

Strategies For Budgeting, Estimating and Managing Projects

Symposium on Capital Project Cost Estimation
Montgomery County Government

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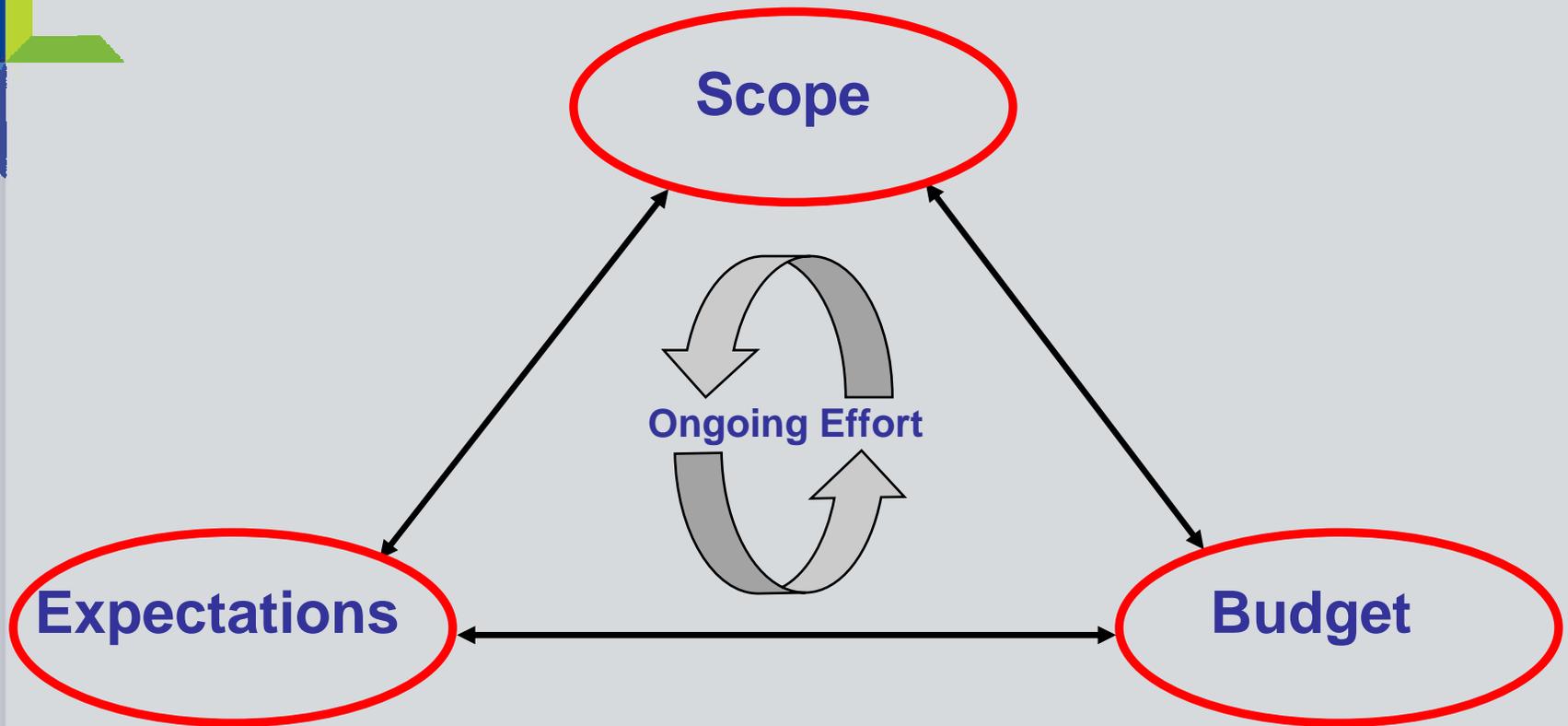
Today's Presentation

- Owner demands and concerns
- Cost estimating basics
 - Alignment
 - Building economics
 - What drives facility cost
- Key suggestions

Owner Demands and Concerns

- Demands
 - Complete their project to full scope and quality
 - Be on time and on budget
 - Involve everyone – exclude no one
 - Build something to be proud of
 - Avoid embarrassment
- Concerns
 - Users always want more than the owner can afford
 - Ability of designers to manage costs
 - Ability of PM's and CM's to manage users and designers
 - How to deal with “at risk” entities
 - Unknowns in the marketplace
 - Ability of owner's staff to manage the overall process

Alignment



Projects need to start right to finish right

Cost management is ALIGNMENT...

