Minimum economic and ecological benefits*** of flexible operation of large-scale heat pumps — Figure 18

Fraunhofer IEG based on Fraunhofer ISI et al. (2022b) assuming a constant COP of 3.0 * Corresponds to the economically optimised operation of the T45-Electricity scenario with low full load hours. ** Heat generation from the large-scale heat pump matches immediate heat demand (no use of heat storage). The maximum heat generation of the large-scale heat pump is limited so that 6 000 full load hours occur over the year. Assuming that the hourly wholesale prices and CO_2 emission factors on the electricity market do not change as a result of the change in the operating mode of the large-scale heat pump. *** Electricity price and CO_2 emission factor for operation under high load apply only to the first marginal unit. With each additional unit that switches from flexible operation to high-load operation, the price of electricity (and the CO_2 emission factor) increases, because increasingly expensive (and CO_2-intensive) electricity generation plants are needed to meet the additional demand.