

# ARTÍCULO PARA EL DEBATE CIENTÍFICO



## Optimal transmission tariff regulation for the Southern Baja-Californian electricity network system\*

Rubí Espinosa<sup>a</sup> ▪ Juan Rosellón<sup>b,c</sup>

### Abstract

The tariff imposed over the use of electricity transmission networks is one critical factor to achieve efficiency in electricity markets. In Mexico, the current transmission network tariffs are based on long run marginal costs. We propose an incentive price-cap mechanism and apply it to the meshed network system in the isolated electricity system of Southern Baja California, Mexico. We further compare the current transmission tariffs set by the Mexican regulator (CRE) with the tariffs resulting from our regulatory scheme. We show that our mechanism prices the network at tariffs rendering superior welfare compared to the tariffs determined by Mexican authorities.

**Key words:** Financial transmission rights, nodal prices, congestion management, electricity, Mexico.

**JEL Classification:** L50, L94, Q40.

---

Manuscript received on January 1st, 2017; accepted on March 23rd, 2017.

\* We are grateful for the much valuable help on data recollection by the Centro Nacional de Control de Energía (CENACE) and the Subsecretaría de Electricidad at the Secretaría de Energía (SENER). We also thank Roberto Carlos Ordóñez for very able research assistantship. Juan Rosellón further acknowledges support from project no. 232743 from the SENER-Consejo Nacional de Ciencia y Tecnología-Fondo de Sustentabilidad Energética, the Center for Energy Studies at Rice University, and the USC Price School.

- a Centro de Investigación y Docencia Económicas (CIDE), Department of Economics (Mexico).
- b CIDE, Department of Economics (Mexico); German Institute for Economic Research (DIW Berlin), Department of Energy, Transportation, Environment (Berlin), and Universidad Panamericana, Campus México, School of Economic and Administrative Sciences (Mexico).
- c Corresponding author: jrosellon@diw.de and juan.rosellon@cide.edu

© 2017 Universidad Nacional Autónoma de México, Facultad de Economía. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Resumen

La tarifa impuesta sobre el uso de la red de transmisión eléctrica es un factor crítico para lograr la eficiencia en los mercados de electricidad. En México, las tarifas vigentes se basan en costos marginales de largo plazo. Proponemos un mecanismo de precios máximos que generen incentivos a la inversión y lo aplicamos al sistema eléctrico aislado de Baja California Sur. Además, comparamos las tarifas actuales de transmisión establecidas por el regulador mexicano (CRE) con las tarifas resultantes de nuestro esquema regulatorio. Demostramos que nuestro mecanismo de precios proporciona un bienestar superior en comparación con las tarifas determinadas por la autoridad mexicana en la red de transmisión eléctrica.

**Palabras claves:** derechos financieros de transmisión, precios nodales, electricidad, gestión de la congestión, inversión.

**Clasificación JEL:** L50, L94, Q40.

### INTRODUCTION

One key objective in an electricity market is to achieve economic efficiency in the provision of its various services and products<sup>1</sup>. However, factors hindering this goal include incomplete markets, increasing trade of electricity among control areas, construction of new generating capacity that exceeds network capacity of the network, scarce operation and maintenance, poorly defined property rights, as well as lack of investment for expanding transmission networks. In last years, different authors have deepened into the study of electricity transmission expansion. The aim has been to find the optimal determination of network pricing and corresponding adequate regulation. This approach has gained importance, both in theory and practice, due to the liberalization processes in several electricity systems that prioritize vertical separation and unbundling of electricity generation and transmission, together with independent system operators (ISOs). The aim has been to create highly competitive electricity markets that facilitate timely infrastructure investment. Electricity transmission-network pricing is further especially important for generation supply companies to reach optimal efficient supply.

Mexico is currently opening its electricity industry to private investment in new generation and transmission projects so as to provide cheaper and more reliable electricity services to consumers<sup>2</sup>. This is being carried out through

---

1 See Hogan (2002) and Hunt (2002).

2 See Secretaría de Gobernación (2016).

Download English Version:

<https://daneshyari.com/en/article/7355873>

Download Persian Version:

<https://daneshyari.com/article/7355873>

[Daneshyari.com](https://daneshyari.com)