24 April 2024

Commerce Commission
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Submission to the Commerce Commission on *CEPA EDB Productivity Study*

Electricity Networks Aotearoa (ENA) appreciates the opportunity to submit to the Commerce Commission (Commission) on the CEPA EDB Productivity Study (the CEPA report).

ENA is the industry membership body that represents the 27 electricity distribution businesses (EDBs) that take power from the national grid and deliver it to homes and businesses across the motu. ENA harnesses members' collective expertise to promote safe, reliable, and affordable power for our members' customers.

CEPA highlights the inherent limitations of productivity studies

The CEPA report dedicates a whole chapter to the limitations and challenges of quantitative productivity studies. CEPA highlighted their restricted applicability and usefulness to complex industries such as electricity distribution. In industries such as these, the multiple services delivered cannot be effectively aggregated into a small number of output variables.

While the CEPA study may be of use for academic purposes, ENA believes that the heavily caveated study should not form the basis for material regulatory interventions such as the arbitrary application of a productivity factor to expenditure allowances under the Part 4 regulatory regime.

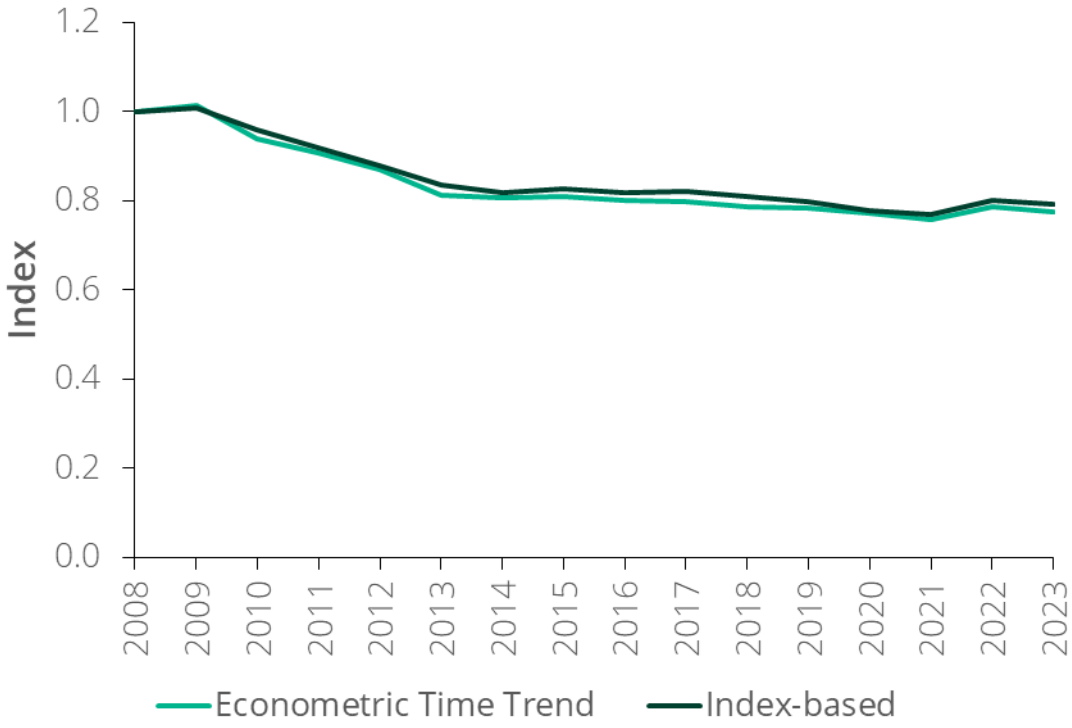
EDB productivity stable for the last decade

Setting aside the material and critical shortcomings inherent in the measurement of productivity in a complex sector such as electricity distribution, CEPA's analysis shows that EDB productivity has remained stable for the past decade (post-2014) using both the index and econometric approaches.

The CEPA modelling suggests that total factor productivity for non-exempt EDBs has only reduced by 0.5% post-2014. CEPA's econometric modelling produced similar results, shown in Figure 1 below[1].

