BUREAU OF RECLAMATION

# ESTIMATE WORKSHEET



**FEATURE:**
Klamath River Dams Removal
Partial Removal Option
JC Boyle Dam & Powerplant Removal
Escalation Included
Life Cycle
*SUMMARY ESTIMATE*

**PROJECT:** Klamath River, Oregon

**WOID:** AF652 | **ESTIMATE LEVEL:** Feasibility
**REGION** MP | **PRICE LEVEL:** Jul-10
**FILE:** U:\2011 Projects\Klamath\007 Crystal Ball\3\with\[03 JC Boyle Crystal Ball Spreadsheet with esc A.xlsx]Construction costs sensitivity

| PLANT ACCOUNT | PAY ITEM | DESCRIPTION | CODE | MPL QUANTITY | MP QUANTITY | MPH QUANTITY | UNIT | MPL UNIT PRICE | MP UNIT PRICE | MPH UNIT PRICE | MPL TOTAL | MP TOTAL | MPH TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PI 1 | Periodic Costs - Year 1 | 86-68130 | 1 | 1 | 1 | LS | $299,400.00 | $348,520.00 | $394,940.00 | $299,400.00 | $348,520.00 | $394,940.00 |
| | PI 2 | Periodic Costs - Year 5 | 86-68130 | 0 | 0 | 1 | LS | $219,930.92 | $219,930.92 | $219,930.92 | $0.00 | $0.00 | $219,930.92 |
| | PI 3 | Periodic Costs - Year 8 | 86-68130 | 0 | 1 | 0 | LS | $166,451.00 | $166,451.00 | $166,451.00 | $0.00 | $166,451.00 | $0.00 |
| | PI 4 | Periodic Costs - Year 10 | 86-68130 | 0 | 0 | 1 | LS | $179,684.33 | $179,684.33 | $179,684.33 | $0.00 | $0.00 | $179,684.33 |
| | PI 5 | Periodic Costs - Year 13 | 86-68130 | 0 | 0 | 1 | LS | $62,645.06 | $62,645.06 | $62,645.06 | $0.00 | $0.00 | $62,645.06 |
| | PI 6 | Periodic Costs - Year 15 | 86-68130 | 0 | 0 | 1 | LS | $146,802.77 | $146,802.77 | $146,802.77 | $0.00 | $0.00 | $146,802.77 |
| | PI 7 | Periodic Costs - Year 17 | 86-68130 | 1 | 1 | 0 | LS | $100,600.00 | $165,990.00 | $165,990.00 | $100,600.00 | $165,990.00 | $0.00 |
| | PI 8 | Periodic Costs - Year 20 | 86-68130 | 0 | 0 | 1 | LS | $119,937.60 | $119,937.60 | $119,937.60 | $0.00 | $0.00 | $119,937.60 |
| | PI 9 | Periodic Costs - Year 25 | 86-68130 | 1 | 1 | 1 | LS | $29,667.63 | $83,724.60 | $136,558.46 | $29,667.63 | $83,724.60 | $136,558.46 |
| | PI 10 | Periodic Costs - Year 30 | 86-68130 | 0 | 0 | 1 | LS | $80,059.80 | $80,059.80 | $80,059.80 | $0.00 | $0.00 | $80,059.80 |
| | PI 11 | Periodic Costs - Year 33 | 86-68130 | 1 | 1 | 0 | LS | $52,688.00 | $86,935.20 | $86,935.20 | $52,688.00 | $86,935.20 | $0.00 |
| | PI 12 | Periodic Costs - Year 35 | 86-68130 | 0 | 0 | 1 | LS | $65,407.79 | $65,407.79 | $65,407.79 | $0.00 | $0.00 | $65,407.79 |
| | PI 13 | Periodic Costs - Year 38 | 86-68130 | 0 | 0 | 1 | LS | $22,803.62 | $22,803.62 | $22,803.62 | $0.00 | $0.00 | $22,803.62 |
| | PI 14 | Periodic Costs - Year 40 | 86-68130 | 0 | 0 | 1 | LS | $53,439.60 | $53,439.60 | $53,439.60 | $0.00 | $0.00 | $53,439.60 |
| | PI 15 | Periodic Costs - Year 42 | 86-68130 | 0 | 1 | 0 | LS | $42,113.00 | $42,113.00 | $42,113.00 | $0.00 | $42,113.00 | $0.00 |
| | PI 16 | Periodic Costs - Year 45 | 86-68130 | 0 | 0 | 1 | LS | $43,659.93 | $43,659.93 | $43,659.93 | $0.00 | $0.00 | $43,659.93 |
| | PI 17 | Annual Costs - Maintenance | 86-68130 | 1 | 1 | 1 | LS | $1,114,593.00 | $1,892,705.00 | $5,257,515.00 | $1,114,593.00 | $1,892,705.00 | $5,257,515.00 |
| | | **Subtotal 1** | | | | | | | | | $1,596,948.63 | $2,786,438.80 | $6,783,384.88 |
| | | Mobilization | | 1 | 1 | 1 | LS | $80,000.00 | $140,000.00 | $340,000.00 | $80,000.00 | $140,000.00 | $340,000.00 |
| | | **Subtotal 1 w/ mobilization** | | | | | | | | | **$1,676,948.63** | **$2,926,438.80** | **$7,123,384.88** |
| | | Escalation to Notice to Proceed (NTP) | | 1 | 1 | 1 | LS | $269,218.37 | $1,006,450.20 | $3,807,399.12 | $269,218.37 | $1,006,450.20 | $3,807,399.12 |
| | | Design Contingencies | | 1 | 1 | 1 | LS | $153,833.00 | $367,111.00 | $1,817,808.00 | $153,833.00 | $367,111.00 | $1,817,808.00 |
| | | APS = Allowance for | | 0 | 0 | 1 | LS | $0.00 | $0.00 | $251,408.00 | $0.00 | $0.00 | $251,408.00 |
| | | Procurement Strategies (if applicable) | | | | | | | | | | | |
| | | **CONTRACT COST** | | | | | | | | | **$2,100,000.00** | **$4,300,000.00** | **$13,000,000.00** |
| | | Construction Contingencies | | 1 | 1 | 1 | LS | $400,000.00 | $900,000.00 | $3,000,000.00 | $400,000.00 | $900,000.00 | $3,000,000.00 |
| | | **FIELD COST** | | | | | | | | | **$2,500,000.00** | **$5,200,000.00** | **$16,000,000.00** |
| | | Non-Contract Costs | | 1 | 1 | 1 | LS | $600,000.00 | $1,600,000.00 | $6,000,000.00 | $600,000.00 | $1,600,000.00 | $6,000,000.00 |
| | | **CONSTRUCTION COST** | | | | | | | | | **$3,100,000.00** | **$6,800,000.00** | **$22,000,000.00** |

**Notes:**
Reference documents RM D&S Cost Estimate (FAC 09-01) and RM D&S CCE and PCE (FAC 09-02)

| QUANTITIES | | | PRICES | | | |
|---|---|---|---|---|---|---|
| BY | Rick Benik | CHECKED: Stephen Latham | BY | Greg Akins | CHECKED | |
| DATE PREPARED | 3/24/2011 | PEER REVIEW: Tom Hepler P.E. | DATE PREPARED | 06/15/11 | PEER REVIEW | |

**Crystal Ball Report - Full**
Simulation started on 6/15/2011 at 11:21:48
Simulation stopped on 6/15/2011 at 11:22:03

| | |
|---|---|
| Run preferences: | |
| Number of trials run | 10,000 |
| Monte Carlo | |
| Seed | 999 |
| Precision control on | |
| Confidence level | 95.00% |
| Run statistics: | |
| Total running time (sec) | 15.04 |
| Trials/second (average) | 665 |
| Random numbers per sec | 30,577 |
| Crystal Ball data: | |
| Assumptions | 46 |
| Correlations | 0 |
| Correlated groups | 0 |
| Decision variables | 0 |
| Forecasts | 3 |

TECHNICAL SERVICE CENTER
ESTIMATING, SPECIFICATIONS
AND VALUE PROGRAM GROUP

UNIT PRICES BY _____

DATE _____

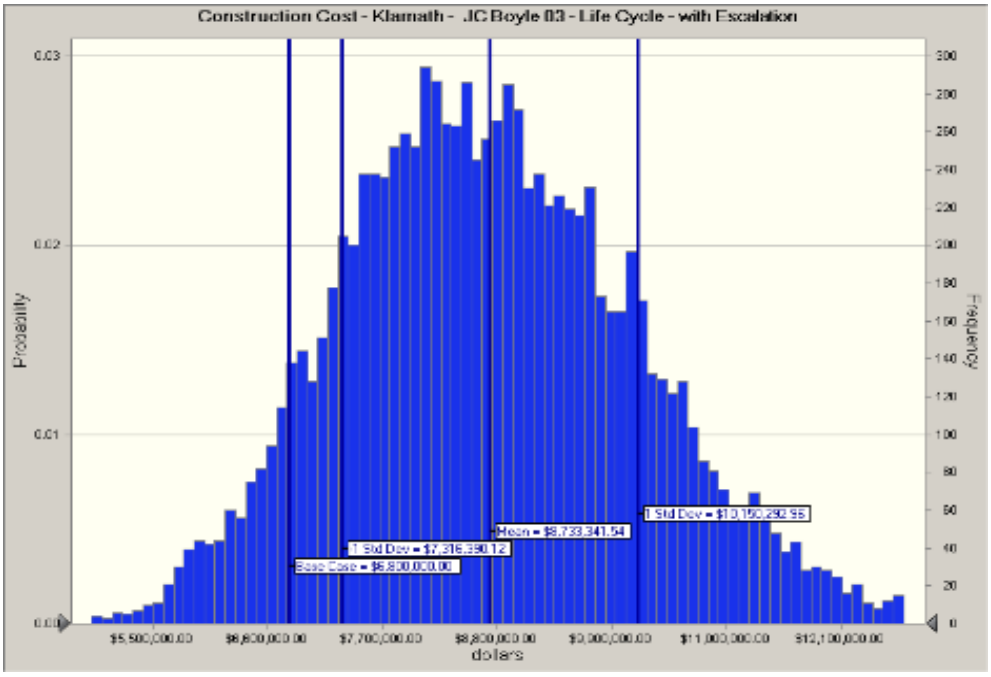
| DATE | PEER REVIEWER(S) | CODE |
|---|---|---|
| 6/15/2011 | Signature | 86-68170 |
| | Craig A. Grush Printed Name | |
| | Signature | |
| | Printed Name | |
| Author Initials | PEER REVIEW NOT REQUIRED | |

