

LCP Cost Estimating Process Overview

Discussion with PUB, 4-Aug-2011

Boundless Energy

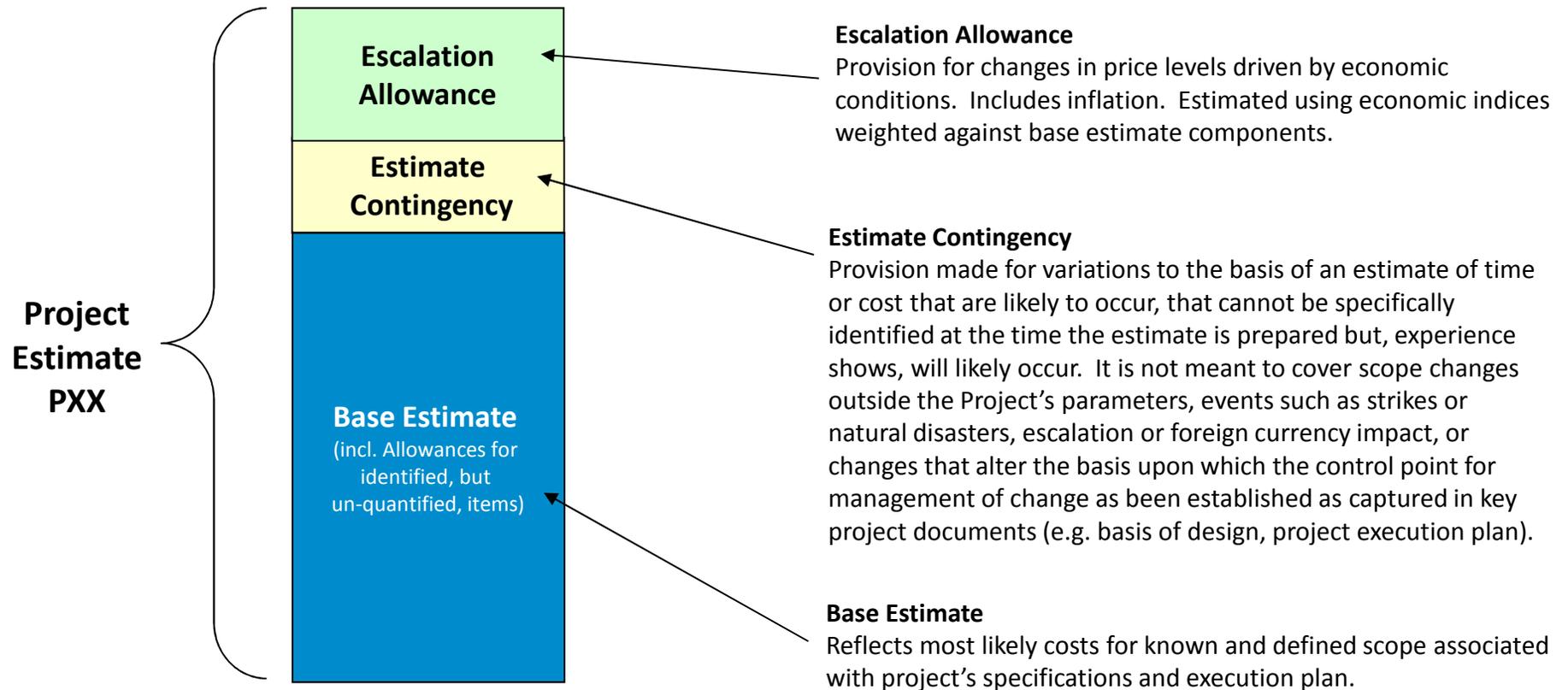


Introduction

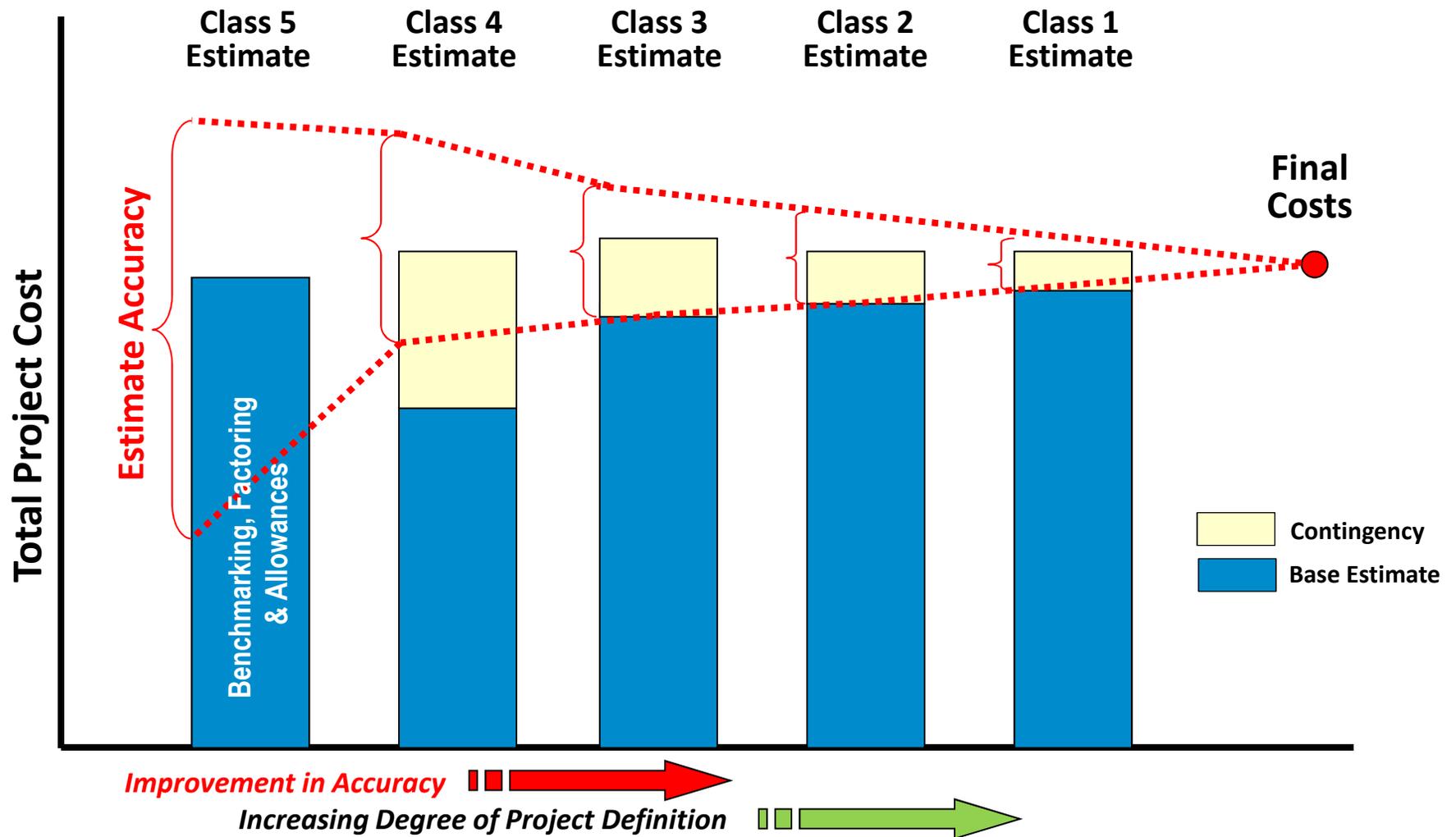
- The following slides are meant to provide insight into the overall process used to develop the Project Cost Estimate.
- Our processes are aligned industry standards and represent best practices
 - Documented within AACE International's Recommended Practices

Cost Estimate is comprised of 3 Primary Components

Definitions as per AACE Recommended Practice No. 10S-90



Cost Estimate matures as the level of engineering and project planning advances.