[1] In creating this figure the ENA corrects an error in the CEPA calculation whereby the econometric time trend for a year is calculated by subtracting the estimated coefficient for the year (the impact on log opex relative to the base year 2008) from the econometric time trend for 2008 (set to be 1). The correct approach is to calculate the time trend by dividing one by the inverse log of the coefficient.

Figure 1: Corrected Figure 14 of the CEPA report



Source: ENA update of CEPA analysis

CEPA findings support the retention of a 0% productivity factor in the DPP

ENA agrees with CEPA that its findings do not provide conclusive evidence that productivity has declined. The CEPA report, with all its included caveats, found that EDB productivity over the past decade has not materially declined. There is no evidence in the report that supports a change to the 0% opex partial productivity factor.

Therefore, the Commission should retain the 0% opex partial productivity factor which it adopted for both Default Price Path (DDP) three and DPP2.

EDBs' complex operating environment is not captured in CEPA's technical productivity models

As noted above, the CEPA report does a good job of highlighting and identifying some of the challenges in selecting inputs and outputs that influence the estimated productivity of EDBs. Specifically, CEPA notes that *EDBs have changed their output in various ways that are not captured in this study. For example, EDBs may have changed their work practices, resulting in fewer workplace injuries or deaths. This is a social benefit that is not being captured here*.[2]

CEPA's analysis does not adequately account for important factors that should be controlled for in the modelling, including reliability and operating environmental factors, (such as the share of underground assets). The analysis also fails to reflect on changes in the industry that may explain the apparent deterioration in productivity. Core among these changes are the costs

[2] Cambridge Economic Policy Associates (CEPA), 2024, EDB Productivity Study: A report prepared for the Commerce Commission (p. 60).

prudently and efficiently incurred by EDBs which are not related to the measured outputs in the CEPA report. The two most material of these costs are:

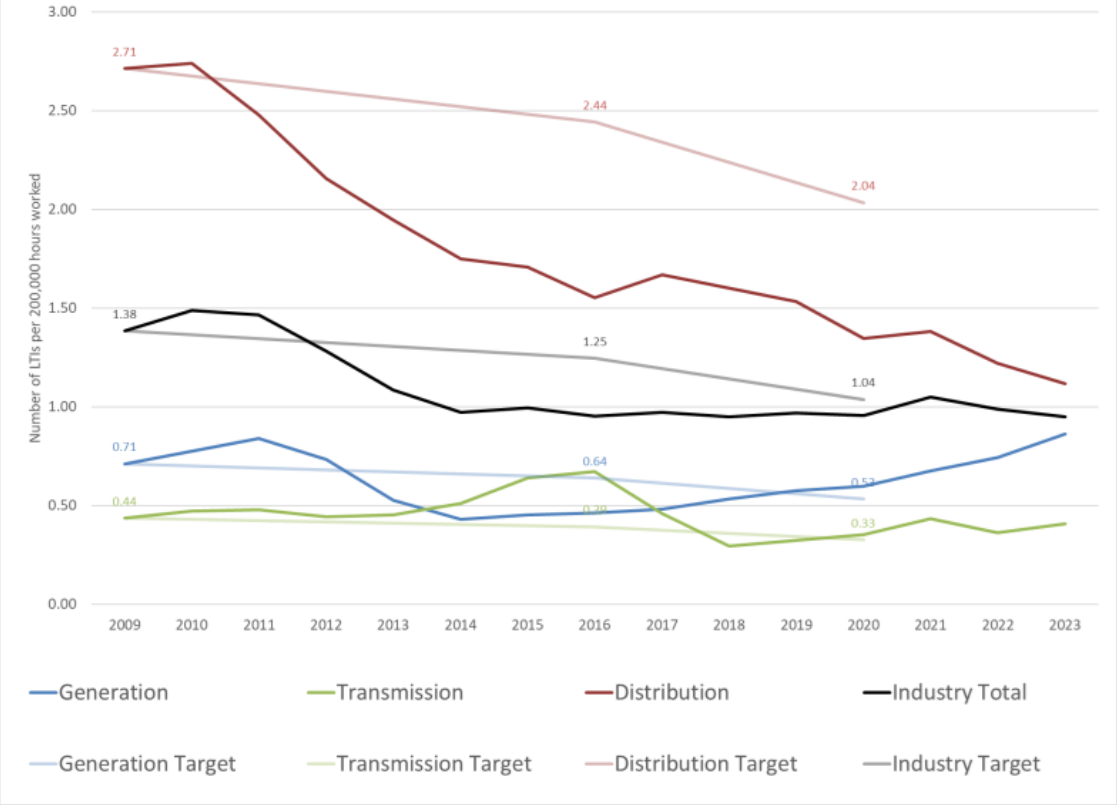
1. Traffic management costs, which have grown to such an extent that they commonly comprise more than 15% of total project costs.
2. Regulatory and other compliance costs.

