Economic Evaluation Complete Report  
EconGuide Test 1

NOTE: All bounds on uncertainties are given with a 95.0% confidence interval. The number of runs was determined with a 5.0% tolerance.

For Base (Alternative 0) 100.0 Monte-Carlo simulations were run.

For Alt 1 (Alternative 1) 400.0 Monte-Carlo simulations were run.

For Alt 2 (Alternative 2) 400.0 Monte-Carlo simulations were run.

For Alt 3 (Alternative 3) 200.0 Monte-Carlo simulations were run.

For Alt 4 (Alternative 4) 400.0 Monte-Carlo simulations were run.

The random number seed for these runs was 604625241.

# Analysis Base Information

* Number of Alternatives: 4
* Planning Horizon: 60 years
* Discount Rate: 3.0%
* Disaster Rate: Every 35 years
* Uncertainty in Disaster Rate: Gaussian distribution with variance of 5
* Disaster Magnitude: 15% of build cost
* Uncertainty in Disaster Magnitude: Triangular distribution with a min of 5 and a max of 50
* Risk Preference: averse
* Statistical Value of a Life: $7500000

# Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Plan Title | Base | Alt 1 | Alt 2 | Alt 3 | Alt 4 |
| Total Benefits ($) | 0 | 3,950,051 | 4,430,713 | 3,387,749 | 847,887 |
| (Lower Bound, Upper Bound) ($) | (0, 0) | (3,423,345, 4,823,480) | (3,714,550, 5,508,614) | (2,960,444, 4,187,761) | (718,327, 1,070,994) |
| Total Costs ($) | 0 | 2,741,950 | 3,308,703 | 0 | 90,389 |
| Net ($) | 0 | 1,208,102 | 1,122,010 | 3,387,749 | 757,498 |
| Net with externalities ($) | 0 | 1,004,464 | 1,147,023 | 3,336,738 | 828,295 |
| SIR (%) | 0.00 | 0.45 | 0.35 | 0.00 | 8.38 |
| IRR (%) | --- | 5.14 | 4.59 | No Valid IRR | No Valid IRR |
| ROI (%) | 0.00 | 2.40 | 2.23 | 0.00 | 15.63 |
| Non-Disaster ROI (%) | 0.00 | 1.00 | 0.78 | 0.00 | 4.47 |

# Base

### Alternative 0

## Fatalities Averted

Number of Statistical Lives Saved: 0.00

Value of Statistical Lives Saved: $0

Description: Soma , comma desc

## Disaster-Related Benefits

|  |  |  |
| --- | --- | --- |
| Title | Amount ($) | Effective Present Value ($) |
| Response and Recovery Cost Reductions |  | 0 |
| Direct Losses Prevented |  | 0 |
| Indirect Losses Prevented |  | 0 |
| Total |  | 0 |

## Resilience Dividend

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Cost Reductions |  |  |  | 0 |
| Recurring Cost Reductions |  |  |  | 0 |
| Total |  |  |  | 0 |

## Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| Direct Costs |  |  |  | 0 |
| Indirect Costs |  |  |  | 0 |
| OMR Costs: One-Time |  |  |  | 0 |
| OMR Costs: Recurring |  |  |  | 0 |
| Total |  |  |  | 0 |

## Externalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Positive Externalities |  |  |  | 0 |
| Recurring Positive Externalities |  |  |  | 0 |
| One Time Negative Externalities |  |  |  | 0 |
| Recurring Negative Externalities |  |  |  | 0 |
| Total |  |  |  | 0 |

# Alt 1

### Alternative 1

## Fatalities Averted

Number of Statistical Lives Saved: 0.34

Value of Statistical Lives Saved: $1,210,406

## Disaster-Related Benefits

|  |  |  |
| --- | --- | --- |
| Title | Amount ($) | Effective Present Value ($) |
| Response and Recovery Cost Reductions |  | 201,734 |
| Alt 1 R&R Reduction | 250,000 | 201,734 |
| Direct Losses Prevented |  | 524,509 |
| Alt 1 Direct Reduction | 650,000 | 524,509 |
| Indirect Losses Prevented |  | 363,122 |
| Alt 1 Indirect Reduction | 450,000 | 363,122 |
| Total |  | 1,089,365 |

Alt 1 Direct Reduction: Triangular distribution with a min of 617500 and a max of 682500

Alt 1 Indirect Reduction: Triangular distribution with a min of 427500 and a max of 472500

