

Using ML and Data Scraping For Equitable Resilient Energy Systems

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Introduction

BACKGROUND

In 1996, Pennsylvania deregulated its energy market, allowing private companies to offer competitive electricity plans alongside default service rates.

PROBLEM STATEMENT

While this was intended to increase competition and consumer choice, the complex pricing structures introduced by competitive suppliers' disadvantage households without the resources needed to compare electricity plans effectively. As a result, many consumers pay higher energy costs or enter into unfavorable service agreements.

PRIMARY OBJECTIVE

Develop methods for systematically comparing default and competitive electricity plans and implements them in an accessible tool to help consumers compare available electricity plans.

Methodology

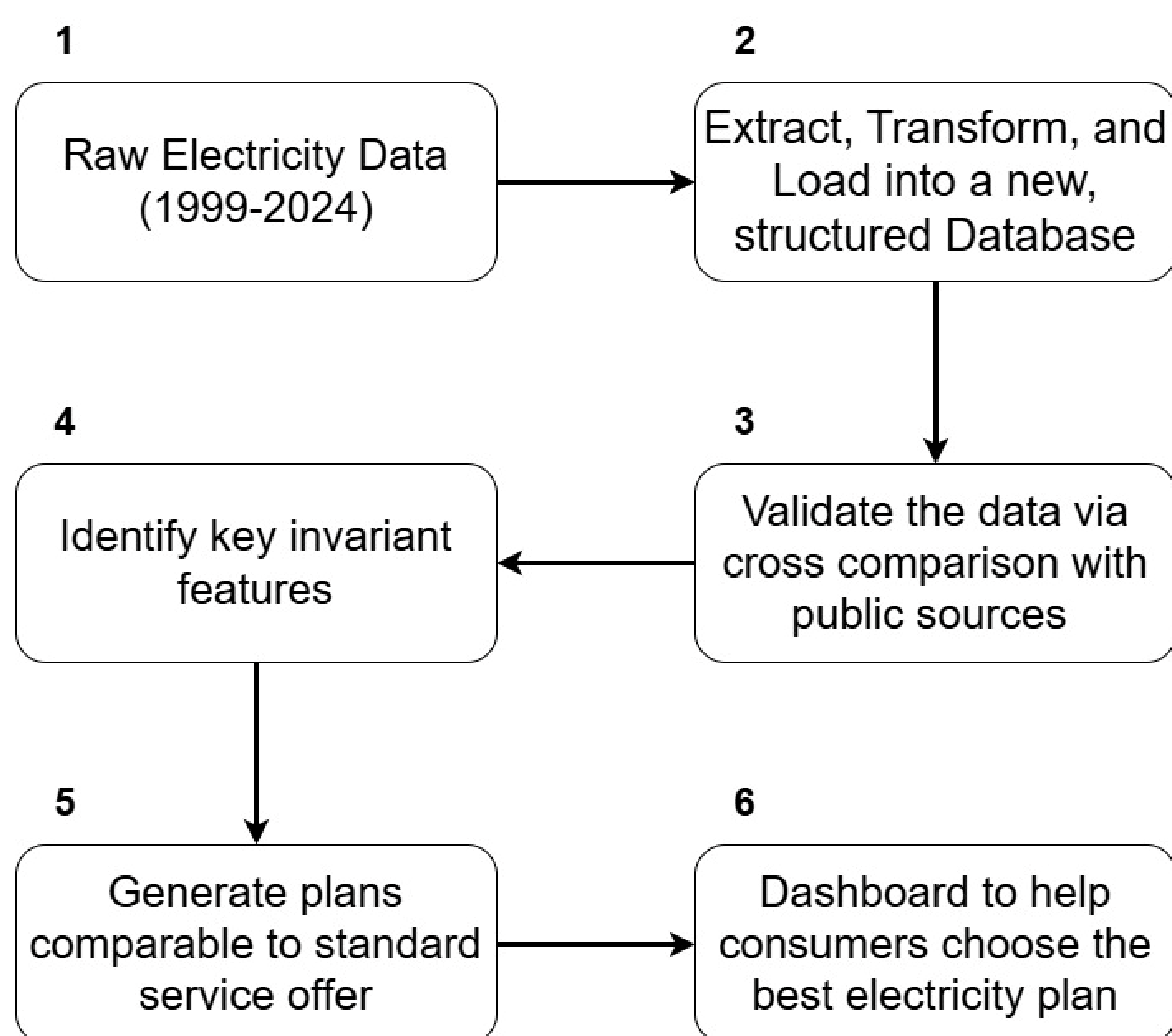


Figure 1: Project Methodology Overview.