EDBs rightfully take pride in their achievements in ensuring the safety of all their employees, ensuring they return home safely every day. In 2013 the Government set a national target of reducing fatal and serious non-fatal work-related injuries by 10% by 2016 and 25% by 2020.[3]

Data from the Electricity Engineers Association (see Figure 2) shows that EDBs significantly outperform this target and achieved a 46% reduction in their Lost Time Injury Frequency Rate (LTIFR) by 2020. Since 2020 EDBs have continued to deliver reductions in LTIRF, with the most recent figures (2022/23) showing EDB's LITRs have more than halved over the period covered by the CEPA study.

The vast improvement in this critical health and safety outcome will be reflected in CEPA's analysis through an increase in the opex incurred by EDBs, but will not increase any of the outputs used by CEPA to measure changes in EDB productivity. Consequently, the improvement in health and safety outcomes to reflect rising industry standards (an unambiguously positive outcome) shows up in CEPA's analysis as a decline in productivity.

Figure 1 LTIFR Trends (three-year moving averages) per 200,000 hours worked



[3] WorkSafe New Zealand, 2017, Towards 2020: Progress towards the 2020 work-related injury reduction target (p. 4).

Source: EEA, Electricity Supply Industry Safety Performance Indicators Report Reporting period: 1 July 2022 - 30 June 2023.

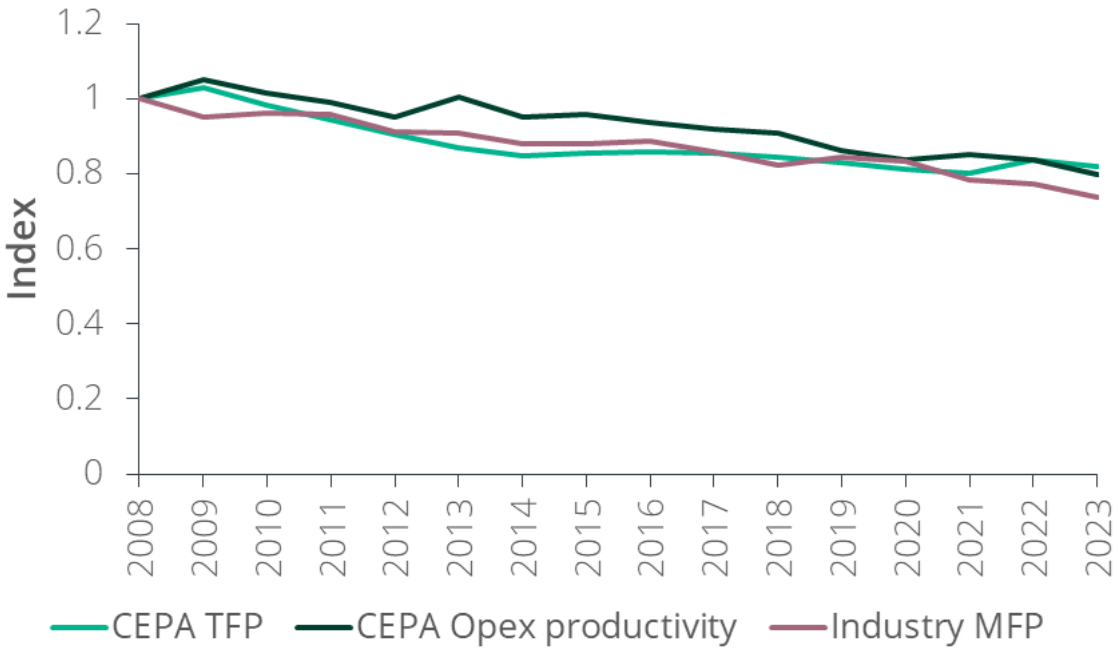
This simply indicates that the costs that EDBs must incur in order to operate their networks safely is increasing over time. It does not provide any evidence of a decline in EDB efficiency.

