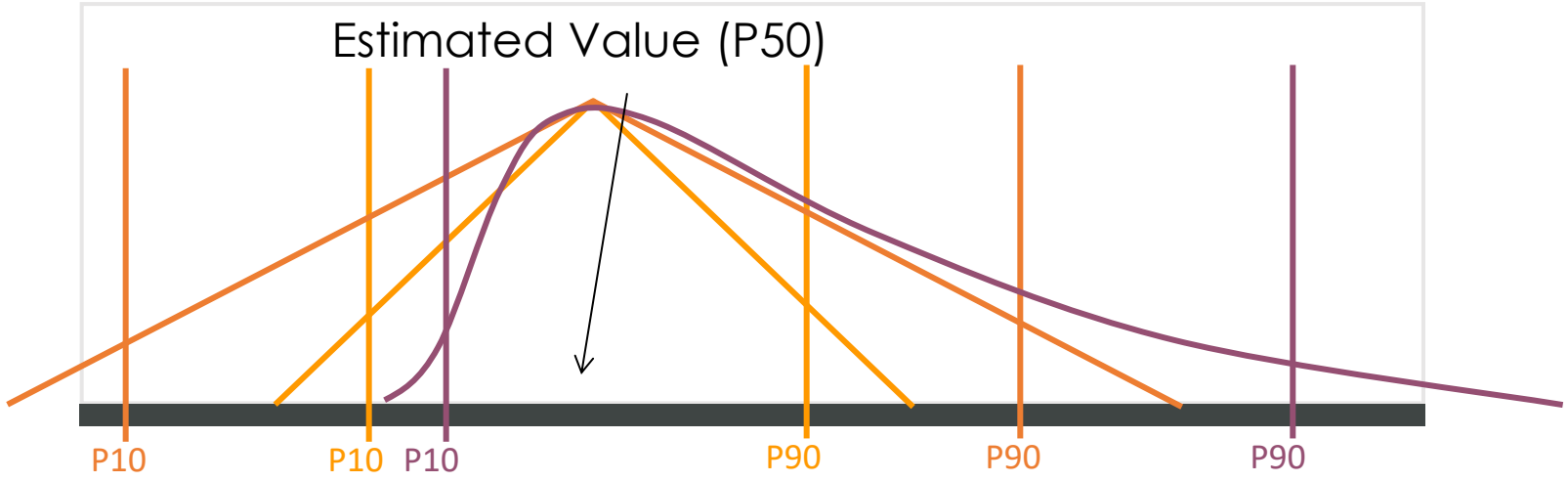
Managing Uncertainty



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Managing Uncertainty

For estimating purposes

- Allowances
  - Use an allowance for a known (bounded) but undefined scope
    - Allowance for miscellaneous carpentry
    - Allowance for painting of piping

- Contingency
  - Use a contingency for unknown scope or unknown conditions

- Estimate Ranges
  - Use ranges to express uncertainty

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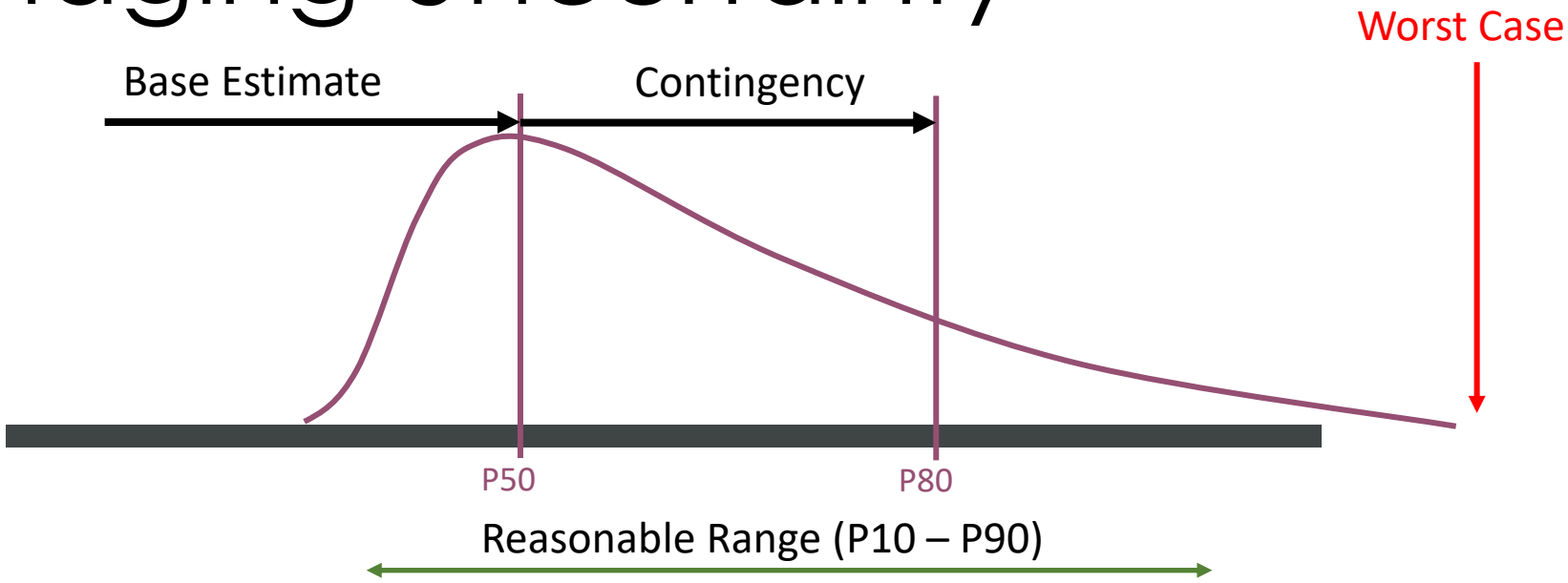
Managing Uncertainty