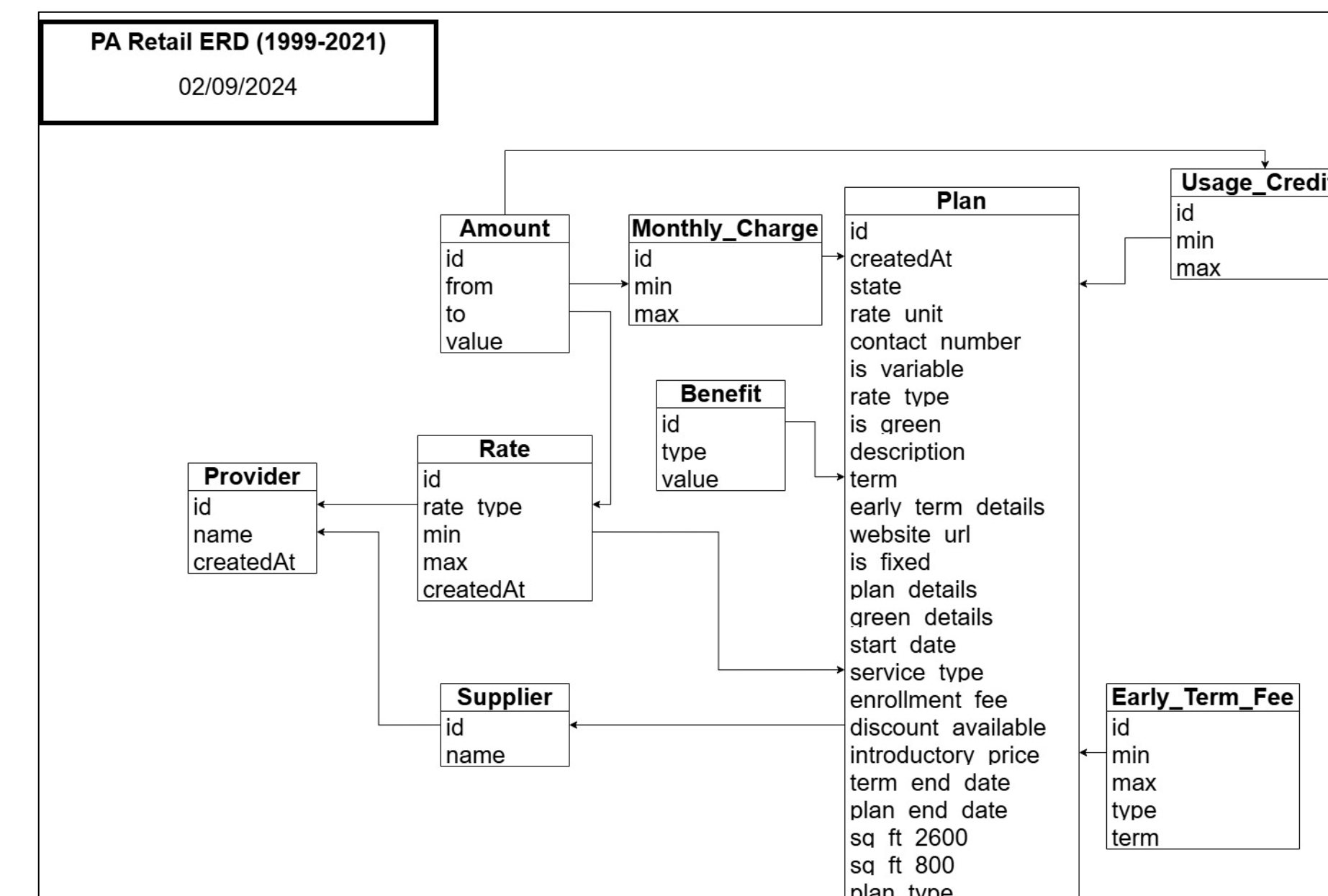


Figure 2: PA Retail Database

