Reconstruction or extension or modification of Allegheny County ALCOSAN Cost Estimates

This spreadsheet will calculate in either "then year dollars" or in "today's dollars" depending on whether an escalated or unescalated cost is entered into D31 and a 1 or 0 is entered into D34 and B69. If a 1 is entered into D34, then D32 and D33 must be filled in for escalation to occur.
The Allegheny County 'Low Projection' base case would use a $3,179 cost entry since it uses escalated Alcosan dollars but includes NO municipality costs. For simplicity, this analysis uses revenue (construction) bonds issued for each year of construction (from 2016 to 2026) rather than for every two years of construction cost as Allegheny County modeled. However, the bonds remain the same in that they are 20 years in life and have a 6.0 percent interest rate with 5% of the initial value (principal) retired each year.

Denote Data Entry Locations for calculations in this spreadsheet>>>>> needed optional
Denote Data Entry in scratchsheet calculations that do NOT affect this spreadsheet>>>>>

All costs in millions of dollars unless noted otherwise

Base Year - Construction Midpoint: 2012 year
Alcosan $1,500
Municipalities $530
Contingency $1,015 50%
Total $3,045

Base cost corrected to Alternate Year Construction Midpoint
Deflate/Inflate to alternate year: 2020
% annual construction inflation: 3.7% — 1.337304 Factor
Total $4,072

Scratchsheet: Calculations in this area are only for user help. These calculations will NOT impact results in this spreadsheet unless they are entered into red boxes.

Total Construction Outlay for calculations on this spreadsheet: $4,072 Million
Base Year of estimate ...or... Construction Cost Midpoint Year: 2020
Annual Construction Cost escalation factor (percent / year): 3.7%
Adjust annual construction costs relative to Base Year C31: 0 1=Yes 0=No

Note: **D32, D33, and D34 are not required entries and may be left blank.** If D32 and D33 have entries and D34 is set to 1, then the spreadsheet will convert any D31 Total Construction Cost estimate from its associated Base Year in D32 by using the inflation rate in D33 into future "Then Year Dollars." However, if D32, D33, and D34 are left blank --or if D34 is set to zero--, then the construction cost escalation adjustment, if any, is simply that already embedded into the D31 estimate and its external "Base Year" estimating assumptions.

Bond Retirement

Bond Interest Rate: 6.00% Bonds are 20-year at the entered interest rate with 5% of the initial value (principal) retired each year.

Added Operating Cost Est - 1998: Alcosan $3.5; Municipal ??; Total $3.5
Normal CPI inflation: 4.00% inflation

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Projected Total Construction Cost in 2020Then Year Dollars																			
Construction cost adjustment relative to Base Year									1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Annual construction outlay									$370	$370	$370	$370	$370	$370	$370	$370	$370	$370	$370
Cumulative Construction cost outlay									$370	$740	$1,111	$1,481	$1,851	$2,221	$2,591	$2,961	$3,332	$3,702	$4,072
Bond Issue and Resulting Value									$370	$352	$333	$315	$296	$278	$259	$241	$222	$204	$185
										$370	$352	$333	$315	$296	$278	$259	$241	$222	$204
											$370	$352	$333	$315	$296	$278	$259	$241	$222
												$370	$352	$333	$315	$296	$278	$259	$241
													$370	$352	$333	$315	$296	$278	$259
														$370	$352	$333	$315	$296	$278
															$370	$352	$333	$315	$296
																$370	$352	$333	$315
																	$370	$352	$333
																		$370	$352
																			$370
Remaining Bond Principal									$370	$722	$1,055	$1,370	$1,666	$1,943	$2,203	$2,443	$2,665	$2,869	$3,054
Bond Retirement Payments										$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
											$19	$19	$19	$19	$19	$19	$19	$19	$19
												$19	$19	$19	$19	$19	$19	$19	$19
													$19	$19	$19	$19	$19	$19	$19
														$19	$19	$19	$19	$19	$19
															$19	$19	$19	$19	$19
																$19	$19	$19	$19
																	$19	$19	$19
																		$19	$19
																			$19
Bond Retirement Cost each Year									$0	$19	$37	$56	$74	$93	$111	$130	$148	$167	$185
Annual Bond Interest									$22	$43	$63	$82	$100	$117	$132	$147	$160	$172	$183
Added Operating Cost in 2008 Dollars for full new plant	$5.18	$0	$0	$0	$0	$0	$0	$0	$1	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10
Total Increased ALCOSAN Annual Cost ($Million)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$22.86	$63.16	$102.41	$140.61	$177.76	$213.86	$248.92	$282.94	$315.93	$347.89	$378.83

