The efficiency of photovoltaic solar cells are constrained by several fundamental losses which are well known and pertain to ideal conditions where entropy generation is minimal. However all practical devices operate under sub-optimal conditions which means the configuration that arises from an ideal analysis will no longer represent the optimum configuration. A straightforward example is that of the optimal band-gap of a solar cell, where Shockley and Queisser showed that the optimum band-gap in the radiative limit differs from that in the presence of non-radiative losses. In the context of the intermediate band solar cell, we have shown that the optimum configuration under less than maximally concentrated sunlight is best achieved with an energy dissipation step of up to 270meV internally. This phenomenon has been termed a photon-ratchet and has recently been implemented in electronic systems where the ratchet energy states are separated either spatially or by spin.