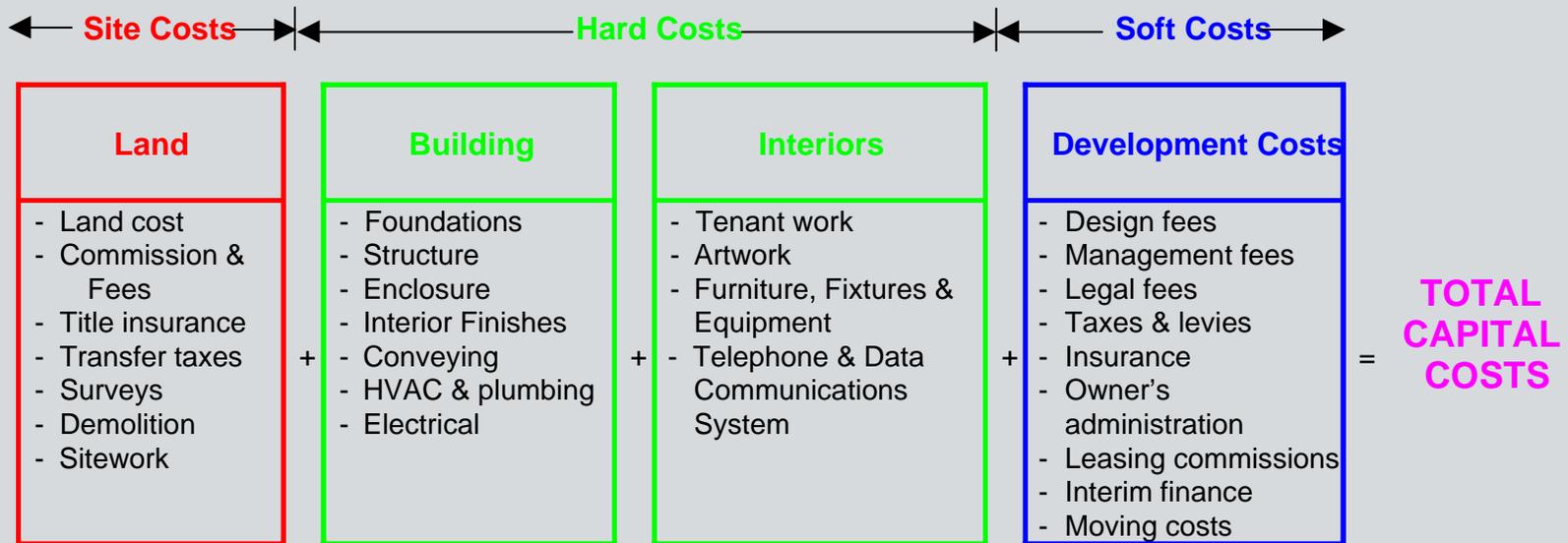
SCOPE	EXPECTATIONS	BUDGET
Measurable and quantifiable aspects of the facility	Quality and performance expectations	The cost of the facility

...and maintaining ALIGNMENT over time

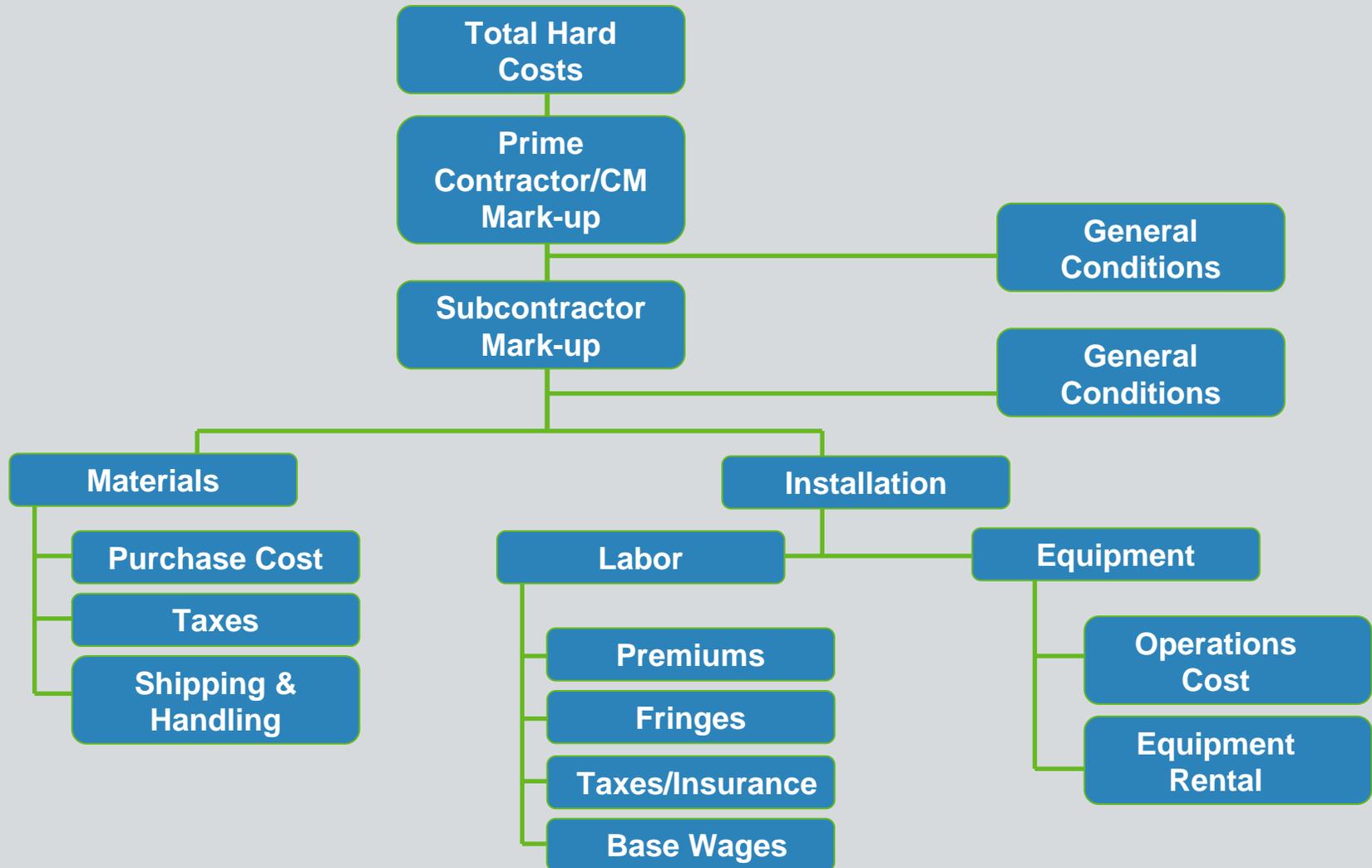
Building Economics

- Types of cost
- Breakdown of construction costs
- Construction spending
- Competition and pricing