For estimating purposes (typical)

- Estimate is set at P50 = most likely
- Contingency is enough to provide 80th percentile confidence
- Normal range is from P10 to P90

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Managing Uncertainty

For estimating purposes

- Contingencies
  - Design (or estimating) contingency
    - To cover development of design
    - Higher in the earlier stages of design
    - Reduces to zero by design completion
  - Bid
    - To cover market uncertainty
  - Construction (or change order)
    - To cover contract adjustments during construction
    - Not for scope changes
    - May be included the contract price
  - Owner Contingency
    - To cover owner driven changes

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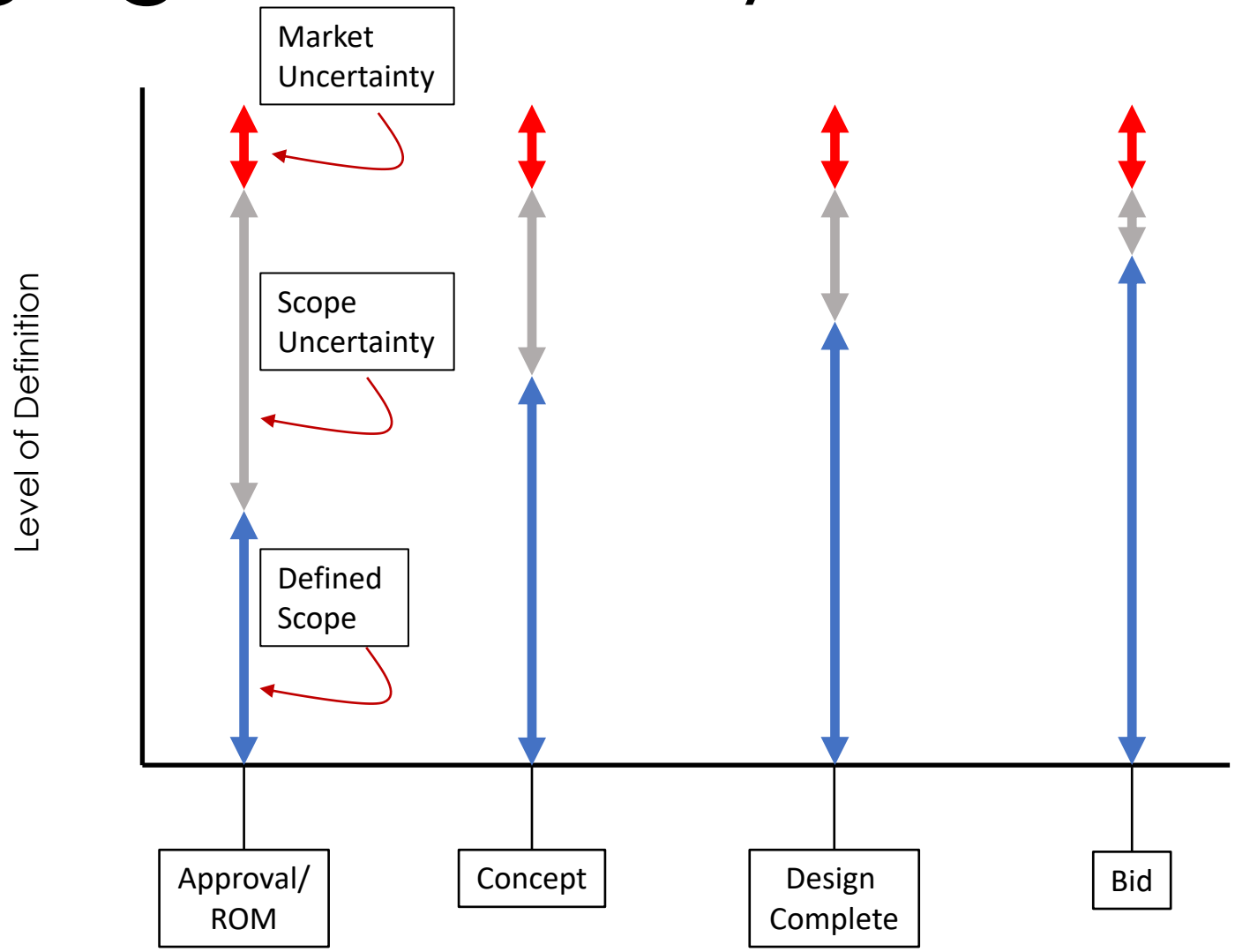
Managing Uncertainty