Alt 1 R&R Reduction: Triangular distribution with a min of 237500 and a max of 262500

## Resilience Dividend

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Cost Reductions |  |  |  | 279,875 |
| Alt 1 NDRB One Time | 3 | N/A | 300,000 | 274,179 |
| Last Comma Test | 15 | N/A | 8,932 | 5,695 |
| Recurring Cost Reductions |  |  |  | 1,370,405 |
| Alt 1 NDRB Recurring | 1 | 1 | 50,000 | 1,370,405 |
| Total |  |  |  | 1,650,280 |

Alt 1 NDRB One Time: Gaussian distribution with variance of 5000

Alt 1 NDRB Recurring: Triangular distribution with a min of 40000 and a max of 60000

Last Comma Test: The last, comma test

## Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| Direct Costs |  |  |  | 2,250,000 |
| Alt 1 Direct | Start-Up | N/A | 2,250,000 | 2,250,000 |
| Indirect Costs |  |  |  | 425,000 |
| Alt 1 Indirect | Start-Up | N/A | 425,000 | 425,000 |
| OMR Costs: One-Time |  |  |  | 41,161 |
| Alt 1 OMR One-Time | 20 | N/A | 75,000 | 41,161 |
| OMR Costs: Recurring |  |  |  | 25,789 |
| Alt 1 OMR Recurring | 5 | 5 | 5,000 | 25,789 |
| Total |  |  |  | 2,741,950 |

Alt 1 Direct: Gaussian distribution with variance of 50000

Alt 1 OMR One-Time: 10% chance of 45000, 40% chance of 50000, and 50% chance of 75000

## Externalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Positive Externalities |  |  |  | 43,035 |
| Alt 1 One Time | 5.0 | N/A | 50,000 | 43,035 |
| Recurring Positive Externalities |  |  |  | 0 |
| One Time Negative Externalities |  |  |  | 0 |
| Recurring Negative Externalities |  |  |  | 246,673 |
| Alt 1 Recurring | 1.0 | 1.0 | 9,000 | 246,673 |
| Total |  |  |  | -203,638 |

Alt 1 One Time: Triangular distribution with a min of 40000 and a max of 75000

Alt 1 Recurring: Gaussian distribution with variance of 100

# Alt 2

### Alternative 2

## Fatalities Averted

Number of Statistical Lives Saved: 0.43

Value of Statistical Lives Saved: $1,513,008

Description: Another, one!, asdf

## Disaster-Related Benefits

|  |  |  |
| --- | --- | --- |
| Title | Amount ($) | Effective Present Value ($) |
| Response and Recovery Cost Reductions |  | 161,387 |
| Alt 2 R&R Reduction | 200,000 | 161,387 |
| Direct Losses Prevented |  | 645,623 |
| Alt 2 Direct Reduction | 800,000 | 645,550 |
| Comma Test | 90 | 73 |
| Indirect Losses Prevented |  | 564,856 |
| Alt 2 Indirect Reduction | 700,000 | 564,856 |
| Total |  | 1,371,866 |

Alt 2 Direct Reduction: Rectangular distribution with a min of 760000 and a max of 840000

Alt 2 Indirect Reduction: Rectangular distribution with a min of 665000 and a max of 735000

Comma Test: A description, with, commas! Woo-,hoo!

## Resilience Dividend

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Cost Reductions |  |  |  | 242,611 |
| Alt 2 NDRB One-Time | 1 | N/A | 250,000 | 242,611 |
| Recurring Cost Reductions |  |  |  | 1,303,227 |
| Alt 2 NDRB Recurring | 5 | 1 | 55,000 | 1,303,227 |
| Total |  |  |  | 1,545,839 |

Alt 2 NDRB One-Time: Rectangular distribution with a min of 150000 and a max of 260000

Alt 2 NDRB Recurring: 15% chance of 45000, 45% chance of 55000, and 40% chance of 60000

## Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| Direct Costs |  |  |  | 2,890,389 |
| Alt 2 Direct | Start-Up | N/A | 2,800,000 | 2,800,000 |
| Test with commas | Start-Up | N/A | 90,389 | 90,389 |
| Indirect Costs |  |  |  | 300,000 |
| Alt 2 Indirect | Start-Up | N/A | 300,000 | 300,000 |
| OMR Costs: One-Time |  |  |  | 50,821 |
| Alt 2 OMR One-Time | 30 | N/A | 125,000 | 50,821 |
| OMR Costs: Recurring |  |  |  | 67,493 |
| Alt 2 OMR Recurring | 2 | 2 | 5,000 | 67,493 |
| Total |  |  |  | 3,308,703 |