Building Economics – Cost Components

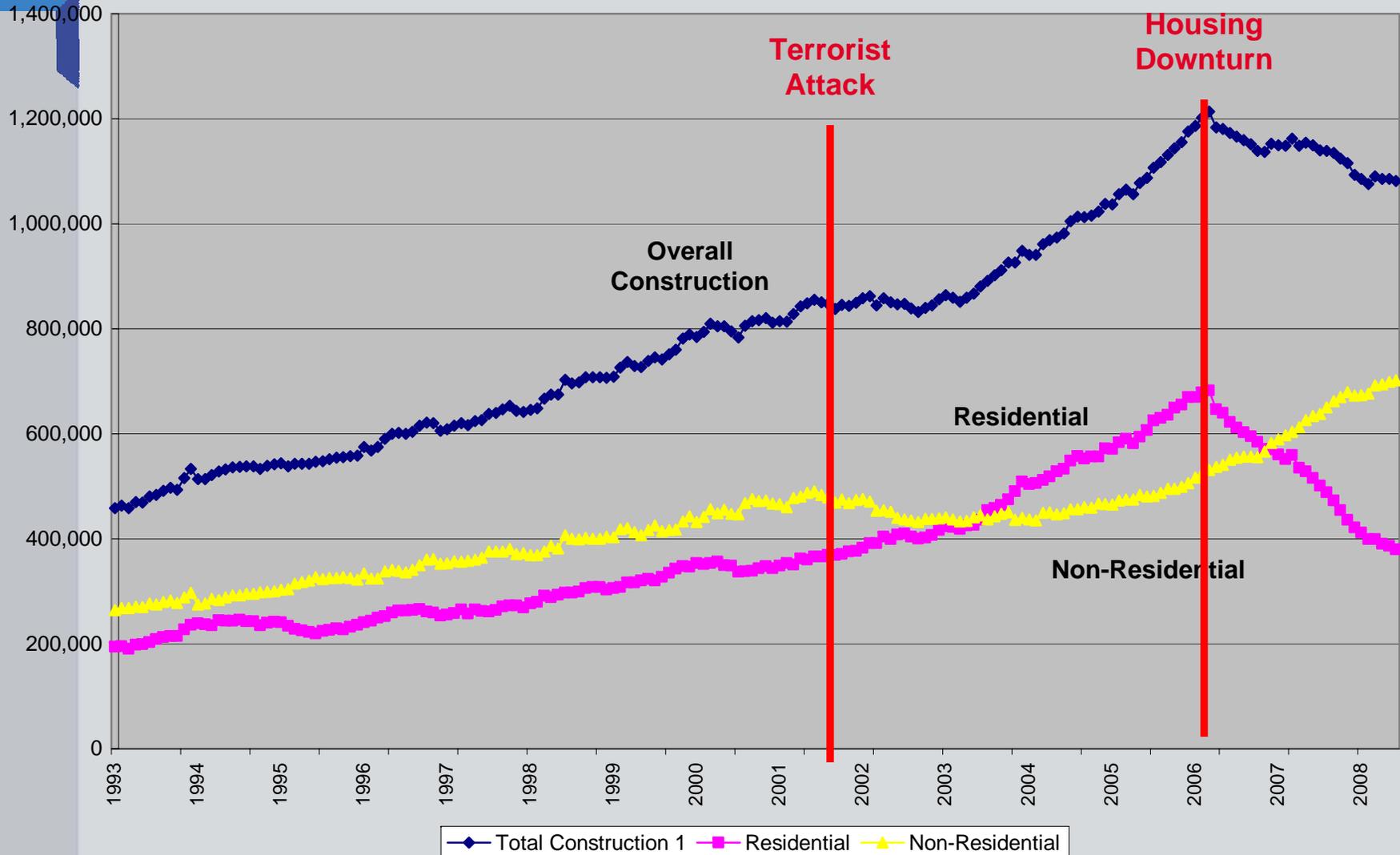


Breakdown of Construction Costs

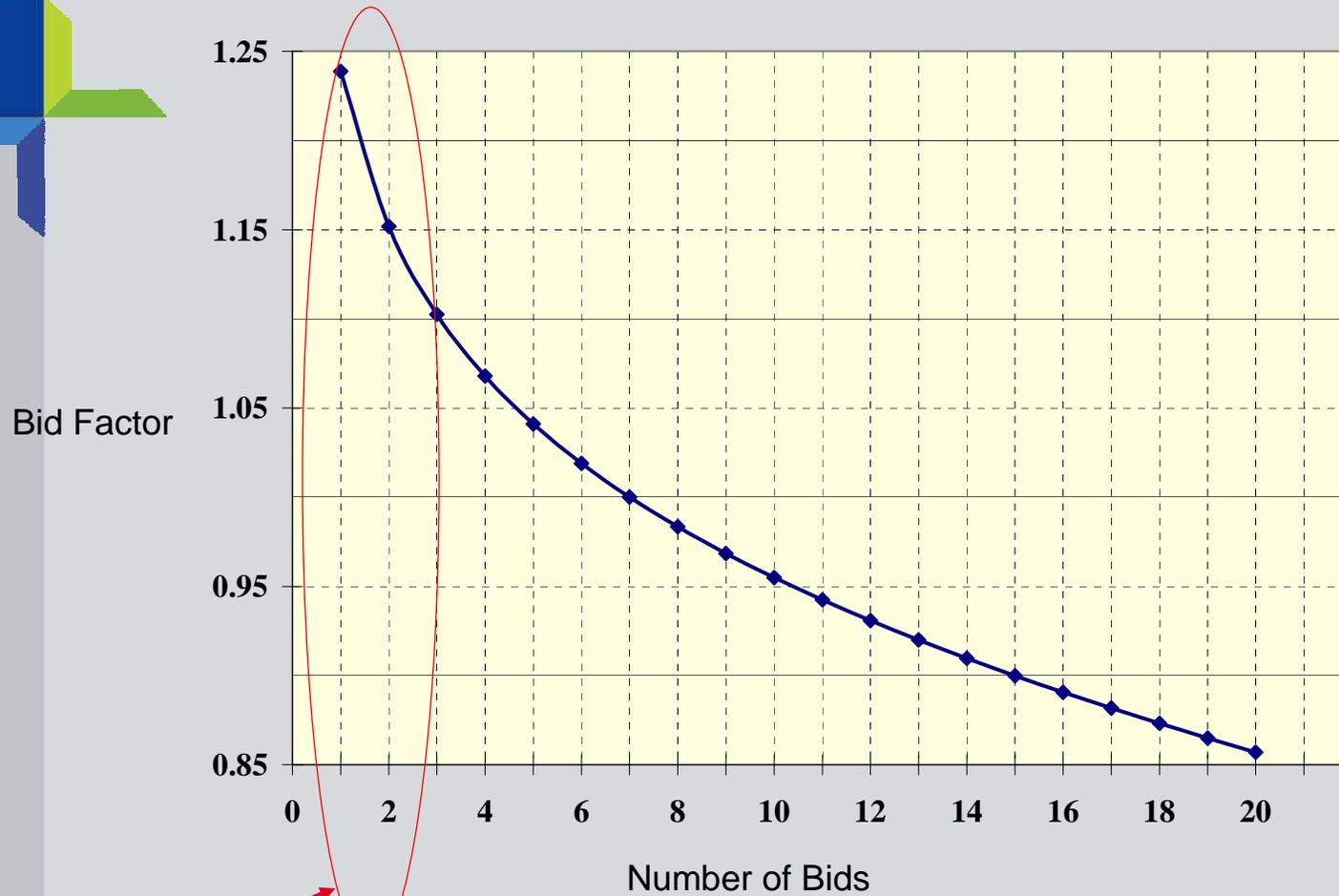


Construction Spending

January 1993 to June 2008



Effect of Competition on Prices



Today's
Marketplace

Source: Area Cost Factor Study, U.S. Army Corps of Engineers

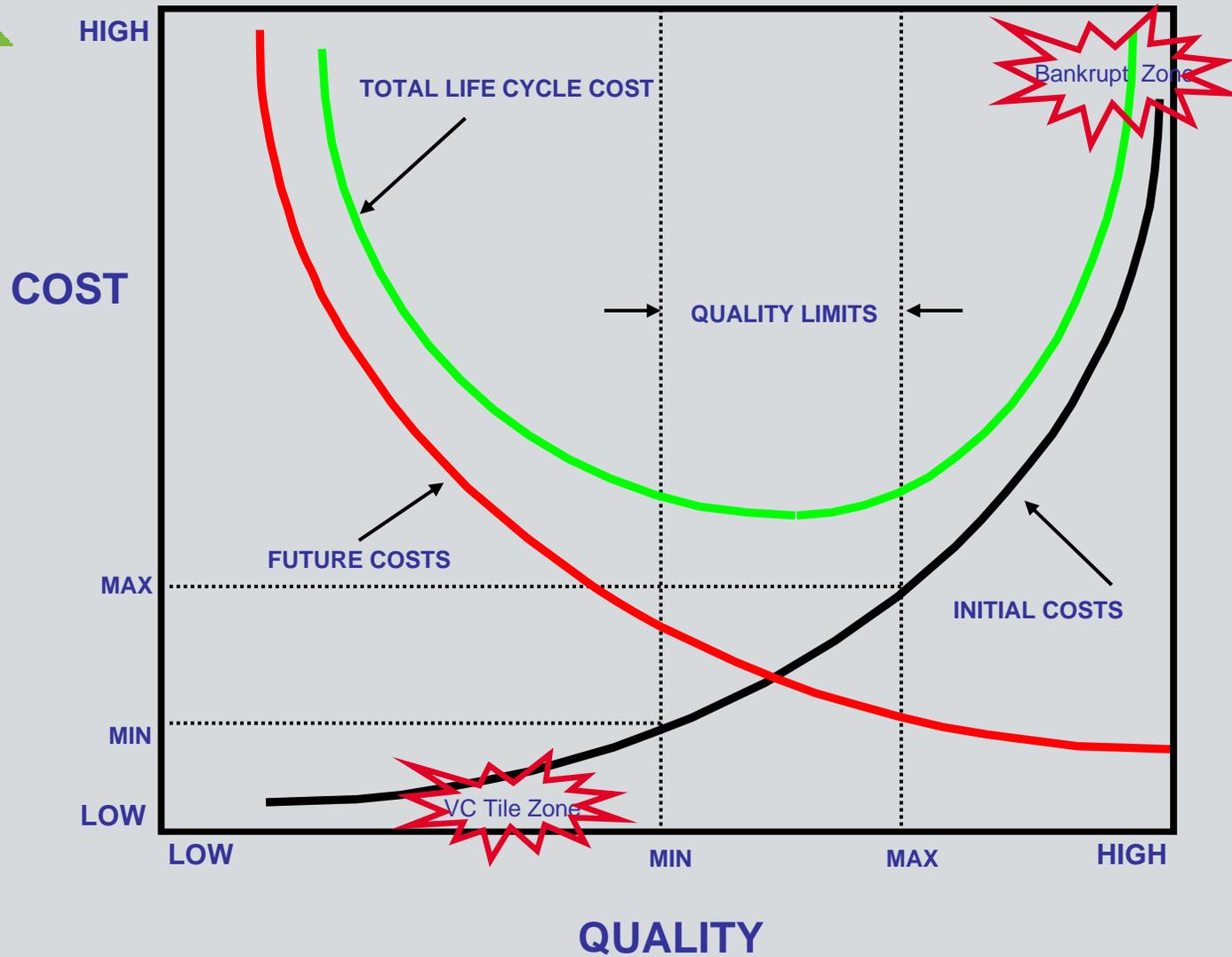
What drives facility cost

- Scope
- Form, massing, volume & efficiency
