

```
1 import matplotlib.pyplot as plt
2
3 solar_total = float(input('What is the total cost of the solar system?
4 '))
5 solar_total *= -0.74
6 solar_total4 = solar_total
7 solar_total55 = solar_total
8 solar_total4_list = []
9 solar_total55_list = []
10 solar_monthly = float(input("What is the solar monthly cost? "))
11 solar_yearly = solar_monthly * 12
12 utility_monthly = float(input("What is the current monthly cost of
13 electricity? "))
14 print('\n')
15 # offset = float(input('How much of the bill will be offset (as a
16 decimal)? '))
17 utility_yearly = utility_monthly * 12
18 growth_rate4 = 1.04
19 growth_rate55 = 1.055
20 num_years = 25
21 utility_yearly_list4 = []
22 running_yearly4 = utility_yearly
23 running_yearly55 = utility_yearly
24 utility_yearly_list55 = []
25 solar_yearly_list = [solar_yearly]*20
26 for num in range(0,5):
27     solar_yearly_list.append(0)
28 year_list = []
29 net_savings4_list = []
30 net_savings55_list = []
31 net_savings4 = 0
32 net_savings55 = 0
33
34 for num in range(1,num_years+1):
35     year_list.append(num)
36
37 for year in range(len(year_list)):
38     running_yearly4 = running_yearly4
39     utility_yearly_list4.append(running_yearly4)
40     net_savings4 += (running_yearly4 - solar_yearly_list[year])
41     net_savings4 = net_savings4
42     net_savings4_list.append(net_savings4)
43     solar_total4 += running_yearly4
44     solar_total4_list.append(solar_total4)
45     running_yearly4 *= growth_rate4
46
47     running_yearly55 = running_yearly55
48     utility_yearly_list55.append(running_yearly55)
49     net_savings55 += (running_yearly55 - solar_yearly_list[year])
50     net_savings55 = net_savings55
51     net_savings55_list.append(net_savings55)
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49     solar_total55 += running_yearly55
50     solar_total55_list.append(solar_total55)
51     running_yearly55 *= growth_rate55
52
53
54 for num in range(len(year_list)):
55     print('Year',str(year_list[num])+':\nSolar
56         Cost:',solar_yearly_list[num],'\nElectricity Cost @
57         4%:',round(utility_yearly_list4[num],2),'\nElectricity Cost @
58         5.5%:',round(utility_yearly_list55[num],2),'\nSavings @
59         4%:',round(net_savings4_list[num],2),'\nSavings @
60         5.5%:',round(net_savings55_list[num],2),'\nCash Savings @
61         4%:',round(solar_total4_list[num],2),'\nCash Savings @
62         5.5%:',round(solar_total55_list[num],2),'\n')
63
64 plt.plot(year_list,utility_yearly_list4, label = "Utility @ 4% growth")
65 plt.plot(year_list,utility_yearly_list55, label = 'Utility @ 5.5%
66 growth')
67 plt.plot(year_list,solar_yearly_list, label = 'Solar')
68 plt.title('Utility vs. Solar Yearly Costs Over 25 Years')
69 plt.xlabel('Years')
70 plt.ylabel('$$$')
71 plt.grid(True)
72 plt.legend()
73 plt.show()
74 plt.clf()
75
76 plt.plot(year_list,net_savings4_list, label = 'Savings @ 4% growth')
77 plt.plot(year_list,net_savings55_list, label = 'Savings @ 5.5% growth')
78 plt.title('Savings With Solar Over 25 Years')
79 plt.xlabel('Years')
80 plt.ylabel('$$$')
81 plt.grid(True)
82 plt.legend()
83 plt.show()
84 plt.clf()
85
86 plt.plot(year_list,solar_total4_list, label = 'Solar Payoff @ 4% growth')
87 plt.plot(year_list,solar_total55_list, label = 'Solar Payoff @ 5.5%
88 growth')
89 plt.title('Solar Cash Payoff Period')
90 plt.xlabel('Years')
91 plt.ylabel('$$$')
92 plt.grid(True)
93 plt.legend()
94 plt.show()
95 plt.clf()
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