Alt 2 Indirect: Triangular distribution with a min of 200000 and a max of 600000

Alt 2 OMR One-Time: Rectangular distribution with a min of 70000 and a max of 150000

Alt 2 OMR Recurring: Gaussian distribution with variance of 500

Test with commas: Some desctsadf, sadfior,,,a df

## Externalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Positive Externalities |  |  |  | 69 |
| New Line Test | 9.0 | N/A | 90 | 69 |
| Recurring Positive Externalities |  |  |  | 75,954 |
| Alt 2 Recurring | 5.0 | 5.0 | 1,000 | 5,158 |
| Comma Test | 8.0 | 90.0 | 90,000 | 70,797 |
| One Time Negative Externalities |  |  |  | 51,010 |
| Alt 2 OneTime | 15.0 | N/A | 80,000 | 51,010 |
| Recurring Negative Externalities |  |  |  | 0 |
| Total |  |  |  | 25,013 |

New Line Test: Some description

Comma Test: My, comma, description test, is it working?

# Alt 3

### Alternative 3

## Fatalities Averted

Number of Statistical Lives Saved: 0.51

Value of Statistical Lives Saved: $1,815,609

## Disaster-Related Benefits

|  |  |  |
| --- | --- | --- |
| Title | Amount ($) | Effective Present Value ($) |
| Response and Recovery Cost Reductions |  | 201,734 |
| Alt 1 R&R Reduction | 250,000 | 201,734 |
| Direct Losses Prevented |  | 0 |
| Indirect Losses Prevented |  | 0 |
| Total |  | 201,734 |

## Resilience Dividend

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Cost Reductions |  |  |  | 0 |
| Recurring Cost Reductions |  |  |  | 1,370,405 |
| Alt 1 NDRB Recurring | 1 | 1 | 50,000 | 1,370,405 |
| Total |  |  |  | 1,370,405 |

## Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| Direct Costs |  |  |  | 0 |
| Indirect Costs |  |  |  | 0 |
| OMR Costs: One-Time |  |  |  | 0 |
| OMR Costs: Recurring |  |  |  | 0 |
| Total |  |  |  | 0 |
|  |  |  |  |  |

## Externalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Positive Externalities |  |  |  | 0 |
| Recurring Positive Externalities |  |  |  | 0 |
| One Time Negative Externalities |  |  |  | 51,010 |
| Alt 2 OneTime | 15.0 | N/A | 80,000 | 51,010 |
| Recurring Negative Externalities |  |  |  | 0 |
| Total |  |  |  | -51,010 |

# Alt 4

### Alternative 4

## Fatalities Averted

Number of Statistical Lives Saved: 0.17

Value of Statistical Lives Saved: $605,203

## Disaster-Related Benefits

|  |  |  |
| --- | --- | --- |
| Title | Amount ($) | Effective Present Value ($) |
| Response and Recovery Cost Reductions |  | 0 |
| Direct Losses Prevented |  | 73 |
| Comma Test | 90 | 73 |
| Indirect Losses Prevented |  | 0 |
| Total |  | 73 |

Comma Test: A description, with, commas! Woo-,hoo!

## Resilience Dividend

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Cost Reductions |  |  |  | 242,611 |
| Alt 2 NDRB OneTime | 1 | N/A | 250,000 | 242,611 |
| Recurring Cost Reductions |  |  |  | 0 |
| Total |  |  |  | 242,611 |

## Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| Direct Costs |  |  |  | 90,389 |
| Test with commas | Start-Up | N/A | 90,389 | 90,389 |
| Indirect Costs |  |  |  | 0 |
| OMR Costs: One-Time |  |  |  | 0 |
| OMR Costs: Recurring |  |  |  | 0 |
| Total |  |  |  | 90,389 |

Test with commas: Some desctsadf, sadfior,,,a df

## Externalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Start Year | Recurrence (Years) | Amount ($) | Effective Present Value ($) |
| One Time Positive Externalities |  |  |  | 0 |
| Recurring Positive Externalities |  |  |  | 70,797 |
| Comma Test | 8.0 | 90.0 | 90,000 | 70,797 |
| One Time Negative Externalities |  |  |  | 0 |
| Recurring Negative Externalities |  |  |  | 0 |
| Total |  |  |  | 70,797 |

Comma Test: My, comma, description test, is it working?