

Distributed Generation, Storage, Demand Response, and Energy Efficiency as Alternatives to Grid Capacity Enhancement

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Rahmatallah Poudineh and Tooraj Jamasb

Abstract

The need for investment in capital intensive electricity networks is on the rise in many countries. A major advantage of distributed resources is their potential for deferring investments in distribution network capacity. However, utilizing the full benefits of these resources requires addressing several technical, economic and regulatory challenges. A significant barrier pertains to the lack of an efficient market mechanism that enables this concept and also is consistent with business model of distribution companies under an unbundled power sector paradigm. This paper proposes a market-oriented approach termed as “contract for deferral scheme” (CDS). The scheme outlines how an economically efficient portfolio of distributed generation, storage, demand response and energy efficiency can be integrated as network resources to reduce the need for grid capacity and defer demand driven network investments.

Keywords: Distributed generation, storage, demand response, investment deferral, network regulation, business model.

JEL Classification L43, L51, L52, L94

Contact Tooraj Jamasb
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