## Forecasts

**Worksheet: [03 JC Boyle Crystal Ball Spreadsheet with esc.xlsx]SUMMARY 480 FP**

**Forecast: Construction Cost - Klamath - JC Boyle 03 - Life Cycle - with Escalation** **Cell: U40**

Summary:
Entire range is from $4,906,957.06 to $14,663,440.72
Base case is $6,800,000.00
After 10,000 trials, the std. error of the mean is $14,169.51



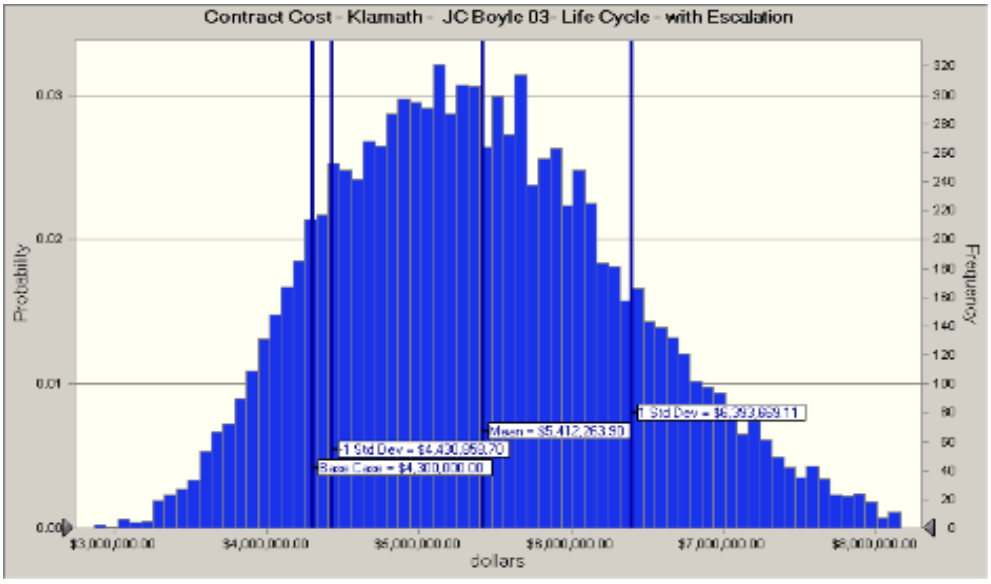
**Forecast: Construction Cost - Klamath - JC Boyle 03 - Life Cycle - with Escalation (cont'd)** **Cell: U40**

| Statistics: | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $8,733,341.54 |
| Median | $8,652,216.29 |
| Mode | --- |
| Standard Deviation | $1,416,951.42 |
| Variance | ################ |
| Skewness | 0.3006 |
| Kurtosis | 2.98 |
| Coeff. of Variability | 0.1622 |
| Minimum | $4,906,957.06 |
| Maximum | $14,663,440.72 |
| Range Width | $9,756,483.66 |
| Mean Std. Error | $14,169.51 |

| Percentiles: | Forecast values |
|---|---|
| 0% | $4,906,957.06 |
| 10% | $6,961,004.48 |
| 20% | $7,517,881.59 |
| 30% | $7,917,026.82 |
| 40% | $8,278,688.10 |
| 50% | $8,652,113.35 |
| 60% | $9,023,408.50 |
| 70% | $9,445,870.27 |
| 80% | $9,937,095.29 |
| 90% | $10,593,746.53 |
| 100% | $14,663,440.72 |

**Forecast: Contract Cost - Klamath - JC Boyle 03- Life Cycle - with Escalation** **Cell: U36**

Summary:
Entire range is from $2,871,985.48 to $9,679,699.54
Base case is $4,300,000.00
After 10,000 trials, the std. error of the mean is $9,814.05



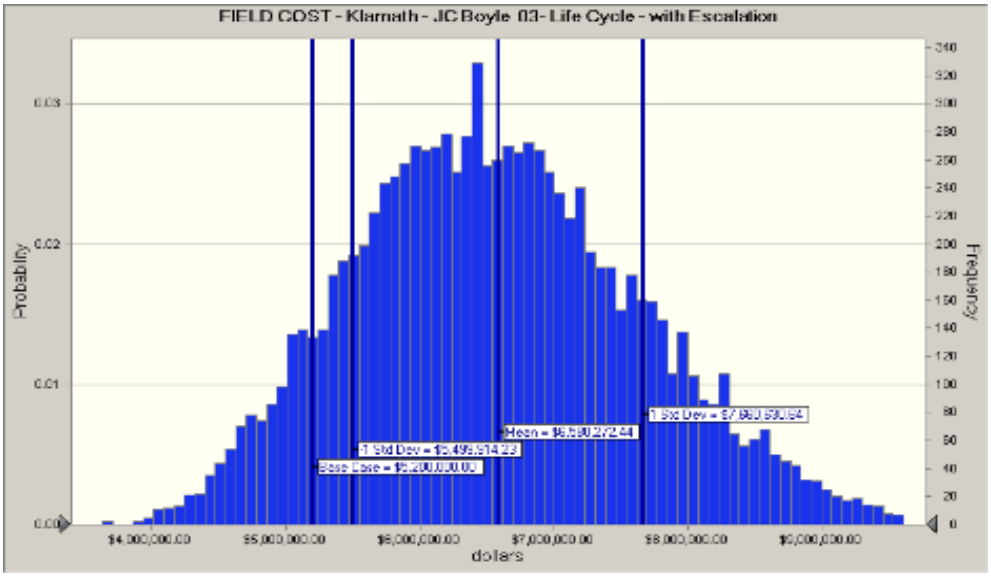

| Statistics: | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $5,412,263.90 |
| Median | $5,341,294.65 |
| Mode | --- |
| Standard Deviation | $981,405.20 |
| Variance | ################ |
| Skewness | 0.3905 |
| Kurtosis | 2.93 |
| Coeff. of Variability | 0.1813 |
| Minimum | $2,871,985.48 |
| Maximum | $9,679,699.54 |
| Range Width | $6,807,714.06 |
| Mean Std. Error | $9,814.05 |

**Forecast: Contract Cost - Klamath - JC Boyle 03- Life Cycle - with Escalation (cont'd)** **Cell: U36**

| Percentiles: | Forecast values |
|---|---|
| 0% | $2,871,985.48 |
| 10% | $4,194,682.01 |
| 20% | $4,533,193.27 |
| 30% | $4,829,175.78 |
| 40% | $5,089,494.47 |
| 50% | $5,341,203.31 |
| 60% | $5,611,633.30 |
| 70% | $5,889,107.56 |
| 80% | $6,227,915.60 |
| 90% | $6,738,499.77 |
| 100% | $9,679,699.54 |

**Forecast: FIELD COST - Klamath - JC Boyle 03- Life Cycle - with Escalation** **Cell: U38**

Summary:
Entire range is from $3,461,859.43 to $10,767,729.47
Base case is $5,200,000.00
After 10,000 trials, the std. error of the mean is $10,803.58




| Statistics: | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $6,580,272.44 |
| Median | $6,509,731.75 |
| Mode | --- |
| Standard Deviation | $1,080,358.20 |
| Variance | ################ |
| Skewness | 0.3341 |
| Kurtosis | 2.97 |
| Coeff. of Variability | 0.1642 |
| Minimum | $3,461,859.43 |
| Maximum | $10,767,729.47 |
| Range Width | $7,305,870.04 |
| Mean Std. Error | $10,803.58 |

**Forecast: FIELD COST - Klamath - JC Boyle 03- Life Cycle - with Escalation (cont'd)** **Cell: U38**

| Percentiles: | Forecast values |
|---|---|
| 0% | $3,461,859.43 |
| 10% | $5,220,393.08 |
| 20% | $5,649,748.87 |
| 30% | $5,956,161.74 |
| 40% | $6,239,703.84 |
| 50% | $6,509,706.31 |
| 60% | $6,796,987.43 |
| 70% | $7,110,016.31 |
| 80% | $7,487,138.50 |
| 90% | $8,012,557.94 |
| 100% | $10,767,729.47 |

