

Methodology of the Street and Parking Facility Lighting Retrofit Financial Analysis Tool

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The Street and Parking Facility Retrofit Financial Analysis Tool provides an avenue for analysis of the costs and benefits from street and parking facility lighting efficiency projects.

The tool utilizes life-cycle cost (LCC) analysis¹, which tracks costs and benefits throughout a specific analysis period, while discounting future cash flows to present value, using a user-specified discount rate. The use of such discounting captures the time value of money. The output metric most typically associated with LCC analysis is the [net present value](#), or NPV, which compares the life-cycle cost of potential retrofit equipment to that of the existing, or base-case, equipment.

Components of the LCC analysis for each project include:

- Capital costs, net of rebates (including discounted capital costs, if a project's implementation is to occur over multiple years)
- Present values of annual electricity costs, for both base and retrofit cases
- Present values of annual maintenance costs, for both base and retrofit cases.

The tool also provides (among other outputs) a common non-discounted financial metric, [simple payback](#) (the number of years required for savings to offset initial outlays), as well as the [internal rate of return](#) (IRR), which is the discount rate at which the NPV is zero.

Other outputs reported include:

- Annual energy and energy-cost savings
- Annual greenhouse gas reductions
- Up to 15 years of detailed annual cash flow data
- Average annualized energy and maintenance savings per fixture.

¹ For a detailed overview of life-cycle cost analysis, see: Fuller, Sieglinde K., and Stephen R. Petersen. 1996. [Life-Cycle Costing Manual for the Federal Energy Management Program](#). NIST Handbook 135, National Institute of Standards and Technology, Washington DC.