Estimation Classification

Nalcor's follows principles of AACE Recommend Practice No. 17R-97

LCP
DG 2 Estimate

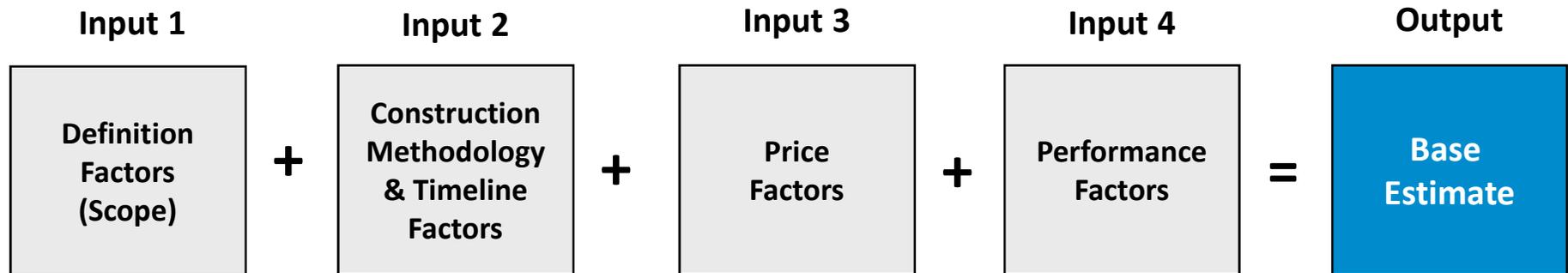


	<i>Primary Characteristic</i>	<i>Secondary Characteristic</i>			
ESTIMATE CLASS	DEGREE OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical +/- range relative to index of 1 (i.e. Class 1 estimate) ^[a]	PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 ^[b]
Class 5	0% to 2%	Screening or feasibility	Stochastic (factors and/or models) or judgment	4 to 20	1
Class 4	1% to 15%	Concept study or feasibility	Primarily stochastic	3 to 12	2 to 4
Class 3	10% to 40%	Budget authorization or control	Mixed but primarily stochastic	2 to 6	3 to 10
Class 2	30% to 70%	Control or bid/tender	Primarily deterministic	1 to 3	5 to 20
Class 1	70% to 100%	Check estimate or bid/tender	Deterministic	1	10 to 100

Notes: [a] If the range index value of "1" represents +10/-5%, then an index value of 10 represents +100/-50%.
[b] If the cost index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%.

Base Estimate developed using 4 Main Inputs

Nalcor's follows principles of AACE Recommend Practice No. 36R-08



- Location Factors
- Plant Definition
- Major Equipment
- Bulk Quantities
- Design Constraints
- Design Criteria
- Design Standards
- Technology Limits

- Build Sequence and Constraints
- Construction Equip.
- Labor Demands
- Trade Mix
- In-directs
- Support Facilities
- Seasonality

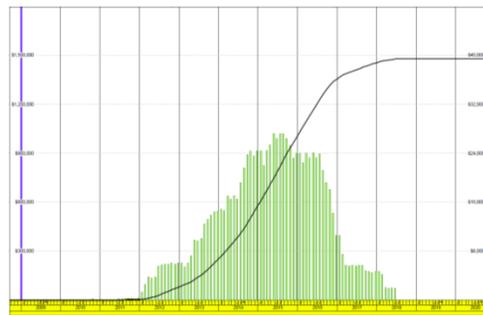
- Labor Rates
- Equipment Rates
- Marine Construction Vessels
- Commodities Rates
- Permanent Equip.
- Materials Cost
- Contracting & Procurement Strategy

- Labor Productivity
- Mobilization Constraints
- Seasonality Impacts
- Equipment Productivity
- In-Directs
- Project Management Resources

Linking the Project Schedule and the Base Estimate to produce realistic Cost Flows



Schedule Loaded with Resources and Demand Profiles
Producing Cost Flow by Physical Component and Project



Note:

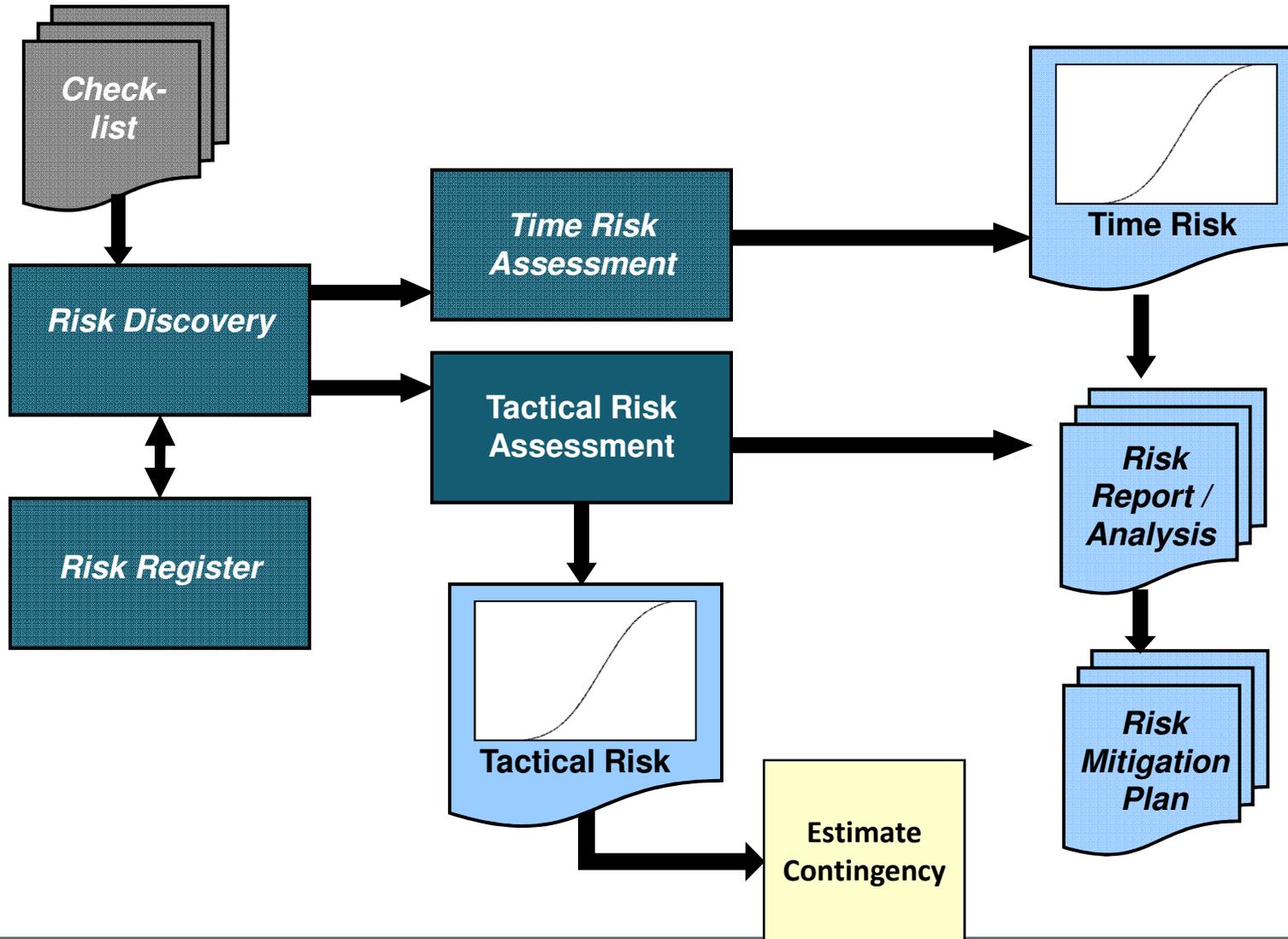
Subsequent adjustments are then made to Base Schedule in order to generate P50 & P75 schedules and associated cost curves.

Typical Physical Components

- Dam
- Diversion
- Accommodations
- Converter Station

Estimate Contingency Setting

Nalcor's follows principles of AACE Recommend Practice No. 42R-08



Tactical Risk Assessment – Focus Areas

DEFINITION RISKS

PERFORMANCE RISKS



- Location Factors
- Plant Definition
- Major Equipment
- Bulk Quantities
- Design Constraints
- Design Criteria
- Design Standards
- Technology Limits



- Build Sequence and Constraints
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- Labor Rates
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- Labor Productivity
- Mobilization Constraints
- Seasonality Impacts
- Equipment Productivity
- In-Directs
- Project Management Resources

Escalation Estimating Process

Nalcor's follows principles of AACE Recommend Practice No. 58R-10

Inputs

