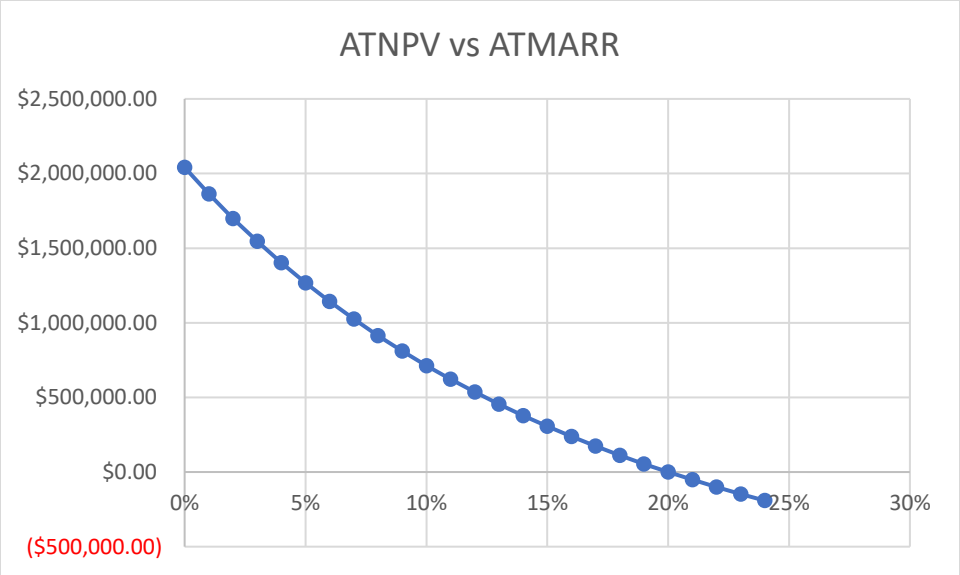
CASE STUDY

Q1) At average selling price of $11 (assumed), the after-tax IRR is 29.16%. We then use the Goal seek function to set after-tax IRR to 20% by changing selling price.

Average selling price of the finished product to yield a 20% after-tax IRR = $10.513.

Q2)

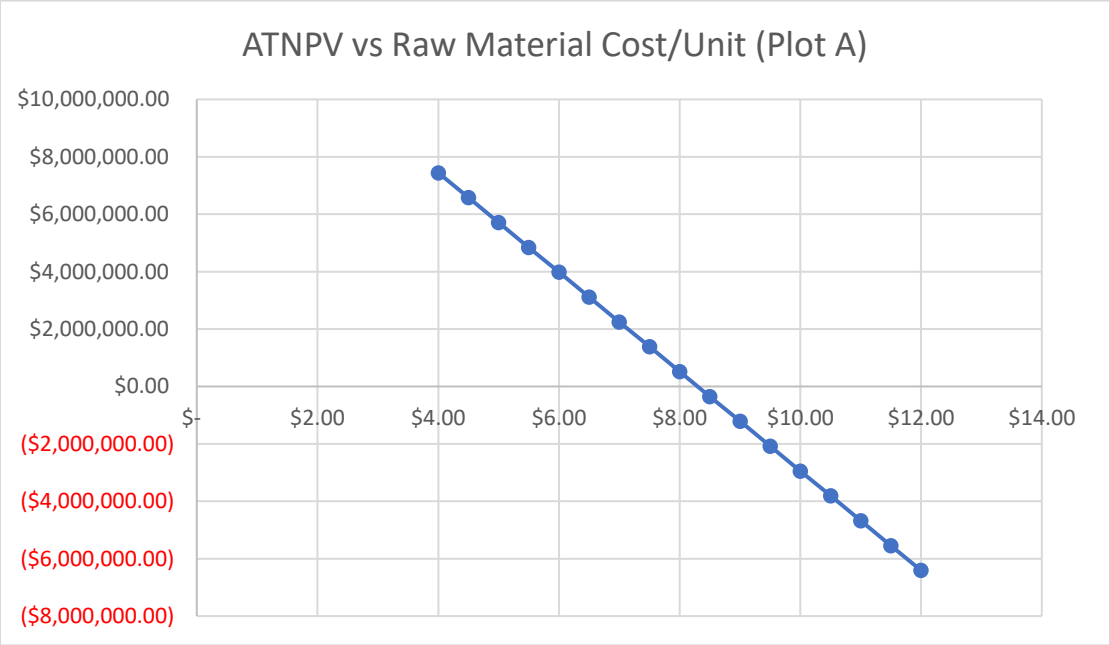
ATMARR	ATNPV
0%	$2,041,048.61
1%	$1,864,199.68
2%	$1,699,378.90
3%	$1,545,605.18
4%	$1,401,988.87
5%	$1,267,722.25
6%	$1,142,071.15
7%	$1,024,367.49
8%	$914,002.61
9%	$810,421.42
10%	$713,117.10
11%	$621,626.41
12%	$535,525.52
13%	$454,426.24
14%	$377,972.66
15%	$305,838.17
16%	$237,722.71
17%	$173,350.40
18%	$112,467.29
19%	$54,839.48
20%	$251.26
21%	($51,496.43)
22%	($100,587.47)
23%	($147,191.85)
24%	($191,466.88)



Q3) a)

Raw Material Cost/Unit	ATNPV
$ 4.00	$7,445,816.85
$ 4.50	$ 6,579,902.05
$ 5.00	$ 5,713,987.26
$ 5.50	$ 4,848,072.46
$ 6.00	$ 3,982,157.66
$ 6.50	$ 3,116,242.86
$ 7.00	$ 2,250,328.07
$ 7.50	$ 1,384,413.27
$ 8.00	$ 518,498.47
$ 8.50	$ (347,416.33)
$ 9.00	$ (1,213,331.12)