Creating the Estimate: Managing Escalation

Managing Escalation

- Labor
  - Direct wages
  - Benefit costs
  - Productivity Changes/Regulation
- Materials
  - Material Costs
  - Transportation
  - Regulation
- Code and Practice
  - Changes in Code
  - Changes in Practice
- Financial
  - Taxes
  - Interest Rates

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Managing Escalation

- "Normal" Inflation
  - Prevails in "normal" markets
- Usually driven by demand elsewhere
  - (Think steel in 2004)
- Easy to Measure
  - ENR/Means/Marshall & Swift
- Usually relatively stable
- Usually relatively predictable
- Lots of charts showing "trends"

Generally runs at 2 – 4% per annum, plus 1% per annum for Code & Practice

Managing Escalation

- Supply/Demand Balance
  - Total Construction Demand
  - Specific Building Capacity
  - Capacity of Individual Trades
- Market Elasticity
  - Size of market
  - Ability to expand/pull in capacity
- Owner Profile
  - Ease of doing business
  - Payment record

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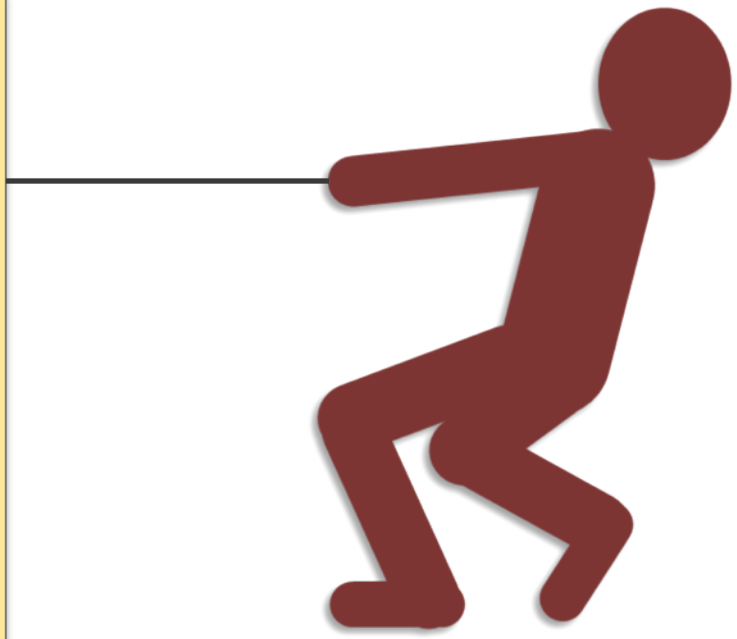
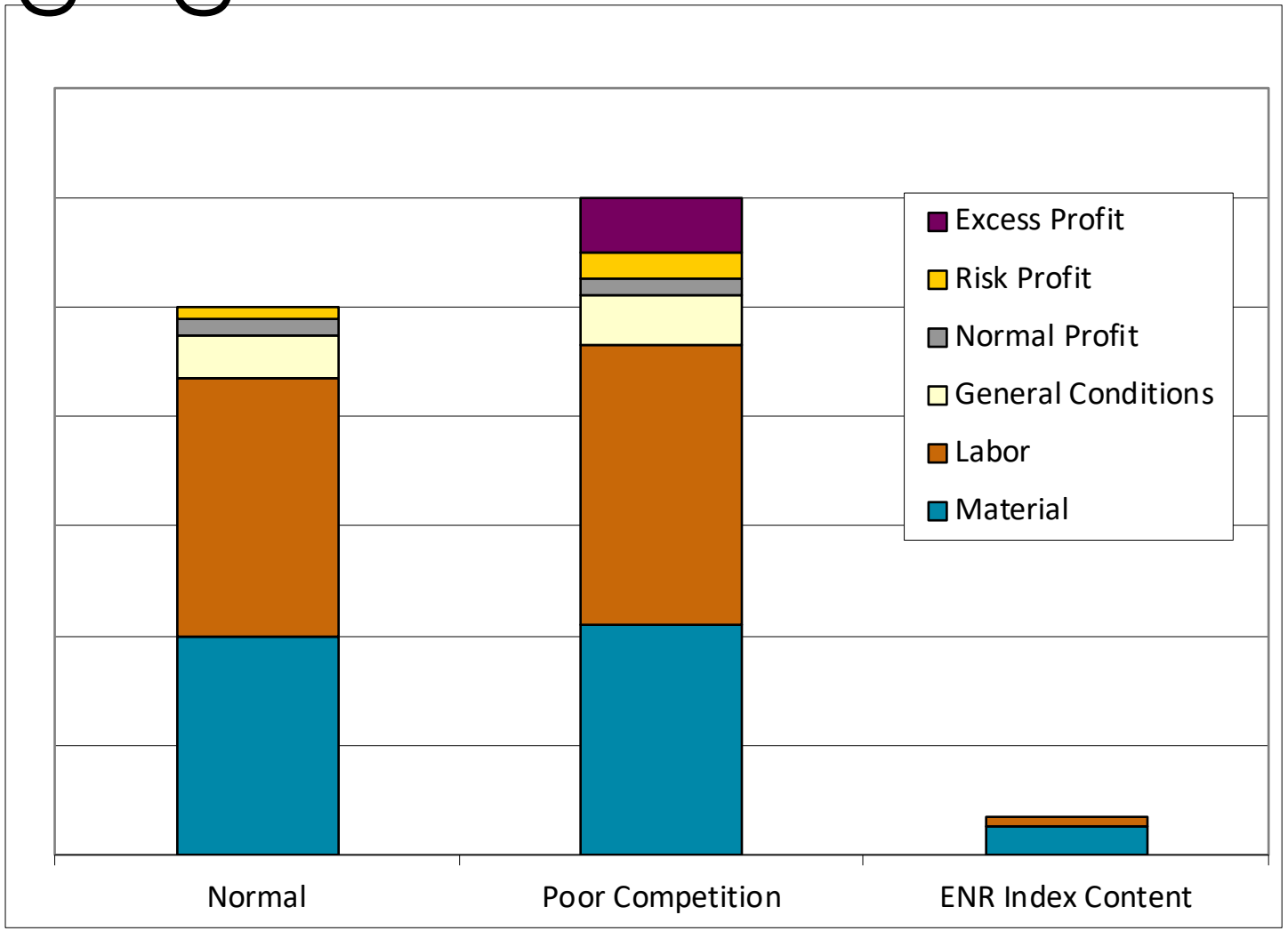
Managing Escalation

- "Excess" Inflation
  - Prevails in "stressed" markets
- Driven by demand locally
  - (Think CA in 2004 - 2007)
- Very hard to measure
  - No systematic indexes
- Very volatile/non-linear
- Very un-predictable
- Employment activity a useful proxy



Can run at over 10% per annum: can spike erratically

Managing Escalation



Managing Escalation

For estimating purposes

- Requires Market assessment

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Questions

Terminology

Cost

That which must be given or surrendered in order to acquire, produce, accomplish or maintain something.

Benefit

Advantage, profit or good received

Value

That which someone is willing to pay for the perceived benefit.

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Goals

VALUES

- Student success and equity
- Diversity
- Excellence
- Innovation
- Financial health: We effectively manage resources.
- Environmental sustainability
- Collaboration: The colleges and service centers use a consultative decision-making process based on trust, communication, and critical thinking.
- Trust
- Employee development
- Communication: We seek first to understand, then to be understood.
- Respect: We treat one another with care and respect.

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Goals

Peralta Community College District

- We are a collaborative community of colleges.
- Together, we provide educational leadership for the East Bay, delivering programs and services that sustainably enhance the region's human, economic, environmental, and social development.
- We empower our students to achieve their highest aspirations.
- We develop leaders who create opportunities and transform lives.
- Together with our partners, we provide our diverse students and communities with equitable access to the educational resources, experiences, and life-long opportunities to meet and exceed their goals.

The Peralta Community College District provides **accessible**, **high quality**, **educational programs and services** to **meet the needs** of our multi-cultural communities:

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QUESTIONS?

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