

NECESSITY AND EFFICIENCY OF CAPACITY REMUNERATION MECHANISMS: LESSONS LEARNED FROM INTERNATIONAL EXPERIENCES FOR THE DUTCH POWER MARKET

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Extended Abstract

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Abstract Summary

The Dutch electricity system is currently undergoing a transformative energy transition characterized by a rapid increase in variable renewable energy (VRE), a mandatory national coal phase-out by 2029, and surging demand driven by cross-sector electrification. This shift significantly elevates adequacy risks; projections by the Transmission System Operator, TenneT, indicate that the Loss of Load Expectation (LOLE) could exceed national limits by a factor of three by 2033. In response, the Dutch government is evaluating whether to supplement its current energy-only market (EOM) with Capacity Remuneration Mechanisms (CRMs) to address the "missing money" problem and ensure long-term reliability of supply.

This paper investigates the necessity and efficiency of implementing CRMs in the Netherlands, specifically examining which designs are most suitable for a market with increasing VRE integration. The research methodology is threefold: first, it provides a qualitative definition of various CRM types, including strategic reserves, market-wide capacity auctions, and reliability options. Second, it performs a descriptive statistical comparison of 13 European nations (including 11 EU Member States, the UK, and Norway) that have already implemented CRMs to identify structural parallels with the Dutch landscape. Finally, the study tests two primary hypotheses: (1) that CRMs successfully attract higher levels of investment in firm capacity additions, and (2) that CRMs are necessary for the profitability of thermal power plants that would otherwise be non-viable in an EOM.

Utilizing data from ENTSO-E, the Centraal Bureau voor de Statistiek (CBS), and EPEX SPOT, the study analyzes historical capacity trends and the profitability of dispatchable generation. While research is ongoing, preliminary results indicate notable differences in investment behavior across market designs. The final results, which will be finalized come

September, will provide essential policy recommendations for the Dutch market design and contribute to the broader literature on grid security in high-VRE systems.

Presenting Author Biography

My name is Thomas-Alexandre Jolicoeur. I'm a first year PhD at Groningen University's Faculty of Economics and Business. Prof. dr. Machiel Mulder is my supervisor.