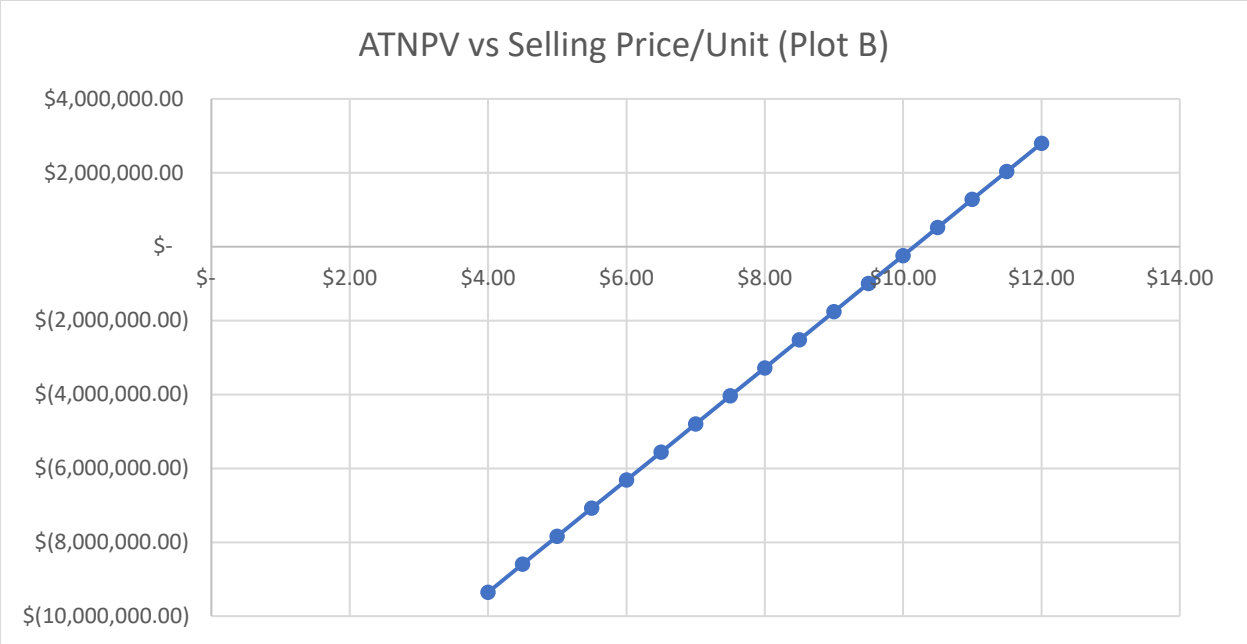
$ 9.50	$ (2,079,245.92)
$ 10.00	$ (2,945,160.72)
$ 10.50	$ (3,811,075.52)
$ 11.00	$ (4,676,990.31)
$ 11.50	$ (5,542,905.11)
$ 12.00	$ (6,408,819.91)



Q3)b)

Selling Price/Unit	ATNPV
$ 4.00	$ (9,355,968.52)
$ 4.50	$ (8,596,394.13)

$ 5.00	$ (7,836,819.75)
$ 5.50	$ (7,077,245.37)
$ 6.00	$ (6,317,670.98)
$ 6.50	$ (5,558,096.60)
$ 7.00	$ (4,798,522.22)
$ 7.50	$ (4,038,947.83)
$ 8.00	$ (3,279,373.45)
$ 8.50	$ (2,519,799.06)
$ 9.00	$ (1,760,224.68)
$ 9.50	$ (1,000,650.30)
$ 10.00	$ (241,075.91)
$ 10.50	$ 518,498.47
$ 11.00	$ 1,278,072.86
$ 11.50	$ 2,037,647.24
$ 12.00	$ 2,797,221.62



Q3) c) Slope of plot A = ($7,445,816.85-(6,408,819.91))/(4.00-12.00) = -1731829.595. In absolute value, Slope = 1731829.595

Slope of Plot B = (2,797,221.62-(9,355,968.52))/(12.00-4.00) = 1,356,383.828

Since plot A has higher absolute value, ATNPV has more sensitivity towards the raw material cost per unit.

Q4)

ATNPV	Selling Price							
Raw Material Cost		-15%	-10%	-5%	0%	5%	10%	15%
	-15%	$204,034.68	$1,001,587.78	$1,799,140.88	$2,596,693.99	$3,394,247.09	$4,191,800.19	$4,989,353.29
	-10%	-$488,697.16	$308,855.94	$1,106,409.04	$1,903,962.15	$2,701,515.25	$3,499,068.35	$4,296,621.46
	-5%	-$1,181,429.00	-$383,875.90	$413,677.21	$1,211,230.31	$2,008,783.41	$2,806,336.52	$3,603,889.62
	0%	-$1,874,160.84	-$1,076,607.73	-$279,054.63	$518,498.47	$1,316,051.57	$2,113,604.68	$2,911,157.78
	5%	-$2,566,892.68	-$1,769,339.57	-$971,786.47	-$174,233.37	$623,319.74	$1,420,872.84	$2,218,425.94
	10%	-$3,259,624.51	-$2,462,071.41	-$1,664,518.31	-$866,965.20	-$69,412.10	$728,141.00	$1,525,694.10
	15%	-$3,952,356.35	-$3,154,803.25	-$2,357,250.15	-$1,559,697.04	-$762,143.94	$35,409.16	$832,962.27

Q5)

If we assume annual production requirement to be 500,000. Then ATNPV at 12% ATMARR = $752,457.63

Using goal seek function, we set ATNPV = 0 by changing annual production requirement. We get required annual production volume = 301457.55 units or 301458 units.