CIRED
ROME, ITALY
12-15 JUNE 2023

10697 – Incentive scheme for efficient grid utilization and use of flexibility services

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The Swedish Energy Markets Inspectorate (Ei) determines a revenue cap for each DSO/TSO for a regulatory period (RP) of four years. The regulation, illustrated in Figure 1, will undergo changes from 2024. This paper focuses on how incentives for use of flexibility services can be strengthened in the revenue cap regulation and intended changes in the incentive scheme for efficient grid utilization.

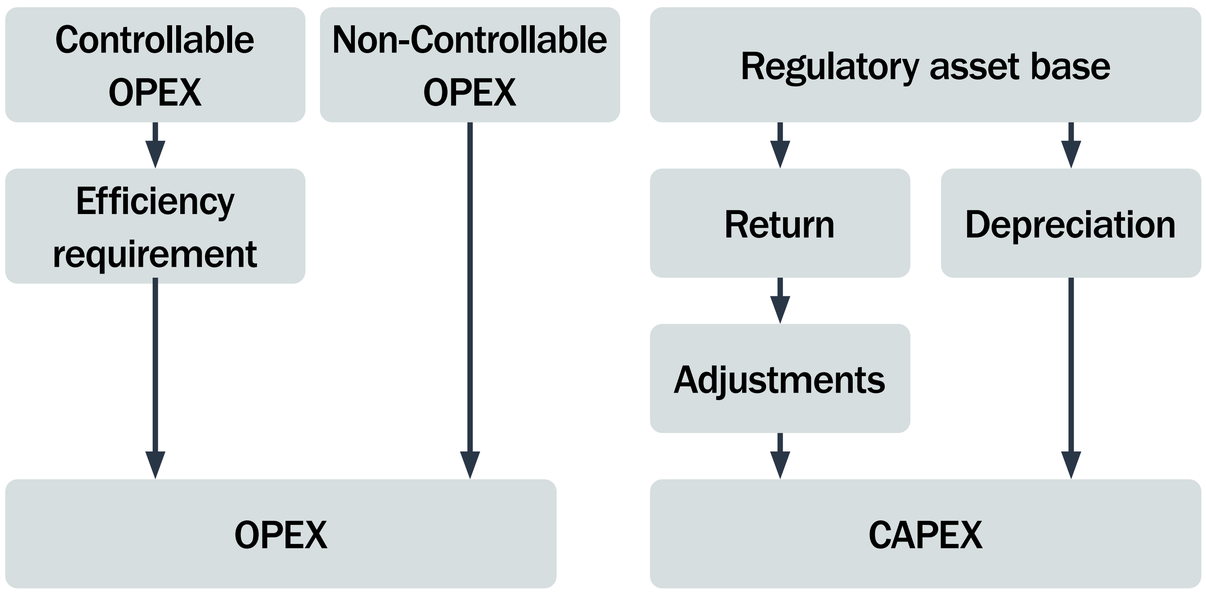

Figure 1 – Overview of the Swedish revenue cap regulation in current RP 2020-2023

Intended changes to strengthen incentives

Strengthening the incentives for efficient grid utilization and the use of flexibility services by:

1. providing more balanced incentives for cost-efficient solutions in the revenue cap model as a whole, as well as
2. improving the existing load flow incentive, providing a performance-based incentive to reduce the peak load and even out the load.

Feasible revenue cap model improvements

Identified economic barriers in the revenue cap regulation for DSO's use of flexibility services:

- Bias towards CAPEX
- Lag in recovery of controllable OPEX

Striving for a regulation with more neutrality in the choice between traditional investments and flexibility services, some possible improvements have been identified:

- Introducing an efficiency requirement on both CAPEX and OPEX.
- Recovery of controllable OPEX based on forecasted costs before the RP and replaced with actual costs after the RP.

Load flow incentive

A reduced peak load can lead to postponed, reduced or even avoided grid investments, but also reduced costs to overlying grids.

This incentive can be summarized as:

$$C_{i,y} = (i_{outcome,y} - i_{norm}) \times C_{feed\text{-}in,y}$$

The load flow incentive equals the difference between the yearly outcome and a norm (own history) for an indicator (i) multiplied by the feed-in costs (e.g. overlying grids) $C_{feed\text{-}in,y}$.

In the current load flow incentive, average load factor ($\mathrm{L}f$) is used as indicator:

$$Lf = \frac{\sum_{d=1}^{D} Lf_{day,d}}{D}$$

where the daily load factors $(Lf_{\mathrm{day,d}})$ is the average hourly power divided by the maximum hourly power during the actual day d and D is the number of days during a period (e.g. a year).

This incentive is intended to undergo changes from 2024 so that the current indicator Lf is replaced by the indicator load factor (η):

$$\eta = \frac{P_{average}}{P_{max,4}}$$

$P_{average}$ is the yearly average power and $P_{max,4}$ is the average of the four highest peak load hours (power) during a year (separate days).

Concluding remarks

Ei has not yet taken any decisions on the methods for calculating the revenue caps for RP 2024-2027 and onwards. Further analysis of the development of the methods, from different perspectives, are ongoing.