Escalate this cost beyond 2008? 1 1=Yes 0=No — ESCALLATION Adj ^^^

Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Cumulative Construction cost outlay	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072	$4,072
Bond Issue and Resulting Value	$167	148	130	111	93	74	56	37	19	0														
	$185	$167	148	130	111	93	74	56	37	19	0													
	$204	$185	$167	148	130	111	93	74	56	37	19	0												
	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0											
	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0										
	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0									
	$278	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0								
	$296	$278	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0							
	$315	$296	$278	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0						
	$333	$315	$296	$278	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0					
	$352	$333	$315	$296	$278	$259	$241	$222	$204	$185	$167	148	130	111	93	74	56	37	19	0				
Remaining Bond Principal	$2,850	$2,647	$2,443	$2,240	$2,036	$1,832	$1,629	$1,425	$1,222	$1,018	$833	$666	$518	$389	$278	$185	$111	$56	$19	$0				
Bond Retirement Payments	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19														
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19													
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19												
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19											
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19										
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19									
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19								
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19							
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19					
	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19				
Bond Retirement Cost each Year	$204	$204	$204	$204	$204	$204	$204	$204	$204	$204	$185	$167	$148	$130	$111	$93	$74	$56	$37	$19	$0	$0	$0	$0
Annual Bond Interest	$171	$159	$147	$134	$122	$110	$98	$86	$73	$61	$50	$40	$31	$23	$17	$11	$7	$3	$1	$0				
Added Operating Cost in 2008 Dollars for full new plant	$11	$11	$12	$12	$13	$13	$14	$14	$15	$16	$16	$17	$17	$18	$19	$20	$20	$21	$22	$23	$24	$25	$26	$27
Total Increased ALCOSAN Annual Cost ($Million)	$385.54	$373.76	$362.00	$350.25	$338.53	$326.82	$315.14	$303.48	$291.83	$280.22	$251.22	$223.37	$196.64	$171.06	$146.61	$123.31	$101.14	$80.12	$60.24	$41.51	$23.92	$24.87	$25.87	$26.90

Base Case estimate of cost impact based on Third Party Review of the Alcosan Regional Long Term Wet Weather Control Concept Plan methodology by using projected number of residential customers in the system.

Residential Customers 294,000
Gallons per Day per Person 50
Persons per Family 2.9
Customers 294,000
Million Gallons 15,560
52,925 Gallons per year per residential customer

vs
Allegheny County est Million Gallons 25,500

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Annual cost increase per homeowner based on 294,000 applicable customers =	$78	$215	$348	$478	$605	$727	$847	$962	$1,075	$1,183	$1,289	$1,311	$1,271	$1,231	$1,191	$1,151	$1,112	$1,072	$1,032	$993	$953	$854	$760	$669	$582	$499	$419	$344	$273	$205	$141	$81	$85	$88	$92

Average from 2016 thru 2026 = $710 — Average from 2016 thru 2044 = $811

Average of key 10 years from 2022 thru 2031= $1,151

Base Case estimate of Allegheny County type cost impact methodology by using overall gallonage use and 62,000 gallons per year for a residential customer.

Base Case Allegheny County calculation of cost impact on homeowners ($MillionAnnualCost x 1000000 / 25.500x10^9 gallons) x 62,000 gal per customer = $MillionAnnualCost x 2.431 = $AnnualCostperHomeowner

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Annual cost Increase per homeowner =	$56	$154	$249	$342	$432	$520	$605	$688	$768	$846	$921	$937	$909	$880	$851	$823	$795	$766	$738	$709	$681	$611	$543	$478	$416	$356	$300	$246	$195	$146	$101	$58	$60	$63	$65

Average from 2016 thru 2026 = $507 — Average from 2016 thru 2044 = $580

Based on $3,179 million in D31 plus escalation = 1 in B69, this $455 result compares with $425 on Page 30 of Allegheny County assessment!

The first thirty pages of Allegheny County's ALCOSAN Consumer Cost Projection, titled "Review of the Allegheny County Sanitary Authority (April 2, 2009) and found at www.alcosancost.com/alegpluspltcostandaudit2009.pdf, are well worth reading. They are a surprisingly well written and comprehensive County summary of the ALCOSAN issue. Moreover, a detailed assessment and a homeowner cost impact summary of the ALCOSAN proposed effort are included (Page 30).

However, the cost analysis has three key shortcomings which understate consumer impact. First: the 50 percent construction cost contingency is not included in the Low Projection case (Page 26). Second: the municipal sewer construction adjunct --which can be nearly as expensive as the ALCOSAN component-- is not included in the cost impact calculations (Page 30). Third: the resulting impact projections are averaged "then year" costs encompassing a 29-year period of: escalation, construction, financing, and bond repayment (Page 45). Thus, the projected actual homeowner cost increases are significantly understated since some major cost components are NOT included.

Nonetheless, the County's "Low Projection" case on its Page 30 --which did include conversations with ALCOSAN-- still indicates a $425 cost increase per homeowner; the worst case, a $3,104 cost increase per homeowner. However, these two published homeowner impacts are the average of a 'saw tooth' year-by-year cost impact coupled with a somewhat low residential use estimate. Thus, the actual homeowner cost impact at the end of ALCOSAN construction would be at least double these Allegheny County projections. A special summary of this Allegheny County estimate can be viewed and downloaded as a one page PDF (1 meg).

Moreover, this allegctyalcosancost.xls MSExcel spreadsheet allows user analysis or modification. This reconstruction can also be viewed as a PDF. This tool also enables users to add related municipal construction and operating costs ...and... to make projections in either "then year" or "today's dollars". The results estimate homeowner cost increases using the analysis assumptions embedded the Allegheny County assessment of ALCOSAN costs. The resulting County's "Low Projection" case is consistent with the 'Alcosan $3 Billion Settlement' analysis on the Main Page of the www.alcosancost.com site.

January 29, 2010 Extended calculations: October 14, 2011

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