End of Forecasts

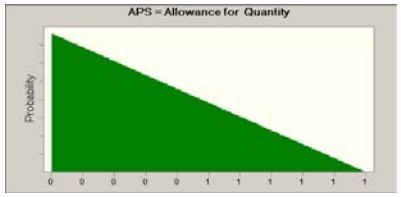
## Assumptions

### Worksheet: [03 JC Boyle Crystal Ball Spreadsheet with esc.xlsx]SUMMARY 480 FP

### Assumption: APS = Allowance for Quantity — Cell: L34

Triangular distribution with parameters:

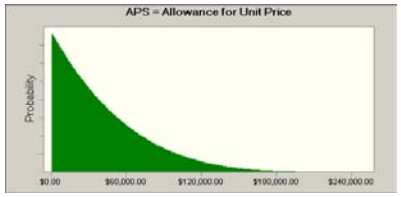
| | | |
|---|---|---|
| Minimum | 0 | (=K34) |
| Likeliest | 0 | (=L34) |
| Maximum | 1 | (=M34) |




### Assumption: APS = Allowance for Unit Price — Cell: R34

BetaPERT distribution with parameters:

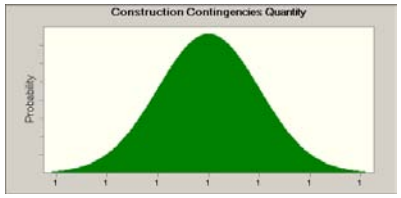
| | | |
|---|---|---|
| Minimum | $0.00 | (=Q34) |
| Likeliest | $0.00 | (=R34) |
| Maximum | $251,408.00 | (=S34) |




### Assumption: Construction Contingencies Quantity — Cell: L37

Normal distribution with parameters:

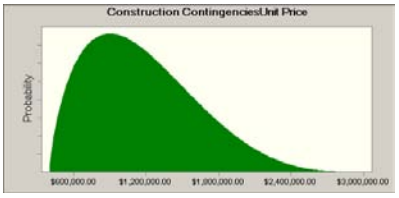
| | | |
|---|---|---|
| Mean | 1 | (=L37) |
| Std. Dev. | 0 | |



## Assumption: Construction ContingenciesUnit Price — Cell: R37

BetaPERT distribution with parameters:

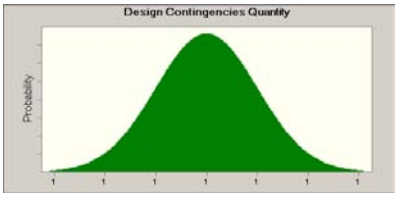
| | | |
|---|---|---|
| Minimum | $400,000.00 | (=Q37) |
| Likeliest | $900,000.00 | (=R37) |
| Maximum | $3,000,000.00 | (=S37) |




## Assumption: Design Contingencies Quantity — Cell: L33

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | 1 | (=L33) |
| Std. Dev. | 0 | |




## Assumption: Design ContingenciesUnit Price — Cell: R33

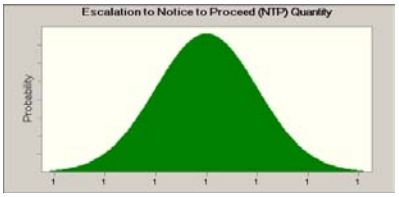
BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $153,833.00 | (=Q33) |
| Likeliest | $367,111.00 | (=R33) |
| Maximum | $1,817,808.00 | (=S33) |

**Assumption: Escalation to Notice to Proceed (NTP) Quantity** **Cell: L32**

Normal distribution with parameters:

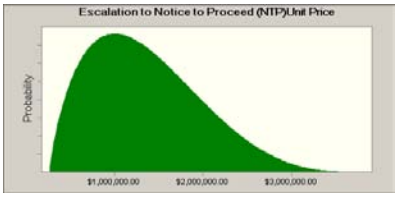
| | | |
|---|---|---|
| Mean | 1 | (=L32) |
| Std. Dev. | 0 | |




**Assumption: Escalation to Notice to Proceed (NTP)Unit Price** **Cell: R32**

BetaPERT distribution with parameters:

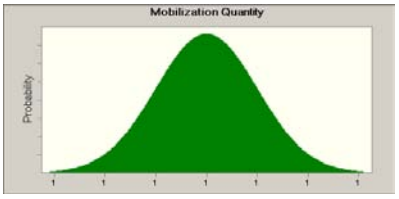
| | | |
|---|---|---|
| Minimum | $269,218.37 | (=Q32) |
| Likeliest | $1,006,450.20 | (=R32) |
| Maximum | $3,807,399.12 | (=S32) |




**Assumption: Mobilization Quantity** **Cell: L30**

Normal distribution with parameters:

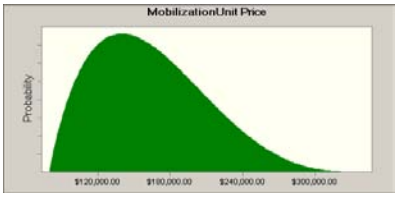
| | | |
|---|---|---|
| Mean | 1 | (=L30) |
| Std. Dev. | 0 | |



**Assumption: MobilizationUnit Price** **Cell: R30**

BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $80,000.00 | (=Q30) |
| Likeliest | $140,000.00 | (=R30) |
| Maximum | $340,000.00 | (=S30) |




**Assumption: Non-Contract Costs Quantity** **Cell: L39**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | 1 | (=L39) |
| Std. Dev. | 0 | |

**Assumption: Non-Contract Costs Unit Price** **Cell: R39**

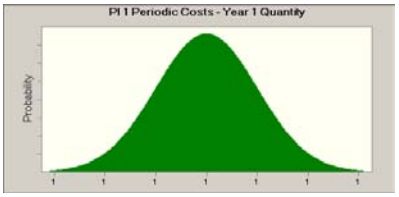
BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $600,000.00 | (=Q39) |
| Likeliest | $1,600,000.00 | (=R39) |
| Maximum | $6,000,000.00 | (=S39) |

**Assumption: PI 1 Periodic Costs - Year 1 Quantity** **Cell: L12**

Normal distribution with parameters:

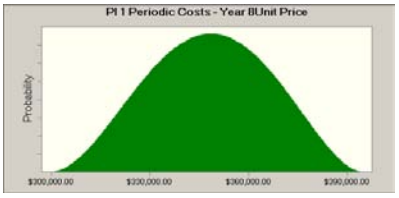
| | | |
|---|---|---|
| Mean | 1 | (=L12) |
| Std. Dev. | 0 | |




**Assumption: PI 1 Periodic Costs - Year 8Unit Price** **Cell: R12**

BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $299,400.00 | (=Q12) |
| Likeliest | $348,520.00 | (=R12) |
| Maximum | $394,940.00 | (=S12) |




**Assumption: PI 10 Periodic Costs - Year 30 Quantity** **Cell: L21**

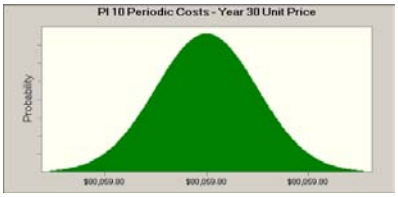
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K21) |
| Likeliest | 0 | (=L21) |
| Maximum | 1 | (=M21) |

## Assumption: PI 10 Periodic Costs - Year 30 Unit Price — Cell: R21

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $80,059.80 | (=R21) |
| Std. Dev. | $0.00 | |




## Assumption: PI 11 Periodic Costs - Year 33 Quantity — Cell: L22

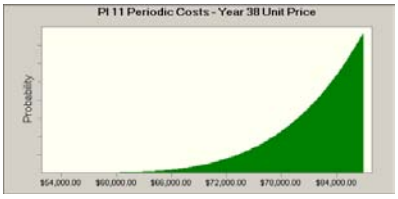
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=M22) |
| Likeliest | 1 | (=K22) |
| Maximum | 1 | (=L22) |

## Assumption: PI 11 Periodic Costs - Year 38 Unit Price — Cell: R22

BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $52,688.00 | (=Q22) |
| Likeliest | $86,935.20 | (=R22) |
| Maximum | $86,935.20 | (=S22) |



**Assumption: PI 12 Periodic Costs - Year 35 Quantity** **Cell: L23**

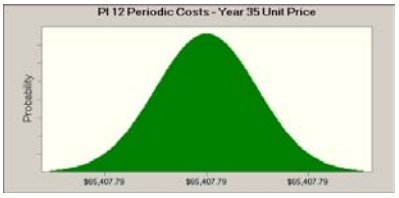
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K23) |
| Likeliest | 0 | (=L23) |
| Maximum | 1 | (=M23) |

**Assumption: PI 12 Periodic Costs - Year 35 Unit Price** **Cell: R23**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $65,407.79 | (=R23) |
| Std. Dev. | $0.00 | |




**Assumption: PI 13 Periodic Costs - Year 38 Quantity** **Cell: L24**

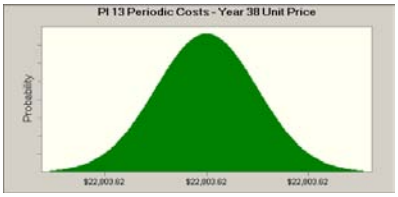
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K24) |
| Likeliest | 0 | (=L24) |
| Maximum | 1 | (=M24) |