- Quality and performance of materials and systems
- Geographical and Site
- Delivery method
- Phasing, scheduling and work restrictions
- Contractual and administrative
- Market factors and competition
- Unknowns & risk

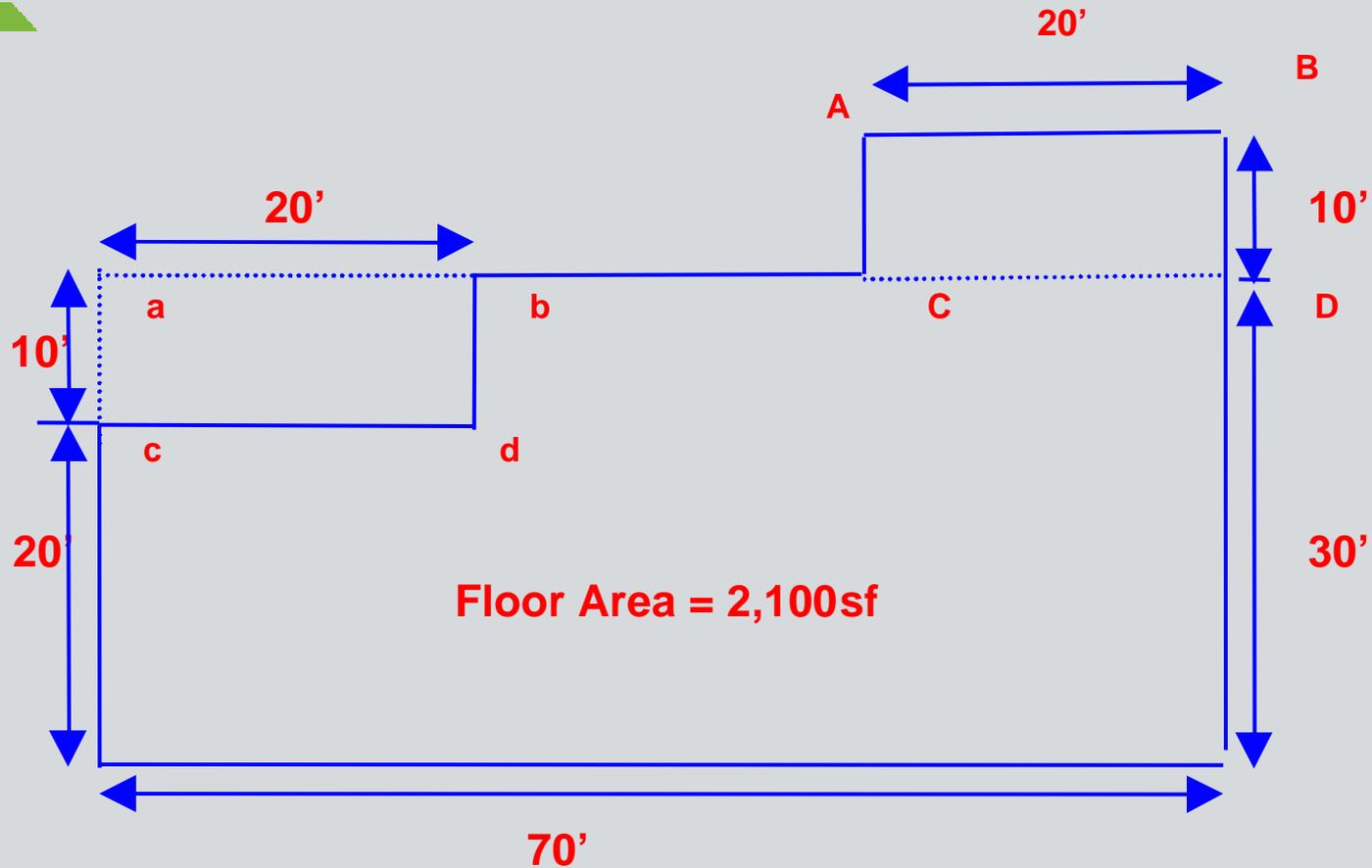
Dealing with “Scope Creep”

- Axiom - Unless restrained, scope will grow!
 - Why?
 - Natural process
 - Human nature
 - Difficult to fit a program into a form
 - Insufficient control
- A study showed a major owner experienced 11.5% “scope creep” from inception to construction

Quality, Performance & Cost



Effects of Plan Shape



Adding the “notch” increases perimeter, wall area, and wall cost by 10%

Impact of Building Efficiency

	Net Rentable Floor Area	Net Rentable Floor Area Ratio	GFA
Office Building A	120,000 sf	80%	150,000 sf
Office Building B	120,000 sf	85%	142,000 sf

