

Life Expectancy for Solar, Wind and Gas Facilities

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The table below outlines the IESO's current estimates for service lives of gas, wind and solar facilities. The expected service lives depend on a number of factors such as the initial design & build, how they were operated, (operating hours and starts, etc.), and the maintenance program throughout their lives.

The facilities under the IESO contracts are expected to manage their costs to meet contract obligations. Generators would need to undertake a cost/benefit assessment to determine whether there will be sufficient return from continuing to operate the facility. While some elements such as land, foundations, electrical integration etc. can last for significantly extended periods, operating facilities beyond their contract lives will likely require new capital investment for the majority of key equipment components. As facilities age, operating expenses could increase, while reliability and output deteriorate and the decision to operate beyond the contract term may require investment in new components before the end of the contract. This decision needs to consider whether the additional expenses will be recouped in the evolving markets at that time. Some recent examples are the NUGs where some decided to shut down after contract expiry, while others were able to be re-contracted, re-invest and continue operating to pay for those investments and an ROI. These decisions will be made by the owners at the end of the contract period for each facility.

In the 2016 Ontario Planning Outlook (OPO), for costing purposes only, it was assumed that the service lives could be extended beyond their original contract term based on additional investments and ongoing costs. This was not an assessment of the cost/benefits or a prediction of what the generators would actually do at the end of their contracts

Technology	Contract Life (yrs)	Expected Service Life (yrs)	Source	Notes & OPO Assumptions for Life Extension
Gas – CCGT, SCGT, CHP	20	Up to 30 years	Based on Consultant report (2015) and actual experience	- OPO assumed 10 year additional life costing about 36% of fixed contract costs (20% points for ongoing operations (indexed to CPI) plus 16% points for new capital investment) - Life varies with initial design and how it is operated & maintained - Without additional investment plant performance would tend to deteriorate beyond contract life which would put expected market revenues (Energy and Capacity) at risk.
Wind	20	Up to 30 years	Based on Consultant report (2014) and actual experience	- OPO assumed competitively based LRP 1 rates after contract expiry which implies new capital investment equal to the LRP to pay for the additional years of operation. - ~60 % to 75% of the capital cost is associated with components that are expected to reach end of life at end of contract term. Elements such as land, foundations, electrical integration etc. can last longer. - Older technologies may deteriorate faster
Solar	20	Up to 30 years	Based on Consultant report (2014) and actual experience	- OPO assumed competitively based LRP 1 rates after contract expiry which implies new capital investment equal to the LRP to pay for the additional years of operation. - Performance deteriorates to about 80% by end of contract. Some facilities built in the initial contract periods may deteriorate more and faster than current technologies but the technology is improving quite rapidly as well and new equipment may be much more efficient and cost effective. - Facilities components need to be replaced over a variety of years (5 to 30 years).