**Assumption: PI 13 Periodic Costs - Year 38 Unit Price** **Cell: R24**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $22,803.62 | (=R24) |
| Std. Dev. | $0.00 | |




**Assumption: PI 14 Periodic Costs - Year 40 Quantity** **Cell: L25**

Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K25) |
| Likeliest | 0 | (=L25) |
| Maximum | 1 | (=M25) |

**Assumption: PI 14 Periodic Costs - Year 40 Unit Price** **Cell: R25**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $53,439.60 | (=R25) |
| Std. Dev. | $0.00 | |

**Assumption: PI 15 Periodic Costs - Year 42 Quantity** **Cell: L26**

Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K26) |
| Likeliest | 0 | (=M26) |
| Maximum | 1 | (=L26) |

**Assumption: PI 15 Periodic Costs - Year 42 Unit Price** **Cell: R26**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $42,113.00 | (=R26) |
| Std. Dev. | $0.00 | |

**Assumption: PI 16 Periodic Costs - Year 45 Quantity** **Cell: L27**

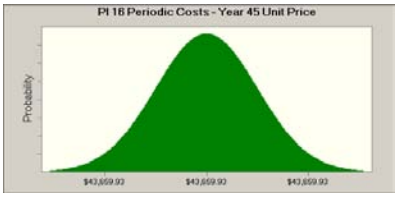
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K27) |
| Likeliest | 0 | (=L27) |
| Maximum | 1 | (=M27) |

## Assumption: PI 16 Periodic Costs - Year 45 Unit Price — Cell: R27

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $43,659.93 | (=R27) |
| Std. Dev. | $0.00 | |




## Assumption: PI 17 Annual Costs - Maintenance Quantity — Cell: L28

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | 1 | (=L28) |
| Std. Dev. | 0 | |

## Assumption: PI 17 Annual Costs - Maintenance Unit Price — Cell: R28

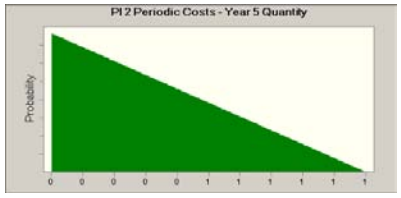
BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $1,114,593.00 | (=Q28) |
| Likeliest | $1,892,705.00 | (=R28) |
| Maximum | $5,257,515.00 | (=S28) |

**Assumption: PI 2 Periodic Costs - Year 5 Quantity** **Cell: L13**

Triangular distribution with parameters:

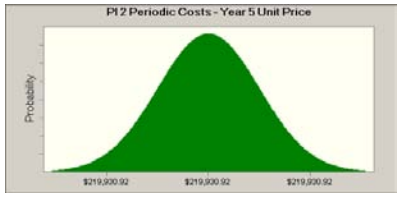
| | | |
|---|---|---|
| Minimum | 0 | (=K13) |
| Likeliest | 0 | (=L13) |
| Maximum | 1 | (=M13) |




**Assumption: PI 2 Periodic Costs - Year 5 Unit Price** **Cell: R13**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $219,930.92 | (=R13) |
| Std. Dev. | $0.00 | |




**Assumption: PI 3 Periodic Costs - Year 8 Quantity** **Cell: L14**

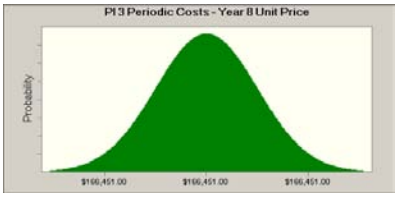
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K14) |
| Likeliest | 0 | (=M14) |
| Maximum | 1 | (=L14) |

**Assumption: PI 3 Periodic Costs - Year 8 Unit Price** **Cell: R14**

Normal distribution with parameters:

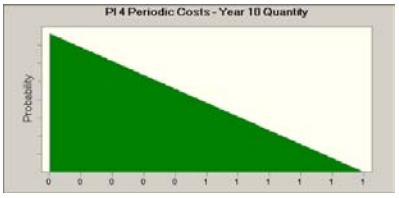
| | | |
|---|---|---|
| Mean | $166,451.00 | (=R14) |
| Std. Dev. | $0.00 | |




**Assumption: PI 4 Periodic Costs - Year 10 Quantity** **Cell: L15**

Triangular distribution with parameters:

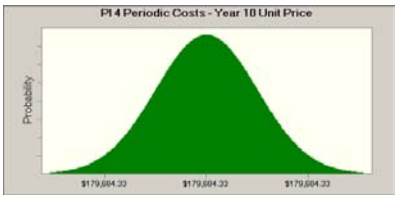
| | | |
|---|---|---|
| Minimum | 0 | (=K15) |
| Likeliest | 0 | (=L15) |
| Maximum | 1 | (=M15) |




**Assumption: PI 4 Periodic Costs - Year 10 Unit Price** **Cell: R15**

Normal distribution with parameters:

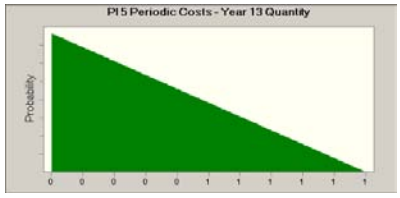
| | | |
|---|---|---|
| Mean | $179,684.33 | (=R15) |
| Std. Dev. | $0.00 | |



**Assumption: PI 5 Periodic Costs - Year 13 Quantity** **Cell: L16**

Triangular distribution with parameters:

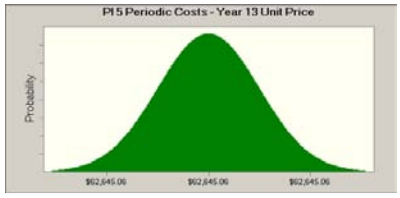
| | | |
|---|---|---|
| Minimum | 0 | (=K16) |
| Likeliest | 0 | (=L16) |
| Maximum | 1 | (=M16) |




**Assumption: PI 5 Periodic Costs - Year 13 Unit Price** **Cell: R16**

Normal distribution with parameters:

| | | |
|---|---|---|
| Mean | $62,645.06 | (=R16) |
| Std. Dev. | $0.00 | |




**Assumption: PI 6 Periodic Costs - Year 15 Quantity** **Cell: L17**

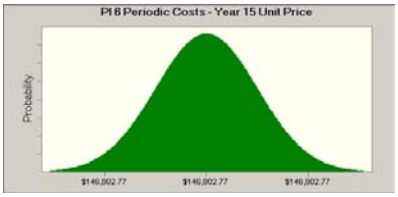
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K17) |
| Likeliest | 0 | (=L17) |
| Maximum | 1 | (=M17) |

**Assumption: PI 6 Periodic Costs - Year 15 Unit Price** **Cell: R17**

Normal distribution with parameters:

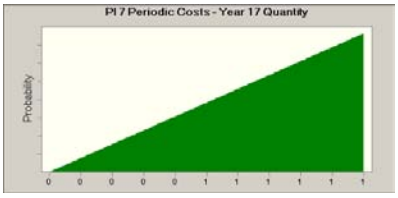
| | | |
|---|---|---|
| Mean | $146,802.77 | (=R17) |
| Std. Dev. | $0.00 | |




**Assumption: PI 7 Periodic Costs - Year 17 Quantity** **Cell: L18**

Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=M18) |
| Likeliest | 1 | (=K18) |
| Maximum | 1 | (=L18) |




**Assumption: PI 7 Periodic Costs - Year 25Unit Price** **Cell: R18**

BetaPERT distribution with parameters:

| | | |
|---|---|---|
| Minimum | $100,600.00 | (=Q18) |
| Likeliest | $165,990.00 | (=R18) |
| Maximum | $165,990.00 | (=S18) |

**Assumption: PI 8 Periodic Costs - Year 20 Quantity** **Cell: L19**

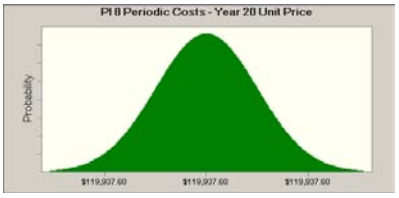
Triangular distribution with parameters:

| | | |
|---|---|---|
| Minimum | 0 | (=K19) |
| Likeliest | 0 | (=L19) |
| Maximum | 1 | (=M19) |

**Assumption: PI 8 Periodic Costs - Year 20 Unit Price** **Cell: R19**

Normal distribution with parameters:

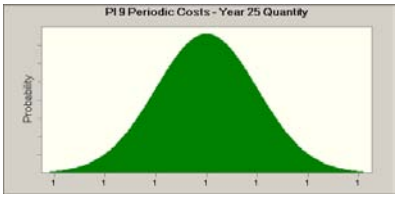
| | | |
|---|---|---|
| Mean | $119,937.60 | (=R19) |
| Std. Dev. | $0.00 | |




**Assumption: PI 9 Periodic Costs - Year 25 Quantity** **Cell: L20**

Normal distribution with parameters:

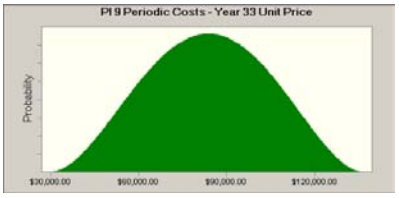
| | | |
|---|---|---|
| Mean | 1 | (=L20) |
| Std. Dev. | 0 | |



