

## Solution

Real Interest Rate	( $i$ )	4.00%
Economic Life	( $N$ , yr)	12
Investment Cost	( $IV$ , \$)	2,500,000
Salvage Percentage		20%
Salvage Value	( $SV$ , \$)	500,000
Effective Investment Cost	( $IV^{eff}$ , \$)	2,187,701
Cost Cap Recovery	( $K$ , \$/yr)	233,104
Annual Demand	( $q$ /yr)	2,500
Operating Cost per Unit	(\$/q)	125
Investment Cost per Unit	(\$/q)	93.242
Cost per Unit	(\$/mi)	218.242

1.

Nominal Interest Rate		7.00%
Current Inflation Rate		3.00%
Real Interest Rate	( $i$ )	4.00%
Economic Life	( $N$ , yr)	5
Investment Cost	( $IV$ , \$)	35,000
Salvage Percentage		35%
Salvage Value	( $SV$ , \$)	12,250
Effective Investment Cost	( $IV^{eff}$ , \$)	24,931
Cost Cap Recovery	( $K$ , \$/yr)	5,600
Annual Mileage	(mi/yr)	15,000
Operating Cost per Unit	(\$/mi)	0.075
Investment Cost per Mile	(\$/mi)	0.373
Cost per Mile	(\$/mi)	0.448

2.

Common				
Annual Demand	( $q$ /yr)	50,000	50,000	
Project		Current	New	Net
Investment Cost	( $IV$ , \$)	100,000	1,000,000	900,000
Oper Cost per Unit	(\$/q)	26.25	7.00	19.25
Operating Cost	( $OC$ , \$/yr)	1,312,500	350,000	962,500
Payback Period ( $IV/OP$ )	(yr)			0.9351

3.

Common			
Cost of Capital	( $i$ )	5%	5%
Economic Life	( $N$ , yr)	10	10
Project		Automated	Manual
Investment Cost	( $IV$ , \$)	850,000	150,000
Salvage Percentage		30%	0%
Salvage Value	( $SV$ , \$)	255,000	0
Eff. Investment Cost	( $IV^{eff}$ , \$)	693,452	150,000
Cost Cap Recovery	( $C^{CR}$ , \$/yr)	89,805	19,426
Oper Cost per Unit	(\$/q)	120.00	145.00
Analysis			
Fixed Cost	( $F$ , \$/yr)	89,805	19,426
Variable Cost	( $V$ , \$/q)	120.00	145.00
Indiff Point	( $q$ /yr)		2,815

4.