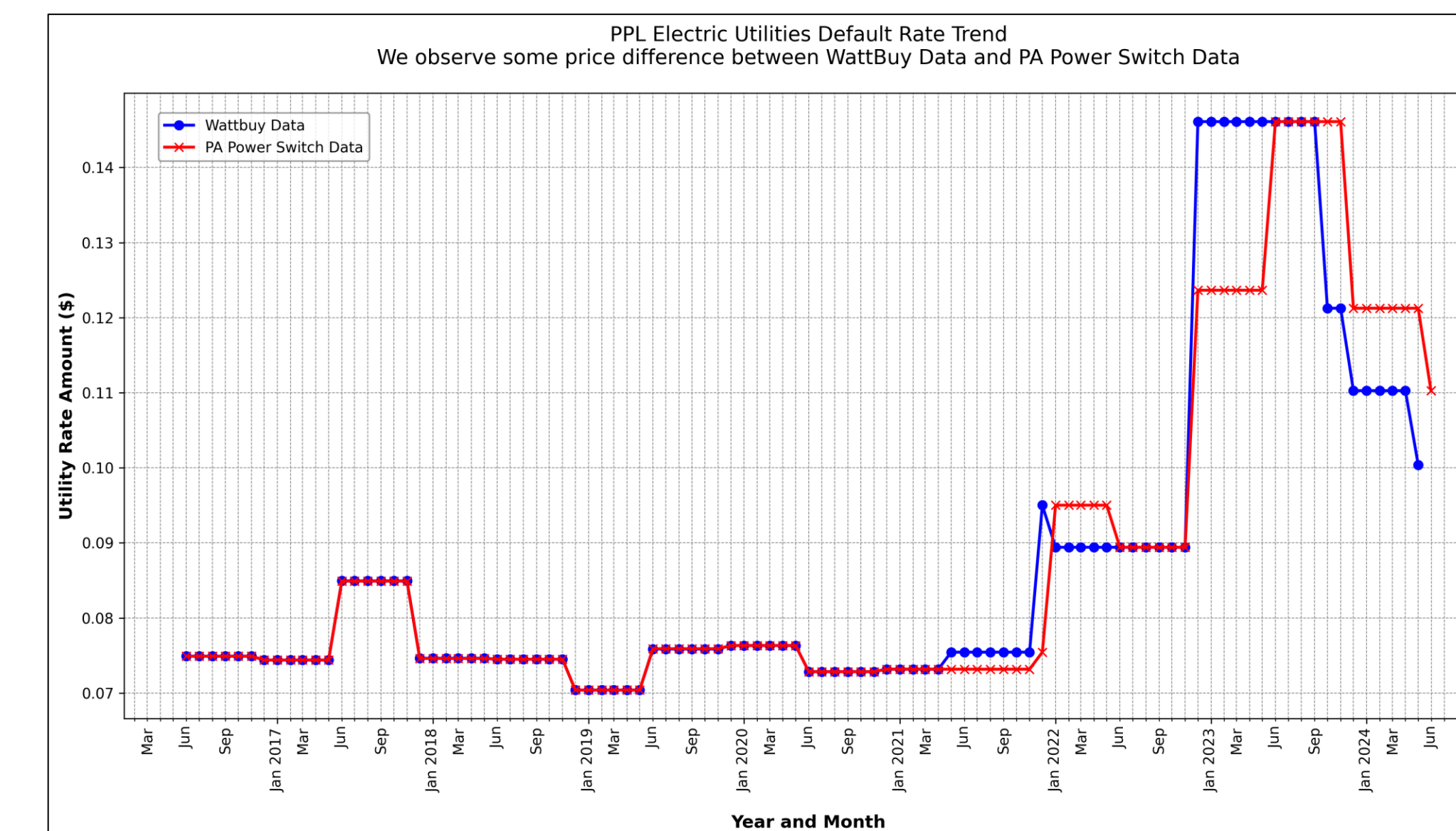


Figure 3: Data Validation