Geographical and Site

- Locality
 - Remoteness
 - Availability of labor, materials and constructors
- Site itself
 - Acquisition cost
 - Development costs
 - Direct impact on facility
- Market

Delivery Methods

- Design-Bid-Build
- Design-Build
- Construction Management
 - CM @ Risk
 - CM cost of the work
 - Owner as CM
- Job order contracting

Phasing, scheduling and work restrictions

- Overall project schedule
- Construction schedule
- Specific construction milestones
- Access/egress limitations
- Security
- Labor practices
- General requirements
- Any limitations on how the work is done (not the specific product)

Contractual and administrative

- Contracting approach
 - Hard bid
 - Prequalification – hard bid
 - Source selection (best value)
 - Other negotiation techniques
- Administrative
 - Bonding and insurance
 - Work rules
 - Reporting requirements

Factors Affecting Bidding

- Risk premium
- Purchasing aggressiveness
- Indirect costs
- Technological/Information advantages
- Opportunity cost
- Profit

*Each category can affect 5-10% - Combined
over 30%*

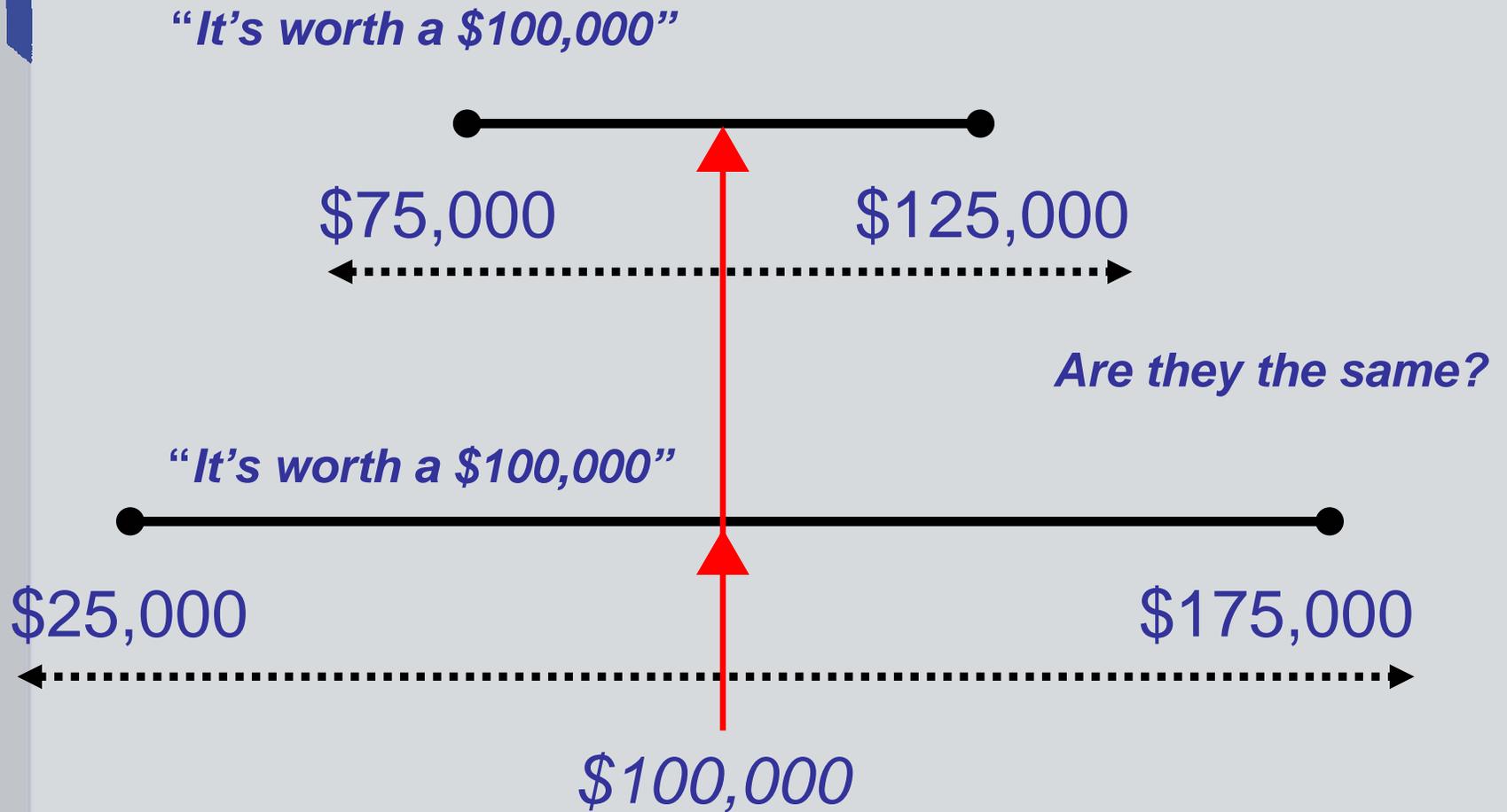
Current marketplace

- Overall, construction is turning down, so will the market moderate?
 - Housing construction is down – over 15%
 - But, non-housing is up – over 15%
- Markets do not overlap a great deal
 - Labor, contractors, subcontractors tend to be separate
 - Materials do overlap
- Predictions
 - Competition in commercial, industrial, institutional and public will remain tight and prices will not retreat
 - Housing downturn may affect pricing in hospitality market and may moderate educational (K-12) market
 - Past annual escalation of upwards of 15% will moderate downward – perhaps to general inflation + 5%