EDB productivity must be seen in the context of broader New Zealand productivity trends

The slight decline in EDB efficiency post-2014, identified in the CEPA analysis, should not be considered in isolation, or divorced from economy-wide productivity trends. Recent NZ Stats data "show that no matter which way you slice and dice the numbers, productivity is sliding".[4] Since 2019 New Zealand's multifactor productivity index fell by 0.4 per cent a year on average.

The productivity trends observed by CEPA can be contrasted with alternative productivity trends for the industry and wider sectors produced by Stats NZ.[5] As shown below, electricity, gas, water and waste services sector (Industry MFP) productivity has decreased more than the EDB sector productivity (CEPA TFP), at -2.0% over the 2008-23 period.[6]

Figure 2: Comparison of productivity indices



Source: CEPA, Stats NZ

[4] Tibshraeny, 2024, NZ productivity problems: Is excessive regulation or primary industry to blame?, New Zealand Herald

[5] See https://www.stats.govt.nz/topics/productivity/

[6] In comparison to -1.3% and -1.5% for TFP and Opex productivity for the EDB sector over the 2008-2023 period.

Model improvements and issues

ENA engaged Frontier Economics to review the technical modelling undertaken by CEPA. This review included an examination of the input data and modelling conducted using the R software.

Frontier's Economics review identified several issues with the CEPA modelling approach, namely:

- The treatment of Vector Lines and Wellington Electricity is incorrect. This occurs because the activity of Vector Lines and Wellington Electricity was disclosed jointly in 2008. As a consequence, the ratcheted maximum demand of Vector Lines is overstated from 2009 onwards in CEPA's study, and the opex of Wellington Electricity is understated in 2009. This error has substantial impacts on model estimates, particularly the econometric models featuring ratcheted maximum demand as an output. We note that the Australian Energy Regulator's (AER's) consultant, Quantonomics has identified and corrected the data for this issue in analysis for the AER's Annual Benchmarking Report.
- CEPA has incorrectly calculated productivity changes as the average annual arithmetic change in the productivity index over time, rather than the average annual geometric change in the index. In calculating the estimated trends, CEPA finds the percentage point reduction in the productivity index over the period and divides it by the number of years, rather than applying the standard approach of finding the annual percentage growth rate. This has a small impact on results in the current study, but it must be corrected for correct interpretation of results and for future studies examining changes over longer periods of time.
- The sum of coefficient estimates from the econometric models with EDB fixed effects suggests unrealistically large diseconomies of scale. This indicates that there are issues with the estimation of these models. It casts doubt over the reliability of these models for estimating productivity trends (or comparative efficiency in future), and the reliability of the coefficients in informing output weights in the index analysis. The Commission should investigate and resolve this issue further before using the CEPA's econometric models to inform estimates of EDB productivity or comparative efficiency.

Please don't hesitate to get in touch with ENA if you'd like to discuss our submission. Contact Keith Hutchinson (keith@electricity.org.nz) in the first instance.

Yours sincerely

Keith Hutchinson

Regulatory Manager

ENA Members

Electricity Networks Aotearoa makes this submission along with the support of its members, listed below.

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