5. Florida Car Wash is considering a new project whose data are shown below. The equipment to be used has a 3-year tax life, would be depreciated on a straight-line basis over the project’s 3-year life, and would have a zero salvage value after Year 3. No new working capital would be required. Revenues and other operating costs will be constant over the project’s life, and this is just one of the firm’s many projects, so any losses on it can be used to offset profits in other units. If the number of cars washed declined by 40% from the expected level, by how much would the project’s NPV decline? (Hint: Note that cash flows are constant at the Year 1 level, whatever that level is.)

WACC 10.0%

Net investment cost (depreciable basis) $60,000

Number of cars washed 2,800

Average price per car $25.00

Fixed op. cost (excl. deprec.) $10,000

Variable op. cost/unit (i.e., VC per car washed) $5.375

Annual depreciation $20,000

Tax rate 35.0%

a. $28,939

b. $30,462

c. $32,066

d. $33,753

e. $35,530

	0	1	2	3
Io	-60000			
Number of cars		2800	2800	2800
Average price per car		25	25	25
Revenue		70000	70000	70000
Fixed op. cost (excl. deprec.)		-10000	-10000	-10000
Variable op. cost/unit		5,375	5,375	5,375
Total Variable		-15050	-15050	-15050
Annual depreciation		20000	20000	20000
tax rate, 35%				
Income		44950	44950	44950
Net Income		29217,5	29217,5	29217,5
CF	-60000	49217,5	49217,5	49217,5
Kd		0,909091	0,826446	0,751315
CFd	-60000	44743,18	40675,62	36977,84
NPV	-60000	-15256,8	25418,8	62396,64

after number of cars washed decli

	0	1
Io	-60000	
Number of cars		1680
Average price per car		25
Revenue		42000
Fixed op. cost (excl. de		-10000
Variable op. cost/unit		5,375
Total Variable		-9030
Annual depreciation		20000
tax rate, 35%		
Income		22970
Net Income		14930,5
CF	-60000	34930,5
Kd		0,909091
CFd	-60000	31755
NPV	-60000	-28245

35530

Revenue=Number of cars* Average price per car
Total Variable=Variable op. cost/unit*Number of cars
Income = Revenue -Fixed costs-TotalVariable
NetIncome=Income*(1-tax rate)
CF=NetIncome+Annual depreciation
Kd=1/(1+wacc)^i
CFd=CF*Kd

ned by 40%

2	3
1680	1680
25	25
42000	42000
-10000	-10000
5,375	5,375
-9030	-9030
20000	20000
22970	22970
14930,5	14930,5
34930,5	34930,5
0,826446	0,751315
28868,18	26243,8
623,1818	26866,98