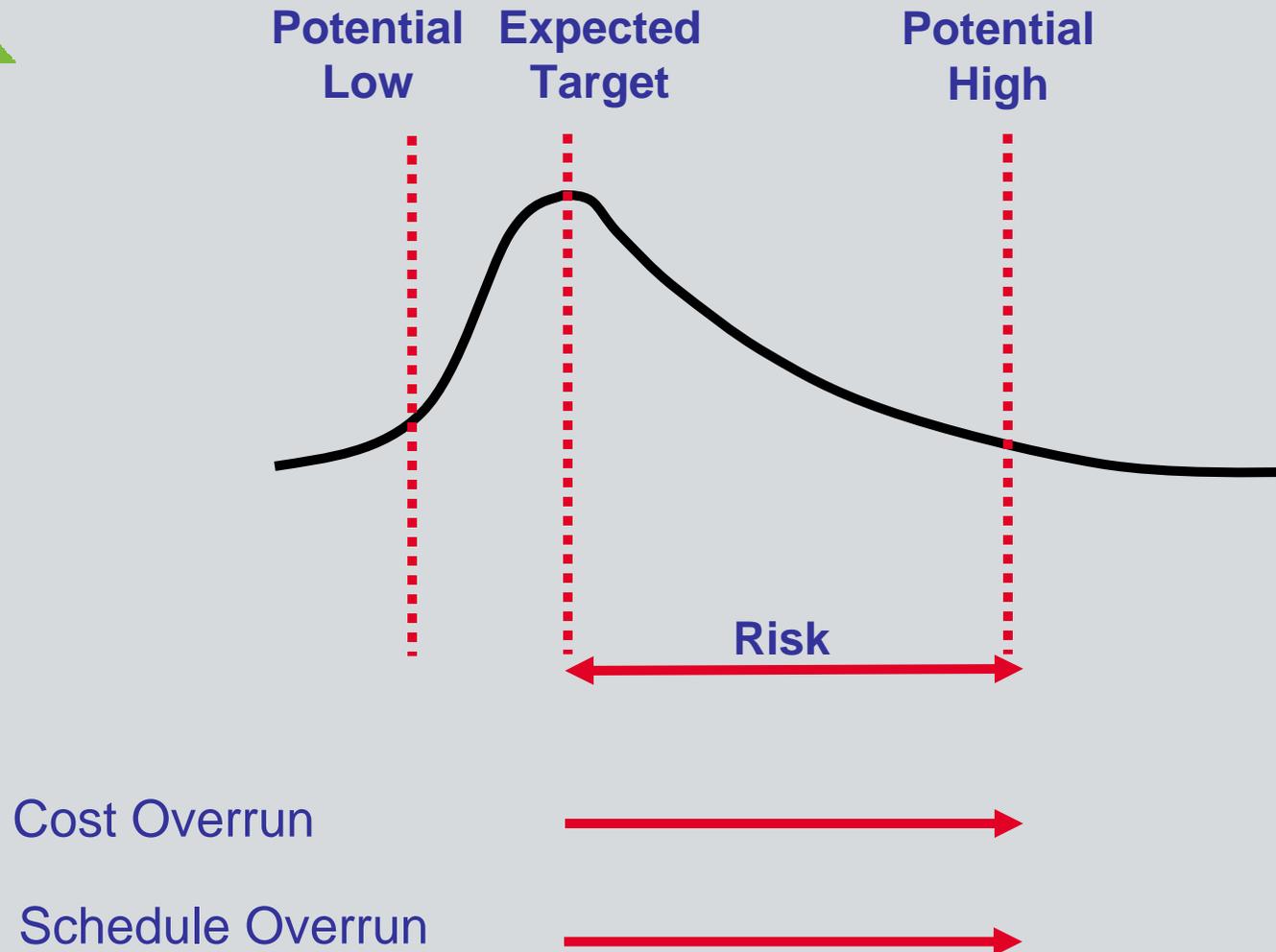
Unknowns & risk

- Cost
- Schedule
- Management
- Perception

Care with Major Cost Risks



Risks in the Cost and Schedule



Key suggestions

It All Starts with a Good Budget

- A Good Budget Should:
 - Reflect scope
 - Reflect quality/performance expectations
 - Reflect owners value objectives
 - Be achievable, acceptable and defensible
 - Contain adequate reserves
 - Be based on sound techniques and data
 - The result should be a “cost model” communicated to the designer as a basis of design
- Avoid
 - Socially acceptable budgets
 - Playing it safe

How best can a budget be projected into the future?

- Key steps
 - Be realistic about inflation/escalation in materials and labor
 - Be conservative projecting the market and competition
 - Include sensible risk and risk analysis in drivers in the budget
- Impacts?
 - Escalation will likely exceed general inflation by 2-5%
 - Competition – Three to five bidders will be 5-10% less costly than one/two
 - Other risks over key drivers could affect cost by 5% or more

