Record Nr. UNINA9910726287303321 Autore Tróndheim Helma Maria Titolo Ensuring Supply Reliability and Grid Stability in a 100% Renewable Electricity Sector in the Faroe Islands / / by Helma Maria Tróndheim Cham:,: Springer Nature Switzerland:,: Imprint: Springer,, 2023 Pubbl/distr/stampa **ISBN** 9783031283680 9783031283673 Edizione [1st ed. 2023.] Descrizione fisica 1 online resource (221 pages) Collana Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5061 321.319 Disciplina Soggetti Electric power distribution Power resources Automatic control **Energy Grids and Networks** Natural Resource and Energy Economics Control and Systems Theory Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Introduction -- Expansion Planning and Theory -- Optimisation of the Future Power System -- 100by2030 Roadmap -- Power Systems Regulation and Modeling Theory -- Faroese Power System Power Factory Model -- Dynamic Studies of the Power System on Suðuroy --

Conclusion. Sommario/riassunto

This book offers a comprehensive study concerning the reliability of renewable electricity production in the Faroe Islands. The first part reports on a RoadMap with investments in generation, storage and transmission capacity. Multiple scenarios, considering different technologies, are analysed. Practical constraints like the local resource potential, power plant locations and sizes are discussed, as well as the potential of tidal power. The second part of the book describes dynamic simulations studies carried out to investigate grid stability of the power system on the isolated island of Suðuroy. The available information about governor and automatic voltage regulators of the synchronous generators was very limited, therefore different

approaches were combined to parameterise and validate the dynamic models. All in all, this book offers extensive information concerning the transition of the Faroese power system into a 100% renewable system. It is practice-oriented, and describes methods that can be applied to other power systems as well.