The Present, the Future, (and Annual) Costs

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Highway Budget Cost Per Mile (2014)

Level	$ per CL mile	Quartile Range
Towns	~$14,000	$10-20,000
Counties	~$35,000	$26-46,000
Villages	~$31,000	$21-45,000
Cities (not NYC)	~$37,000	$30-54,000

Pave NY (2016)

Type	2016-17
NYC	$19,623,829.60
Counties	$34,078,766.02
Cities	$9,307,004.71
Towns	$29,732,511.81
Villages	$7,257,887.85
Statewide Total	**$100,000,000.00**

Economic Indicators

Benefit/Cost Ratio (B/C)	Benefit/Cost (B/C)
Net Present Value (NPV)	Present Value (P)
Equivalent Uniform Annual Costs (EUAC)	Annual Value (A)

Engineering Economic Formulas (Excel Equivalent)

$(P\|F,i,n)\ P = F \times (1+i)^{-n}$	n.a.
$(F\|P,i,n)\ F = P \times (1+i)^{n}$	n.a.
$(P\|A,i,n)\ P = A \times \frac{(1+i)^{n}-1}{i(1+i)^{n}}$	=-PV(i,n,A)
$(A\|P,i,n)\ A = P \times \frac{i(1+i)^{n}}{(1+i)^{n}-1}$	=-PMT(i,n,P)
$(F\|A,i,n)\ F = A \times \frac{(1+i)^{n}-1}{i}$	=-FV(i,n,A)
$(A\|F,i,n)\ A = F \times \frac{i}{(1+i)^{n}-1}$	=-PMT(i,n,P,F) (use 0 for P)
Cost series over time	=-XNPV(i,P0 & Fj,nj) Initial cost → P_0 Future cost → F_j at date n_j

Notes

Resources:

Life-Cycle Cost Analysis in Pavement Design
Pavement Division, HNG-40
Office of Engineering — FHWA
400 7th Street SW, Washington, DC 20590
September 1998
isddc.dot.gov/OLPFiles/FHWA/013017.pdf

Life-Cycle Cost Primer
FHWA, Office of Asset Management,
1200 New Jersey Avenue, SE
Washington, DC 20590 USA
isddc.dot.gov/OLPFiles/FHWA/010621.pdf

CPI – Consumer Price Index
http://www.bls.gov/cpi/cpid1406.pdf
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Principles of Engineering Economic Analysis
6th edition
John White, Kenneth Case, and David Pratt
John Wiley and Sons, NY, 2012

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Running Your Highway Department
www.clrp.cornell.edu/workshops/managing.html

PPI – Producer Price Index
http://www.bls.gov/ppi/data.htm