**Assumption: PI 9 Periodic Costs - Year 33 Unit Price** **Cell: R20**

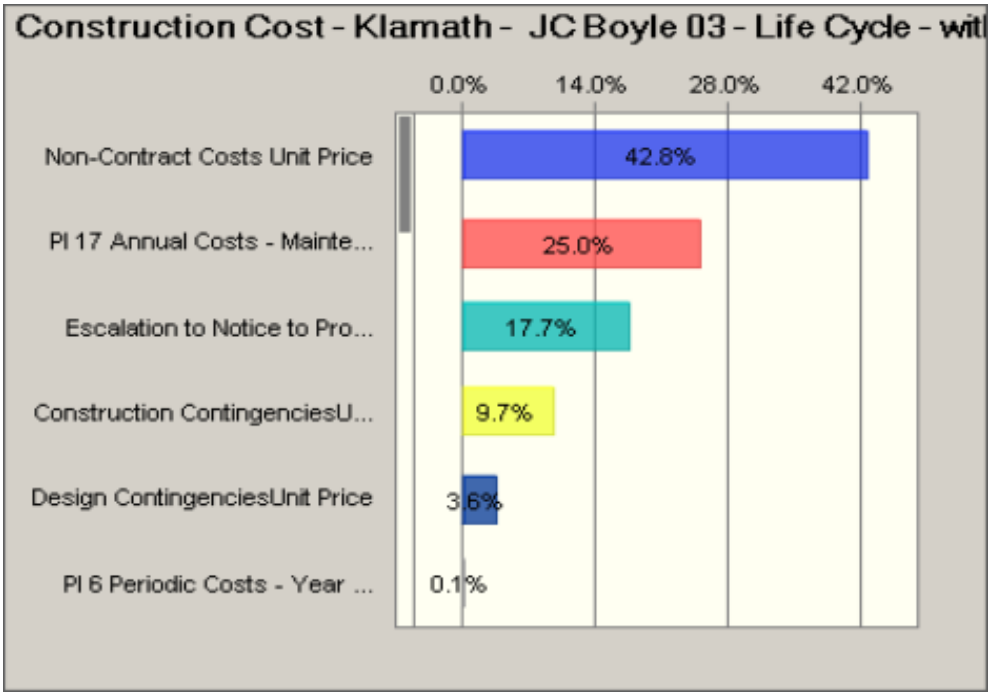
BetaPERT distribution with parameters:

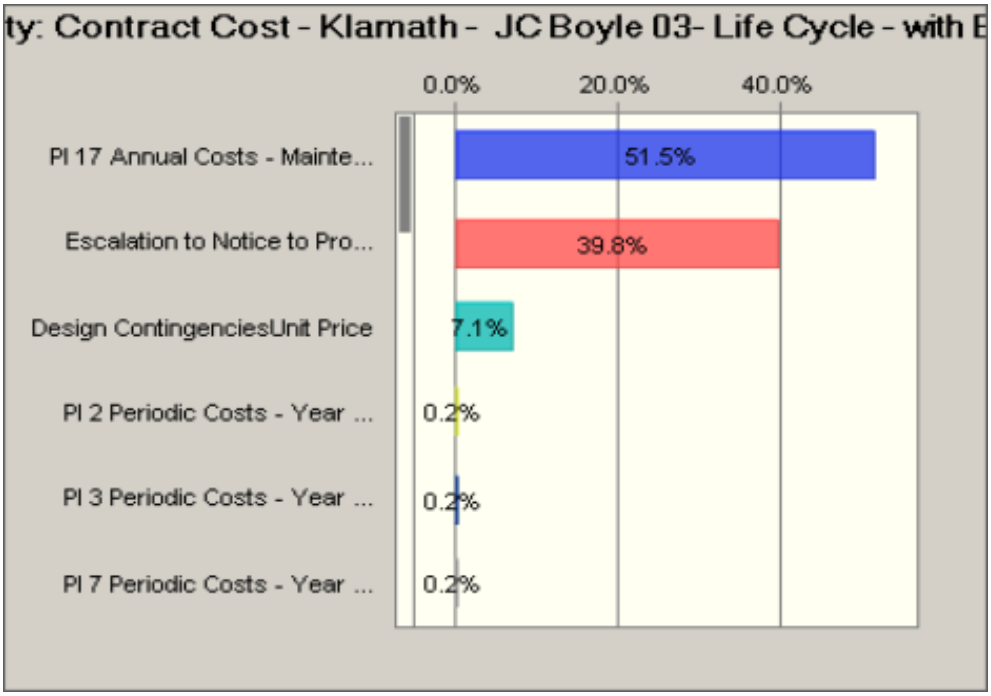
| | | |
|---|---|---|
| Minimum | $29,667.63 | (=Q20) |
| Likeliest | $83,724.60 | (=R20) |
| Maximum | $136,558.46 | (=S20) |

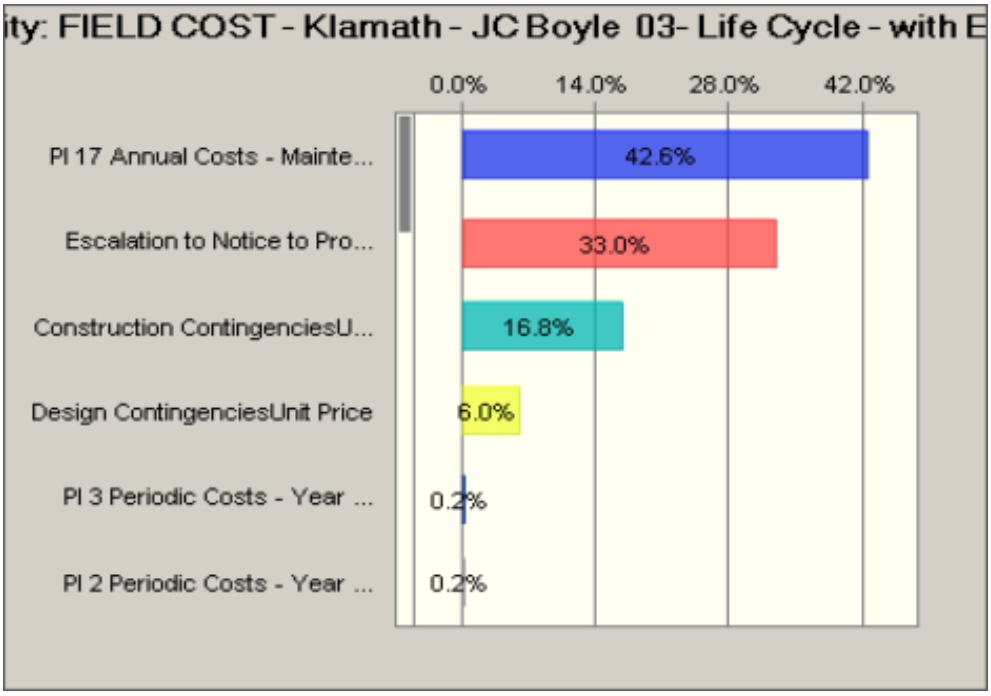



End of Assumptions

## Sensitivity Charts




ty: Contract Cost - Klamath - JC Boyle 03- Life Cycle - with E
0.0%
20.0%
40.0%
Pl 17 Annual Costs - Mainte...
51.5%
Escalation to Notice to Pro...
39.8%
Design ContingenciesUnit Price
7.1%
Pl 2 Periodic Costs - Year ...
0.2%
Pl 3 Periodic Costs - Year ...
0.2%
Pl 7 Periodic Costs - Year ...
0.2%