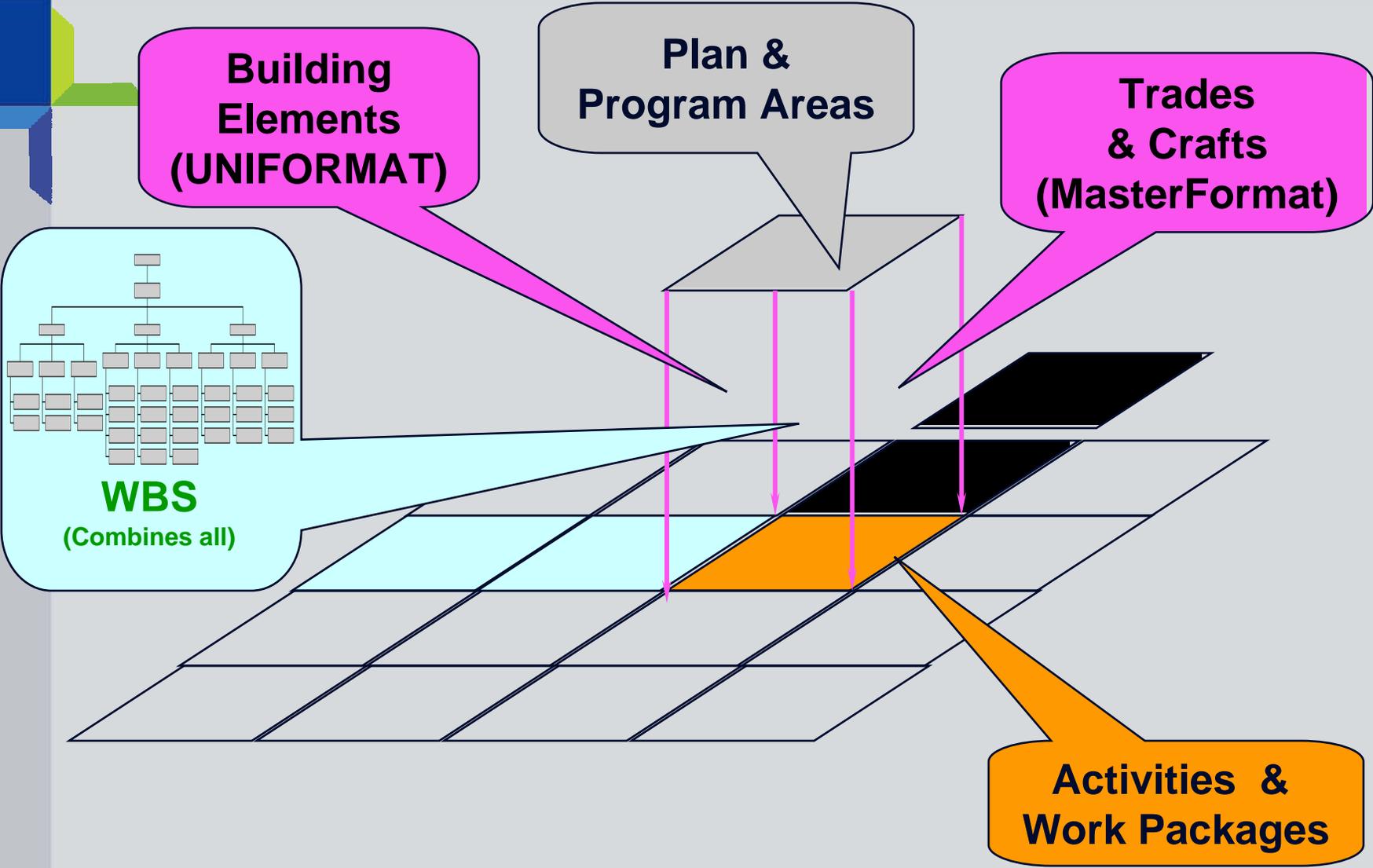
When in the “best” time to “fix” a budget for appropriation?

- Options
 - Early - based on pre-conceptual design information
 - Later – based on schematic level design
 - Late – based on a GMP or other guaranteed price
- Advantages/disadvantages
 - The later in the process - more accurate the budget
 - The later in the process - higher the chance of “design breakage” through cancellation/postponement
 - Overall design/construction time likely benefitted by early budget fixing because of continuity
 - Some agencies/organizations have benefited from specialized project budgeting approaches
 - How much risk is the owner willing to take?

Aggressively manage the delivery process

- Monitor scope at each phase
 - Require scope submission and reconciliation
 - Require scope changes to undergo a rigorous review
 - “Expensive” spaces will tend to grow – “inexpensive” spaces will tend to shrink
- Communicate that estimates are important
 - Through contract terms
 - Require proper development
 - Do independent estimates
 - Force comprehensive reconciliations
- Use value engineering wisely
 - Start early
 - Participate
 - Follow through

Use effective formats



Effective Sources for estimating costs

- Choices
 - Historic project information
 - Building “from the ground up” – detailed estimating
 - Assemblies
 - Functional area method
- Recommendations
 - Budgeting and very early estimates – combine historical and functional area approach
 - Schematic – Assemblies with some details
 - DD and CD estimates – build from the ground up
 - *Spend some time and to gather your own historical costs*

How to promote competition

- Remember – subcontractors are dominating the current market
- Owner can control/enhance competition – take care with:
 - Contracts & provisions
 - Bonding & insurance requirements
 - General requirements
 - Schedule, access, security etc.
 - Payment history
 - Focus on goals not fixed targets
- Advertise intelligently
 - Appropriate to size & Complexity
 - Care with timing
 - Assure funding is real
- Design & specify wisely
 - Avoid scarce materials, complex systems & exceptional workmanship
 - Avoid proprietary choices
 - Good quality documents

What can be done if projects bid over budget?

- Examine bids in as much detail as possible
 - Number of primes is significant
 - But – number of subs per trade may be more significant
 - Talk with second bidder if rules allow
- If re-bidding
 - Review owner General Requirements carefully
 - Allow reasonable time for re-bidding
 - Be careful with complicated bid forms
 - Monitor other projects that are bidding to avoid conflicts
 - Examine specifications and details that can be easily modified
 - Negotiation (if allowed) may be superior to re-bidding
 - Adding more time to market may not improve price
 - **Remember – bidders don't like re-bidding – make it as easy as possible**

Wrap up