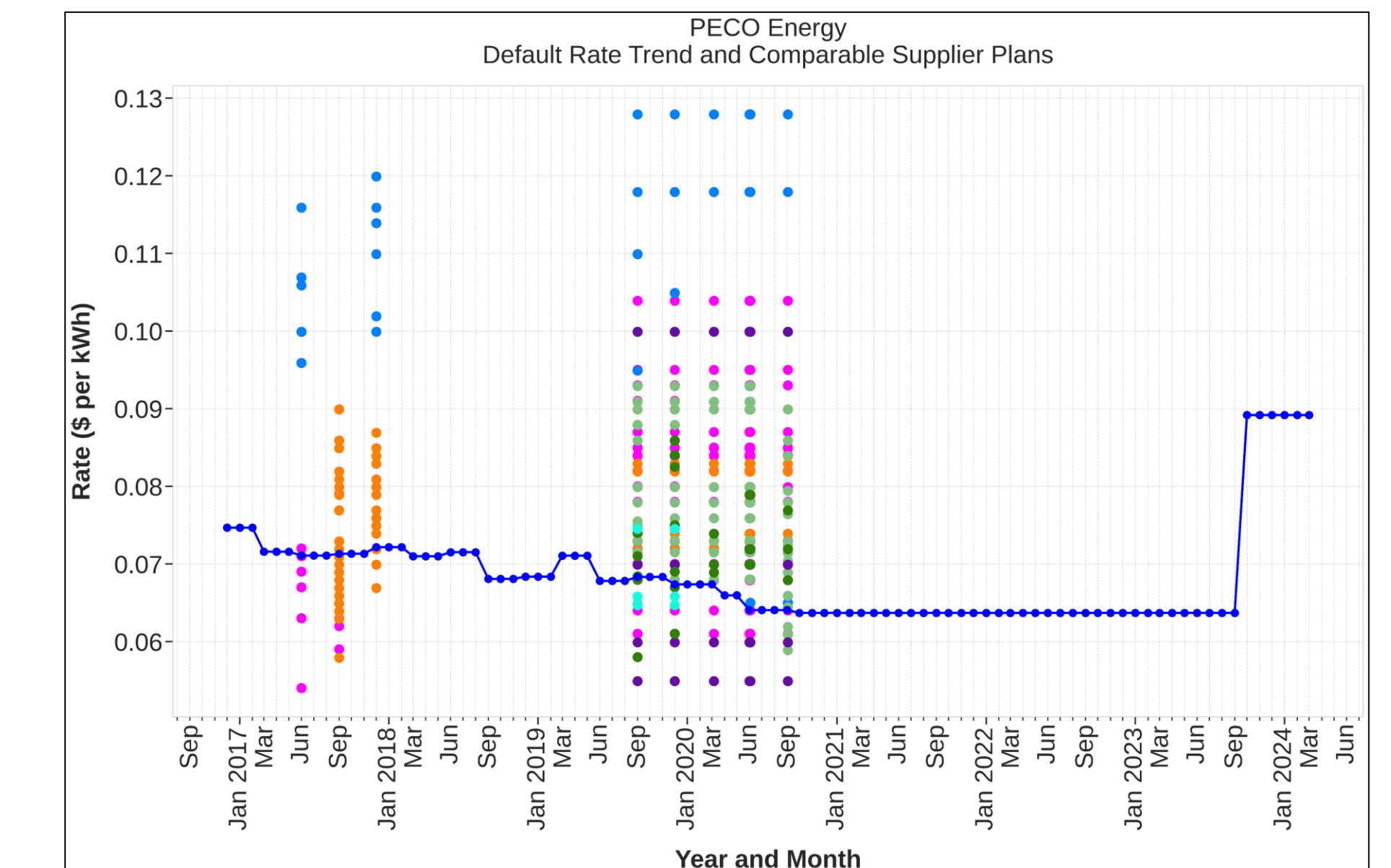


Figure 4: Default utility providers