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Review and Outlook on Energy Transition

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Abstract

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Abstract:

The global shift away from fossil fuel-based electricity generation to resources such as wind and solar photovoltaic (PV) generation, electric vehicles and building electrification, and the increasing usage of energy storage, are critical enablers of the global energy transition now underway. Utilities are faced with various generation sources given the growth of renewable and must consider developing a new business model to enable an efficient delivery system. Intermittent generation (PV and wind energy) as well as distributed energy resources (DER) may well prove to be the single most disruptive and transformational influence in the history of the electric grid. The proposed work highlights transformation business models for electric utilities to manage the modern resilient grid maximizing decarbonization employing a large number of DER.

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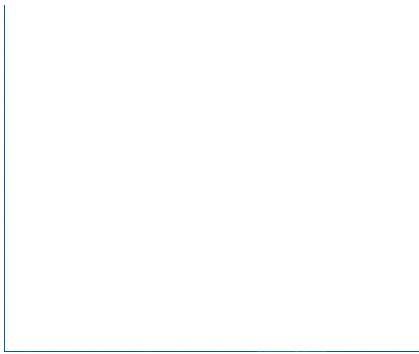


I. Introduction

Techno-economic advances are desired to decrease carbon emissions in the power sector [1– 2]. Regardless of economically feasible and scalable renewable-based solutions accessible for around two-thirds of the global power supply, population growing and intensifying energy demand could outperform energy decarbonization without urgent investments in research and development. International Renewable Energy Agency (IRENA) inspects the elementary constraints vital to cultivate innovation and yield novel technologies for future low-carbon power system.

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