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Implicit Demand-Side Response in EV Modelling for Strategic Energy Planning: Assumptions, Technical Limits and Policy Implications

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Extended Abstract

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Abstract Summary

Accurate representation of implicit demand-side response (iDSR) from the transportation sector is increasingly critical in power system planning. This study analyses how different official planning processes treat iDSR from electric vehicles (EVs), doing a case study for assumptions used in the Austrian Network Infrastructure Plan process (ÖNIP), the Austrian component of the Ten-Year Network Development Plan 2024 (TYNDP 2024), and the European Resource Adequacy Assessment 2025 (ERAA 2025) were compared to a probabilistic, behavior-based EV model. The objective is to highlight the technical limits of flexibility from EVs, quantify the sensitivity of modelling assumptions, and derive implications for policy instruments such as capacity mechanisms and the Flexibility Needs Assessment (FNA)

Presenting Author Biography

Thomas Vouk, Dipl.-Ing., is a research associate at the Chair of Integrated Energy Systems, Technical University of Leoben (since 2022). After completing his M.Sc. in Energy Engineering in 2024, he began doctoral studies on modeling multi energy systems, focusing on system flexibilities and pathways to climate neutrality. He has contributed to R&D projects, including the Integrated Austrian Network Development Plan (ÖNIP) and the FFG project “Storage Potentials in Austria for 2030 and 2040,” where he studies scenario modeling for DSOs. He also co-developed for the Austrian EV modeling for ERAA2025.