

Optimization model for design and analysis of an integrated renewable hydrogen system
(IRHS): Application to Korea hydrogen economy

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This study presents a framework for the design and assessment of a renewable energy sources (RES) based hydrogen supply system. We first generate an integrated renewable hydrogen system (IRHS), which includes various types of RES and hydrogen technologies such as production, storage and transportation. We develop then a multi period deterministic optimization model for the IRHS using mixed integer linear programming (MILP) technique. The proposed model determines the optimal configuration and operational strategy of IRHS. The capability of the proposed model is illustrated through the application to design problem of the future Korea hydrogen economy. We also perform the sensitivity analysis to identify the major parameters on the required cost of the underlying energy system.