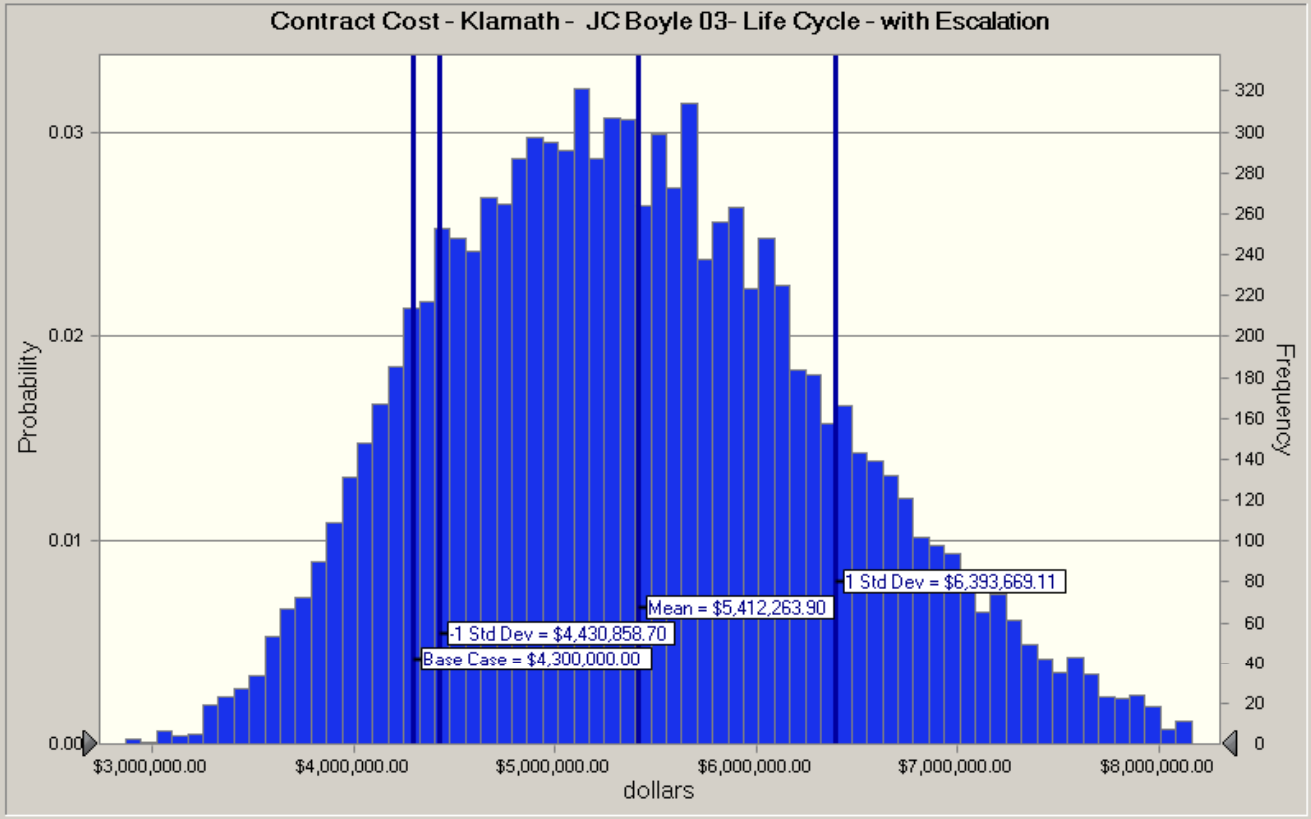

ity: FIELD COST - Klamath - JC Boyle 03- Life Cycle - with E
0.0%
14.0%
28.0%
42.0%
Pl 17 Annual Costs - Mainte...
42.6%
Escalation to Notice to Pro...
33.0%
Construction ContingenciesU...
16.8%
Design ContingenciesUnit Price
6.0%
Pl 3 Periodic Costs - Year ...
0.2%
Pl 2 Periodic Costs - Year ...
0.2%

No target forecast has been specified

No target forecast has been specified

End of Sensitivity Charts

10,000 Trials | Split View | 9,952 Displayed

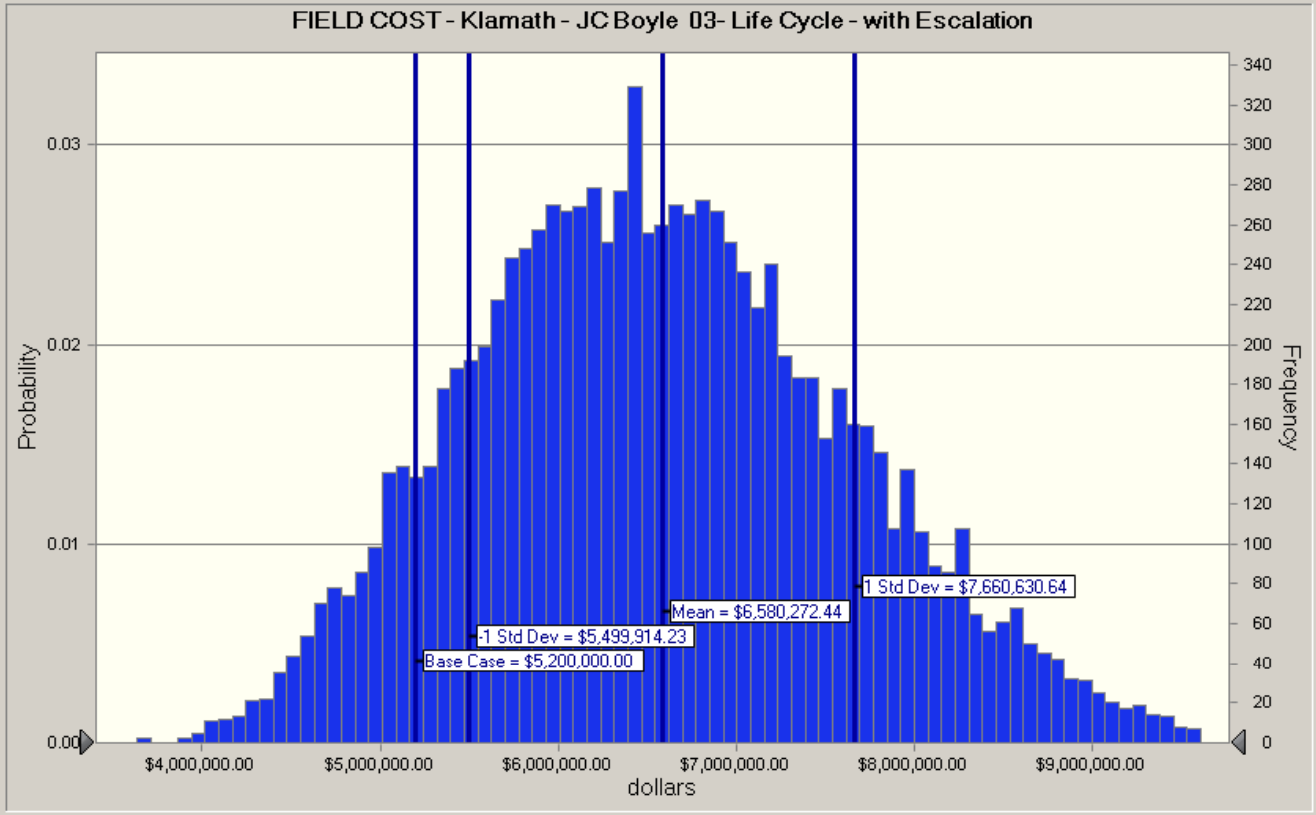



| Statistic | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $5,412,263.90 |
| Median | $5,341,294.65 |
| Mode | --- |
| Standard Deviation | $981,405.20 |
| Variance | $963,156,173,392.16 |
| Skewness | 0.3905 |
| Kurtosis | 2.93 |
| Coeff. of Variability | 0.1813 |
| Minimum | $2,871,985.48 |
| Maximum | $9,679,699.54 |
| Mean Std. Error | $9,814.05 |

| Percentile | Forecast values |
|---|---|
| 0% | $2,871,985.48 |
| 10% | $4,194,682.01 |
| 20% | $4,533,193.27 |
| 30% | $4,829,175.78 |
| 40% | $5,089,494.47 |
| 50% | $5,341,203.31 |
| 60% | $5,611,633.30 |
| 70% | $5,889,107.56 |
| 80% | $6,227,915.60 |
| 90% | $6,738,499.77 |
| 100% | $9,679,699.54 |

