

Assumptions:	
Interest (Discount) rate	5.00%
Capital Cost (Once)	\$13,000,000.00
Benefits(annual)	8,160,000.00
Operating Costs(annual)	\$1,700,000.00
Cost of Ban	\$ 7,000,000.00

At 5%
 Ban is preferred to 5 year plant (See cell B12)
 10 year plant is preferred to Ban (See cell B13)

NPV of Ban **\$ 23,200,000**

Plant - Ban
 goal seek 5 yr **(\$8,231,581)**
 goal seek 10 yr **\$13,682,408**

Goal Seek Results
 Ban vs 5 yr plant indiff @ 10.22%
 Ban vs 10 yr plant indiff @ 38.91%
 Ban vs 10 yr plant indiff @ 2.70%
 Note: Two rates work for 10 plant

Year	Benefits	Costs	Net Benefits	Discounted Net Benefits	Sum of Disc. Net Benefits
				NB/(1+r) ^t	
0	\$ -	\$ 13,000,000	\$ (13,000,000)	\$ (13,000,000)	(\$13,000,000)
1	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 6,152,381	(\$6,847,619)
2	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,859,410	(\$988,209)
3	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,580,391	\$4,592,182
4	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,314,658	\$9,906,840
5	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,061,579	\$14,968,419
6	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,820,551	\$19,788,971
7	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,591,001	\$24,379,972
8	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,372,382	\$28,752,354
9	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,164,174	\$32,916,528
10	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,965,880	\$36,882,408
11	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,777,028	\$40,659,436
12	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,597,170	\$44,256,606

Yr Proj Breaks even

Ban \$ 23,200,000

Base 6.5 10.5
 Height 13 21
 42.25 110 68
 Change in CS annual 8,160,000.00

Assumptions:	
Interest (Discount) rate	10.22%
Capital Cost (Once)	\$13,000,000.00
Benefits(annual)	8,160,000.00
Operating Costs(annual)	\$1,700,000.00
Cost of Ban	\$ 7,000,000.00

Breakeven for BAN versus 5 year plant.

Run Goal Seek on cell B12, setting it to zero by changing cell B3

Answer is 10.22%

NPV of Ban **\$ 11,352,956**

Plant - Ban
goal seek 5 yr **(\$0)**
goal seek 10 yr **\$14,972,588**

Goal Seek Results
Ban vs 5 yr plant indiff @ 10.22%
Ban vs 10 yr plant indiff @ 38.91%
Ban vs 10 yr plant indiff @ 2.70%
Note: Two rates work for 10 plant

Year	Benefits	Costs	Net Benefits	Discounted Net Benefits	Sum of Disc. Net Benefits	
				NB/(1+r) ^t		
0	\$ -	\$ 13,000,000	\$ (13,000,000)	\$ (13,000,000)	(\$13,000,000)	
1	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,861,133	(\$7,138,867)	
2	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 5,317,783	(\$1,821,085)	
3	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,824,803	\$3,003,719	Yr Proj Breaks even
4	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,377,525	\$7,381,244	
5	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,971,712	\$11,352,956	
6	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,603,518	\$14,956,474	
7	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,269,458	\$18,225,932	
8	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,966,367	\$21,192,299	
9	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,691,373	\$23,883,671	
10	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,441,872	\$26,325,543	
11	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,215,501	\$28,541,044	
12	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,010,115	\$30,551,159	

Ban \$ 11,352,956

Base 6.5 10.5
Height 13 21
42.25 110 68
Change in CS annual 8,160,000.00

Assumptions:	
Interest (Discount) rate	38.911873%
Capital Cost (Once)	\$13,000,000.00
Benefits(annual)	8,160,000.00
Operating Costs(annual)	\$1,700,000.00
Cost of Ban	\$ 7,000,000.00

RUN Goal Seek on CELL B13, changing cell B3

Note that there are two answers, depending on what your starting value:

If you use 5% as a starting value (in B3) Goal seek returns **2.7003%**

If you use 10% as a starting value (in B3) Goal Seek returns **38.91%**

NPV of Ban **\$ 2,981,095**

Plant - Ban
goal seek 5 yr **(\$2,589,098)**
goal seek 10 yr **\$0**

Goal Seek Results
Ban vs 5 yr pant indiff @ 10.22%
Ban vs 10 yr pant indiff @ 38.91%
Ban vs 10 yr pant indiff @ 2.70%
Note: Two rates work for 10 plant

Year	Benefits	Costs	Net Benefits	Discounted Net Benefits	Sum of Disc. Net Benefits	
				NB/(1+r) ^t		
0	\$ -	\$ 13,000,000	\$ (13,000,000)	\$ (13,000,000)	(\$13,000,000)	
1	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 4,650,430	(\$8,349,570)	
2	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 3,347,756	(\$5,001,814)	
3	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 2,409,985	(\$2,591,828)	
4	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 1,734,902	(\$856,926)	
5	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 1,248,923	\$391,997	Yr Proj Breaks even
6	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 899,076	\$1,291,073	
7	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 647,227	\$1,938,300	
8	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 465,927	\$2,404,227	
9	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 335,412	\$2,739,639	
10	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 241,456	\$2,981,095	
11	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 173,820	\$3,154,915	
12	\$ 8,160,000	\$ 1,700,000	\$ 6,460,000	\$ 125,130	\$3,280,045	

Ban \$ 2,981,095

Base 6.5 10.5
Height 13 21
42.25 110 68
Change in CS annual 8,160,000.00