vs suppliers

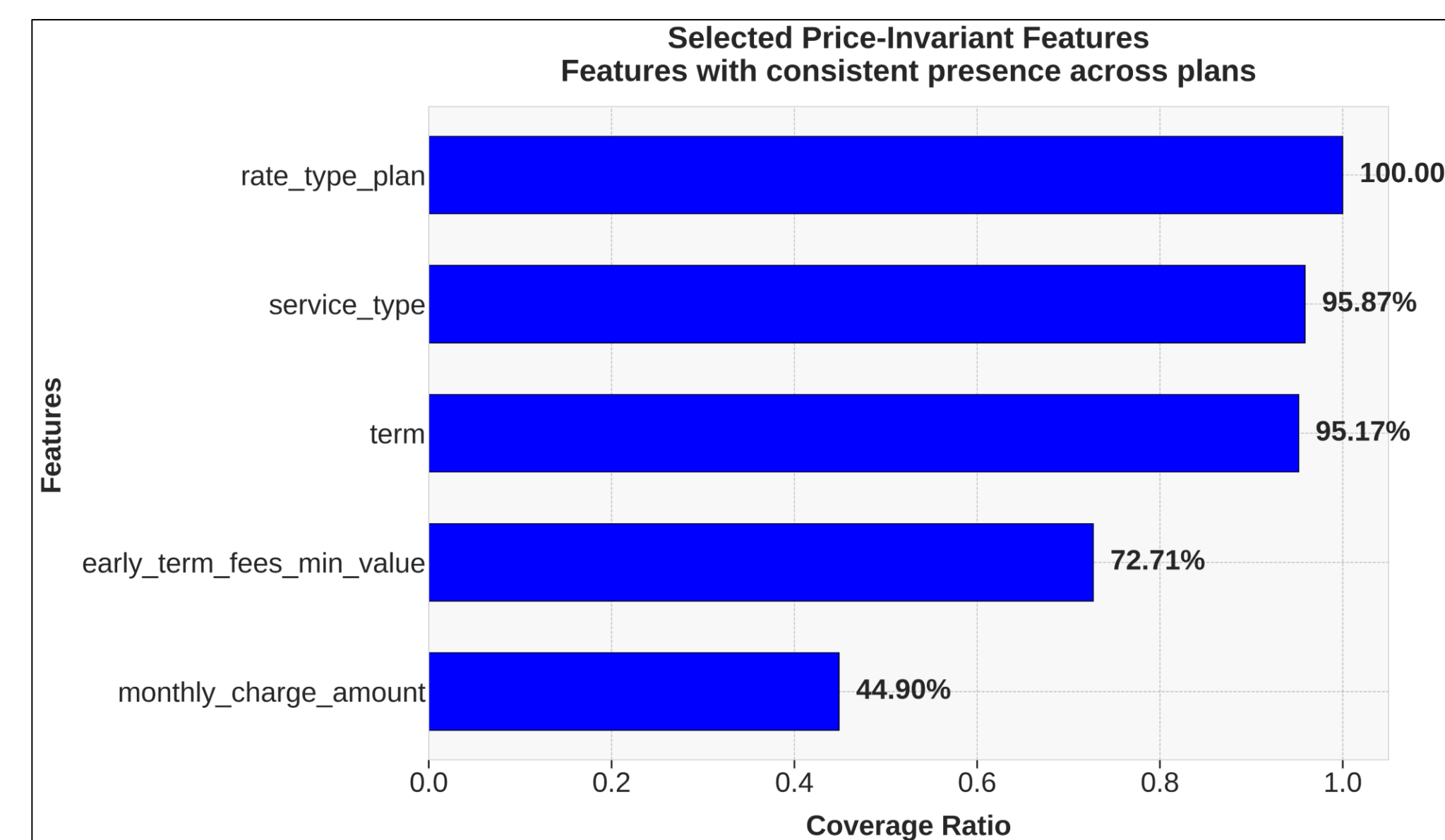


Figure 5: