

At A Glance

Electricity Transmission and Distribution Tariff Design

Introduction

Transmission and distribution networks play a vital role in facilitating competition and trade in electricity and providing the infrastructure needed to move electricity from where it is produced to where it is consumed. Their importance will increase in the coming years, as renewable generation in more remote locations requires an expanded transmission grid, including subsea networks to connect offshore generation in some jurisdictions. Transmission and distribution systems will also face significant investment requirements linked to decarbonization policies and the emergence of new technologies like electric vehicles. Against this background, the design of regulated tariffs (or “rates”) that customers and generators pay to use transmission and distribution grids is important for recovering network companies’ costs and signaling network costs to users. If well designed, transmission and distribution tariffs can save customers money by encouraging consumption and generation at times and in locations where the costs of transporting it to end users is lowest.

Tariff design also determines the distribution of costs among customers. Because electricity networks are natural monopolies, much of their costs are invariant to changes in network use, so policymakers face choices on how to mark up tariffs that reflect “marginal” costs to recover network companies’ total regulated costs of service. These judgments will become more challenging as new technologies allow more customers to change their patterns of production and consumption in response to network tariffs.

Client Experience

NERA has supported clients on these topics in a wide variety of jurisdictions.

In the **United States** and **Canada**, NERA has a long track record of supporting electricity distribution utilities on designing cost-reflective rates. NERA advises clients on tariff design issues ranging from formulating pricing strategy and developing innovative tariff solutions to detailed analyses of the building blocks on which tariff policy is based (e.g., studies of marginal costs, bill impacts, and customer response to new tariffs). We have supported

electricity distribution utilities in all US states and Canadian provinces. Our clients include Consolidated Edison, Dominion Energy, Duke Energy, Florida Power & Light, Georgia Power Company, the Los Angeles Department of Power and Water, Pacific Gas & Electric, the Tennessee Valley Authority, Hydro-Québec, Hydro One (Ontario), and hundreds of others.

In the **United Kingdom**, NERA has supported various market participants on designing and reforming Transmission Network Use of System (TNUoS) charges since



NERA provides a range of services to utilities, regulators, and governments on designing transmission and distribution tariffs

Across all the areas listed in this table, our work has increasingly focused on how tariffs should reflect the costs of accommodating renewable electricity generation technologies, embedded generation, electricity storage technologies, and electric vehicles in the power network.

<p>Transmission infrastructure charges: NERA supports utilities, regulators, and market participants (e.g., generators) on the design and reform of transmission infrastructure charges, advising on alternative structures for allocating costs between users, and encouraging efficient use and development of networks.</p>	<p>Mechanisms to allocate network congestion costs and losses: Part of the costs of transporting electricity are electrical losses and congestion costs that arise when networks are constrained. NERA advises on mechanisms to recover these costs and the interactions with other aspects of power trading arrangements, such as zonal or nodal pricing.</p>	<p>Distribution tariffs (utility rates) to signal marginal costs: NERA's methods for estimating marginal costs set the industry standard in the US when marginal cost pricing was introduced in the late 1970s. Our methods have been continually updated and enhanced, incorporating more rigorous techniques for capturing time-of-use and geographic differences in costs, estimating short-run costs, and providing a sound basis for efficient delivery tariffs as well as charges for bundled service. NERA continues to advise clients on tariff design and pricing strategy.</p>
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the 1990s, and we continue to work on the TNUoS reforms currently being considered by the regulator (Ofgem). Our recent clients include the Association for Decentralised Energy (ADE), RWE, and RenewableUK. We also supported the UK Competition and Markets Authority (CMA) on the introduction of zonal transmission loss factors.

In **Spain**, NERA has supported a major utility in discussions with the Ministry for the Ecological Transition around reforming the access tariff methodology, specifically in the design of the tariff component meant to recover costs not directly related with electricity supply ("cargos"), with the objective of promoting electrification in transport and heating.

In **New Zealand**, we have supported Meridian Energy on reforming the transmissions pricing methodology (TPM), which has included considering long-run marginal cost (LRMC) and "Beneficiary Pays" methodologies.

In the **Arabian Gulf**, NERA is supporting the Gulf Cooperation Council Interconnection Authority (GCCIA) on the development of a new "Beneficiary Pays" transmission

pricing regime. NERA is also supporting the Water and Electricity Regulatory Authority (WERA) on designing new electricity market arrangements, including a Transmission Use of System (TUoS) methodology, and methods for pricing System ("Ancillary") Services.

About NERA

NERA Economic Consulting (www.nera.com) is a global firm of experts dedicated to applying economic, finance, and quantitative principles to complex business and legal challenges. For over half a century, NERA's economists have been creating strategies, studies, reports, expert testimony, and policy recommendations for government authorities and the world's leading law firms and corporations. With its main office in New York City, NERA serves clients from major cities across North America, Europe, and Asia Pacific.

Contact

For more information or to contact our experts, please visit www.experts.nera.com/electricity.