-Infinity | Certainty: 100.00 % | Infinity

10,000 Trials | Split View | 9,940 Displayed

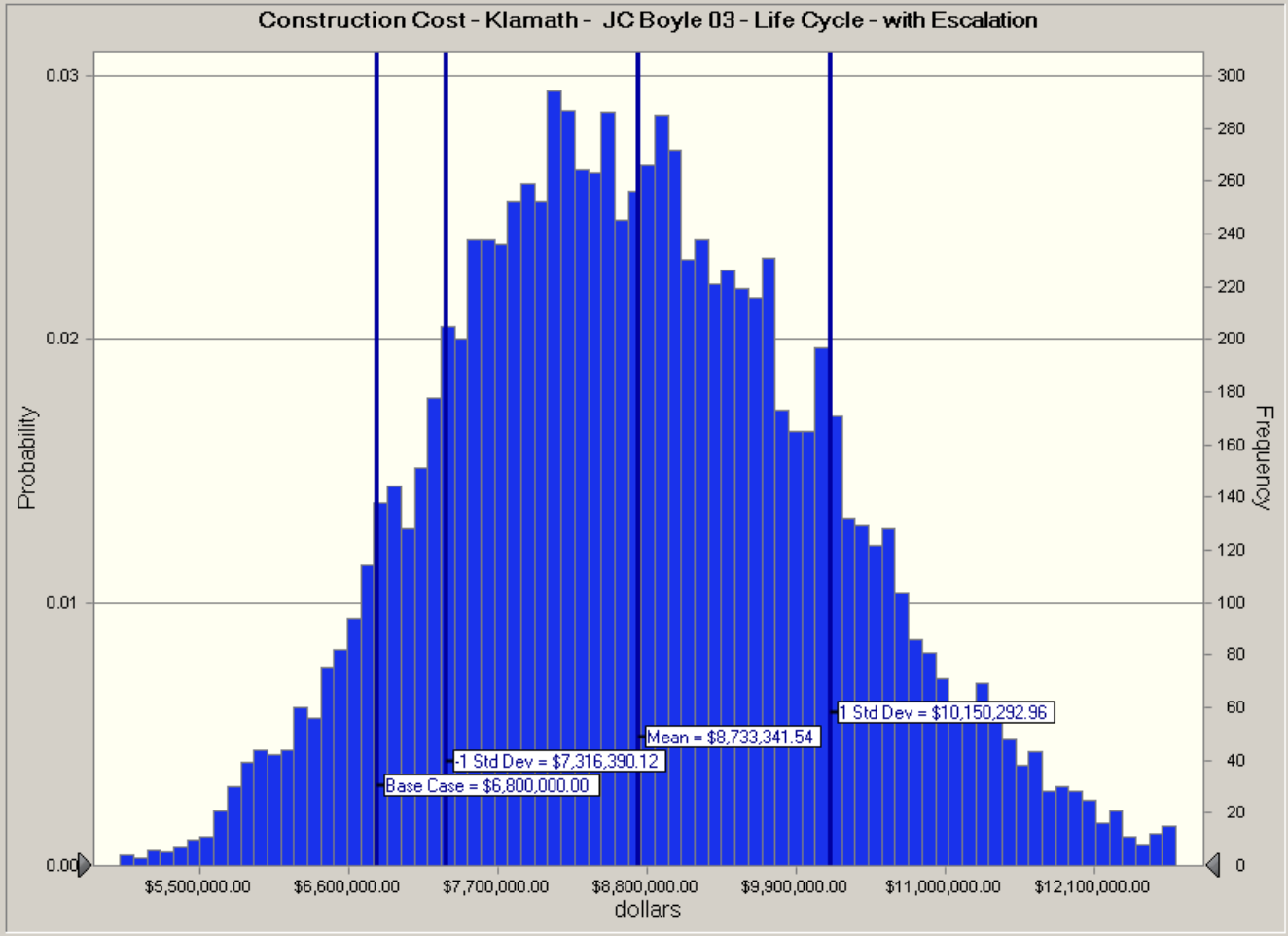



| Statistic | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $6,580,272.44 |
| Median | $6,509,731.75 |
| Mode | --- |
| Standard Deviation | $1,080,358.20 |
| Variance | $1,167,173,843,916.5 |
| Skewness | 0.3341 |
| Kurtosis | 2.97 |
| Coeff. of Variability | 0.1642 |
| Minimum | $3,461,859.43 |
| Maximum | $10,767,729.47 |
| Mean Std. Error | $10,803.58 |

| Percentile | Forecast values |
|---|---|
| 0% | $3,461,859.43 |
| 10% | $5,220,393.08 |
| 20% | $5,649,748.87 |
| 30% | $5,956,161.74 |
| 40% | $6,239,703.84 |
| 50% | $6,509,706.31 |
| 60% | $6,796,987.43 |
| 70% | $7,110,016.31 |
| 80% | $7,487,138.50 |
| 90% | $8,012,557.94 |
| 100% | $10,767,729.47 |

-Infinity | Certainty: 100.00 % | Infinity

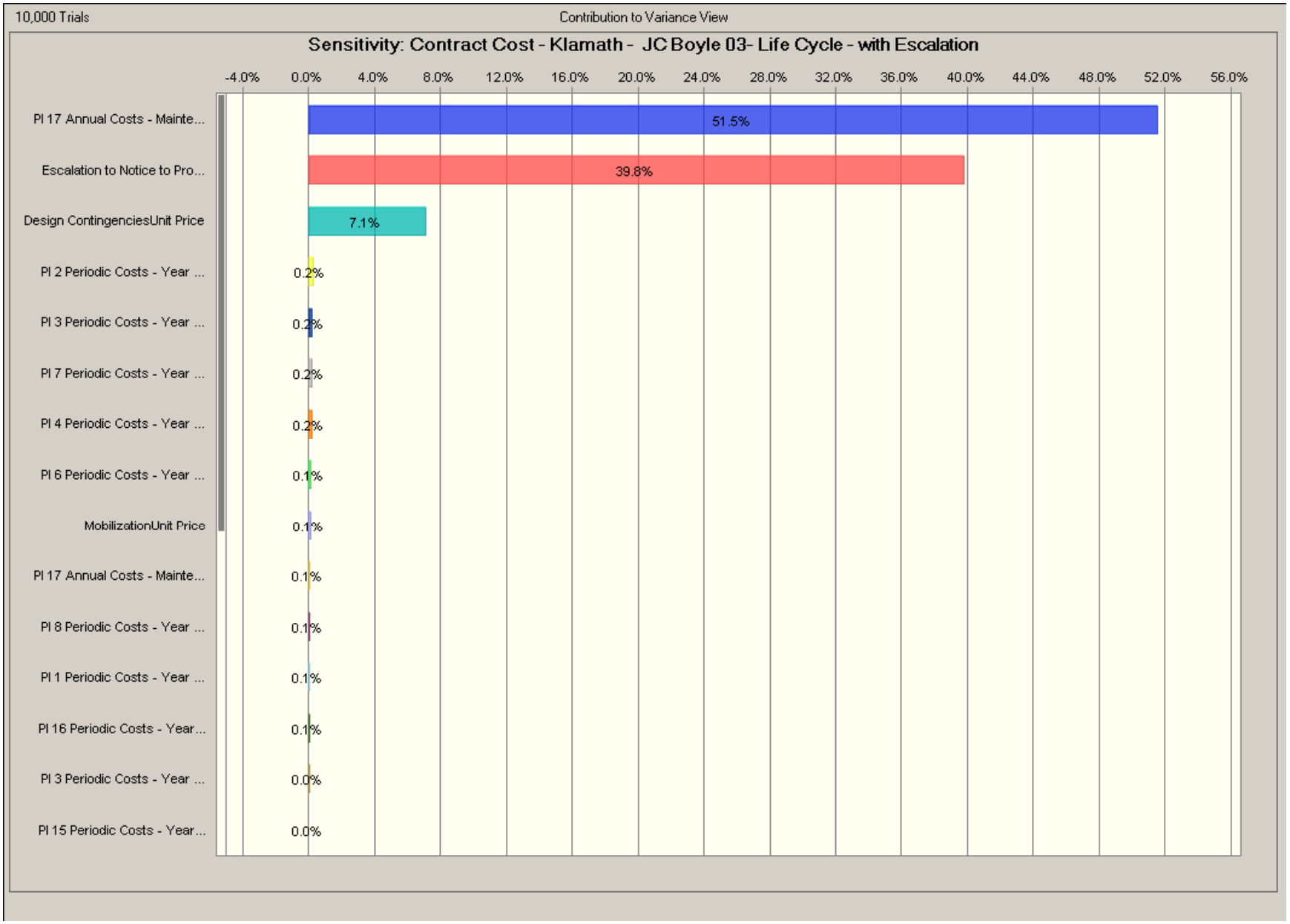
10,000 Trials | Split View | 9,952 Displayed