Invariant features

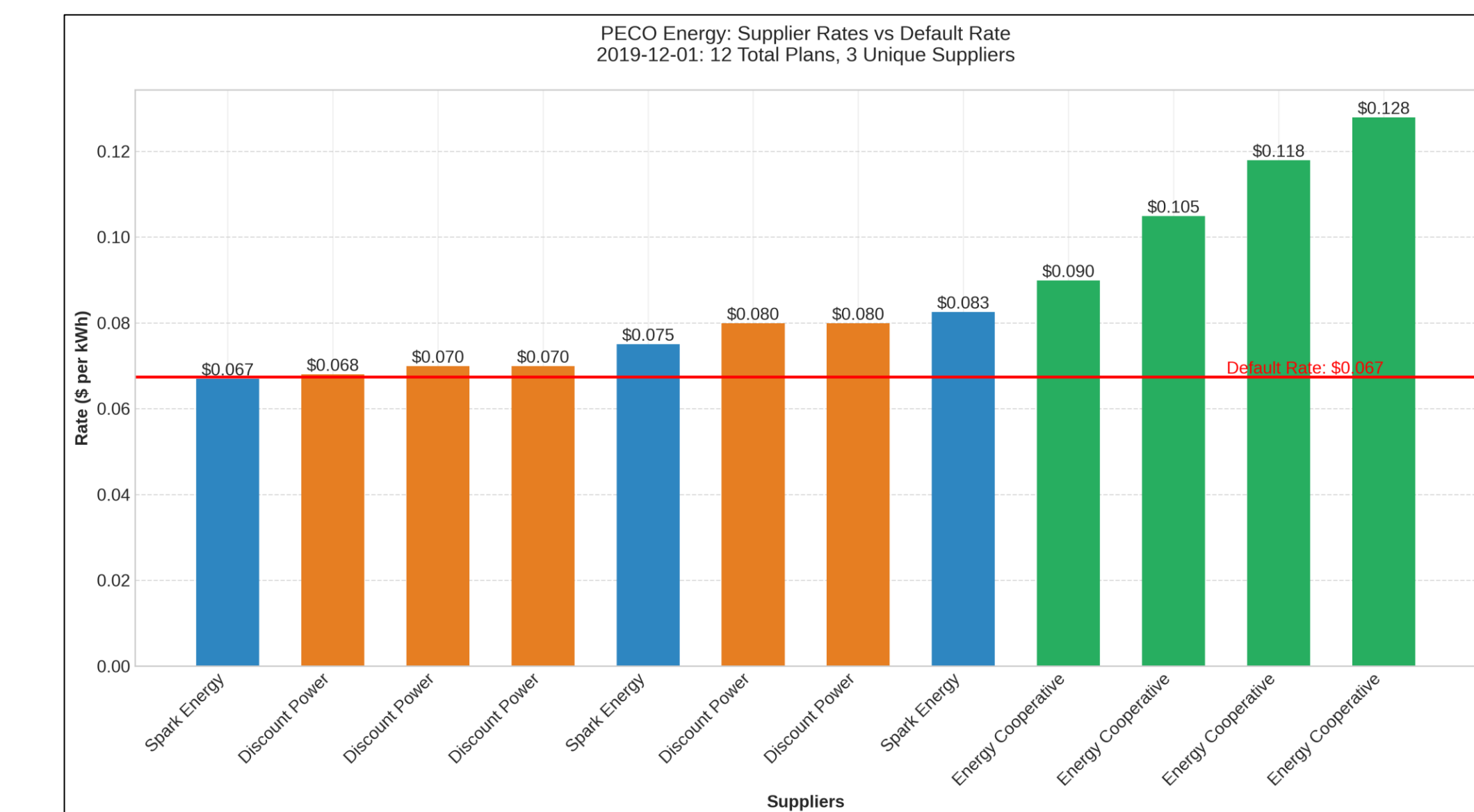


Figure 6: Daily rates