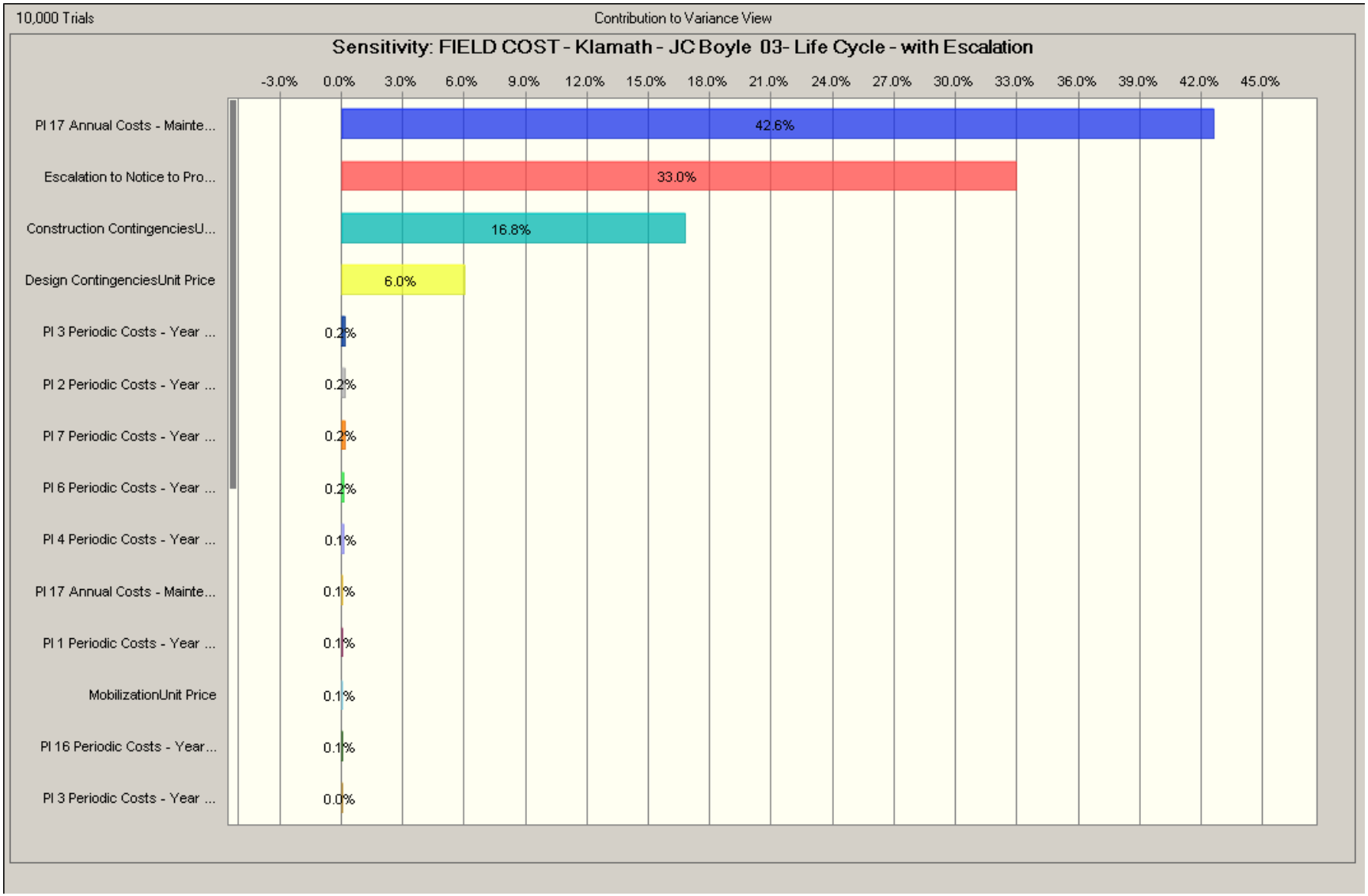


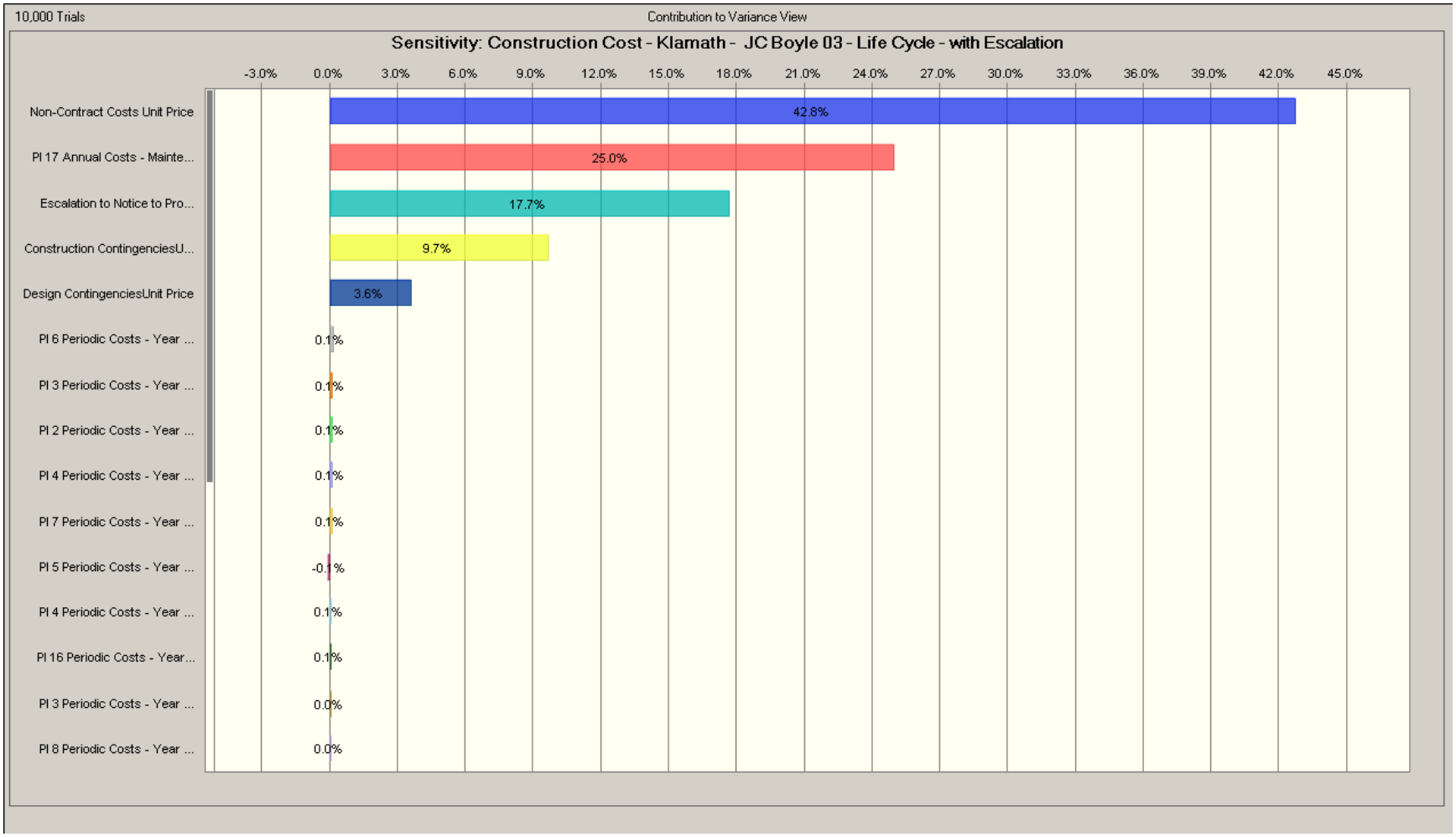

| Statistic | Forecast values |
|---|---|
| Trials | 10,000 |
| Mean | $8,733,341.54 |
| Median | $8,652,216.29 |
| Mode | --- |
| Standard Deviation | $1,416,951.42 |
| Variance | $2,007,751,329,729.8 |
| Skewness | 0.3006 |
| Kurtosis | 2.98 |
| Coeff. of Variability | 0.1622 |
| Minimum | $4,906,957.06 |
| Maximum | $14,663,440.72 |
| Mean Std. Error | $14,169.51 |

| Percentile | Forecast values |
|---|---|
| 0% | $4,906,957.06 |
| 10% | $6,961,004.48 |
| 20% | $7,517,881.59 |
| 30% | $7,917,026.82 |
| 40% | $8,278,688.10 |
| 50% | $8,652,113.35 |
| 60% | $9,023,408.50 |
| 70% | $9,445,870.27 |
| 80% | $9,937,095.29 |
| 90% | $10,593,746.53 |
| 100% | $14,663,440.72 |

-Infinity | Certainty: 100.00 % | Infinity


10,000 Trials
Contribution to Variance View
Sensitivity: Contract Cost - Klamath - JC Boyle 03- Life Cycle - with Escalation
-4.0%
0.0%
4.0%
8.0%
12.0%
16.0%
20.0%
24.0%
28.0%
32.0%
36.0%
40.0%
44.0%
48.0%
52.0%
56.0%
Pl 17 Annual Costs - Mainte...
51.5%
Escalation to Notice to Pro...
39.8%
Design ContingenciesUnit Price
7.1%
Pl 2 Periodic Costs - Year ...
0.2%
Pl 3 Periodic Costs - Year ...
0.2%
Pl 7 Periodic Costs - Year ...
0.2%
Pl 4 Periodic Costs - Year ...
0.2%
Pl 6 Periodic Costs - Year ...
0.1%
MobilizationUnit Price
0.1%
Pl 17 Annual Costs - Mainte...
0.1%
Pl 8 Periodic Costs - Year ...
0.1%
Pl 1 Periodic Costs - Year ...
0.1%
Pl 16 Periodic Costs - Year...
0.1%
Pl 3 Periodic Costs - Year ...
0.0%
Pl 15 Periodic Costs - Year...
0.0%


10,000 Trials
Contribution to Variance View
Sensitivity: FIELD COST - Klamath - JC Boyle 03- Life Cycle - with Escalation
-3.0%
0.0%
3.0%
6.0%
9.0%
12.0%
15.0%
18.0%
21.0%
24.0%
27.0%
30.0%
33.0%
36.0%
39.0%
42.0%
45.0%
Pl 17 Annual Costs - Mainte...
42.6%
Escalation to Notice to Pro...
33.0%
Construction ContingenciesU...
16.8%
Design ContingenciesUnit Price
6.0%
Pl 3 Periodic Costs - Year ...
0.2%
Pl 2 Periodic Costs - Year ...
0.2%
Pl 7 Periodic Costs - Year ...
0.2%
Pl 6 Periodic Costs - Year ...
0.2%
Pl 4 Periodic Costs - Year ...
0.1%
Pl 17 Annual Costs - Mainte...
0.1%
Pl 1 Periodic Costs - Year ...
0.1%
MobilizationUnit Price
0.1%
Pl 16 Periodic Costs - Year...
0.1%
Pl 3 Periodic Costs - Year ...
0.0%


10,000 Trials
Contribution to Variance View
Sensitivity: Construction Cost - Klamath - JC Boyle 03 - Life Cycle - with Escalation
-3.0%
0.0%
3.0%
6.0%
9.0%
12.0%
15.0%
18.0%
21.0%
24.0%
27.0%
30.0%
33.0%
36.0%
39.0%
42.0%
45.0%
Non-Contract Costs Unit Price
42.8%
PI 17 Annual Costs - Mainte...
25.0%
Escalation to Notice to Pro...
17.7%
Construction ContingenciesU...
9.7%
Design ContingenciesUnit Price
3.6%
PI 6 Periodic Costs - Year ...
0.1%
PI 3 Periodic Costs - Year ...
0.1%
PI 2 Periodic Costs - Year ...
0.1%
PI 4 Periodic Costs - Year ...
0.1%
PI 7 Periodic Costs - Year ...
0.1%
PI 5 Periodic Costs - Year ...
-0.1%
PI 4 Periodic Costs - Year ...
0.1%
PI 16 Periodic Costs - Year...
0.1%
PI 3 Periodic Costs - Year ...
0.0%
PI 8 Periodic Costs - Year ...
0.0%