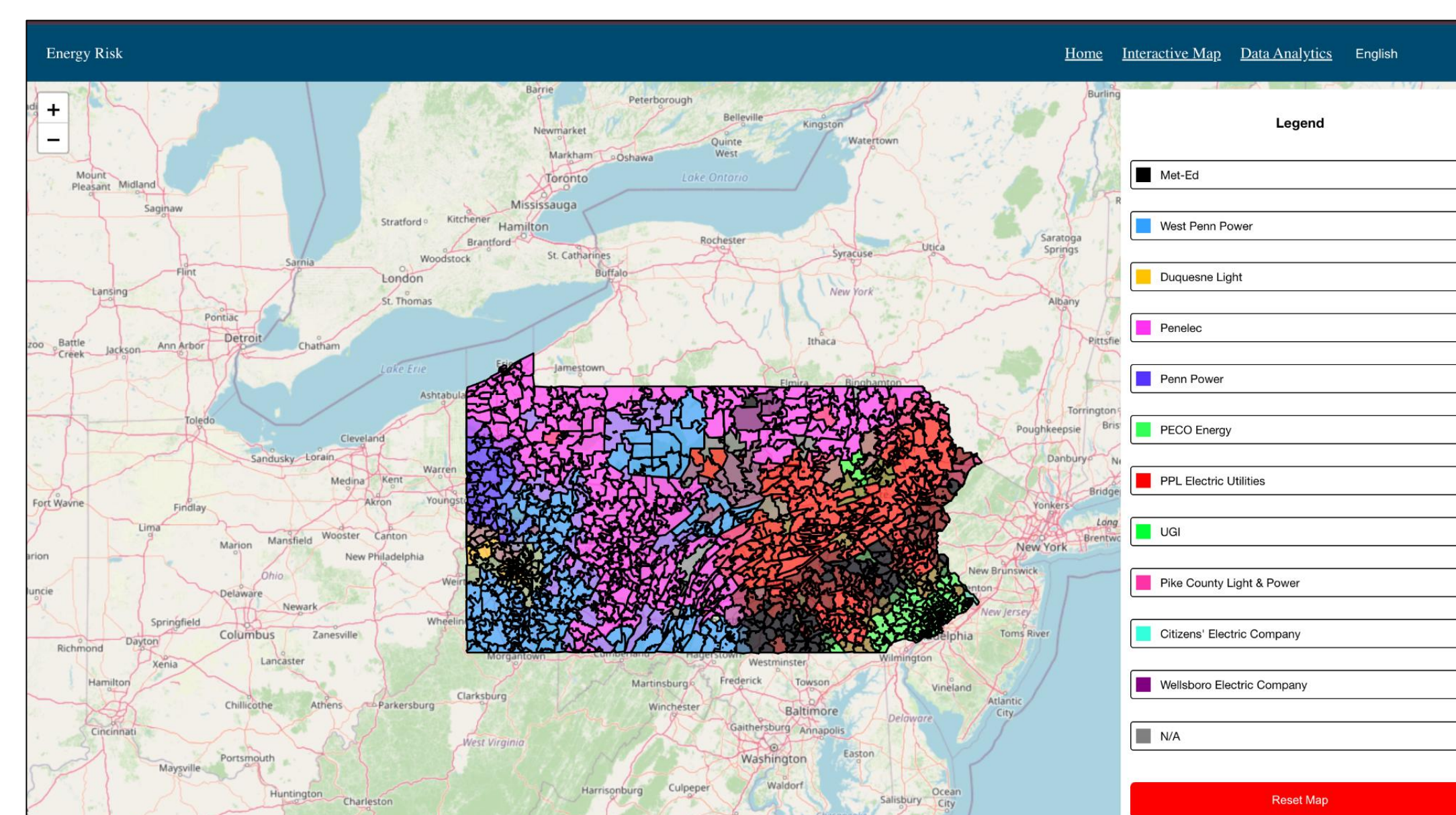


Figure 7: Website

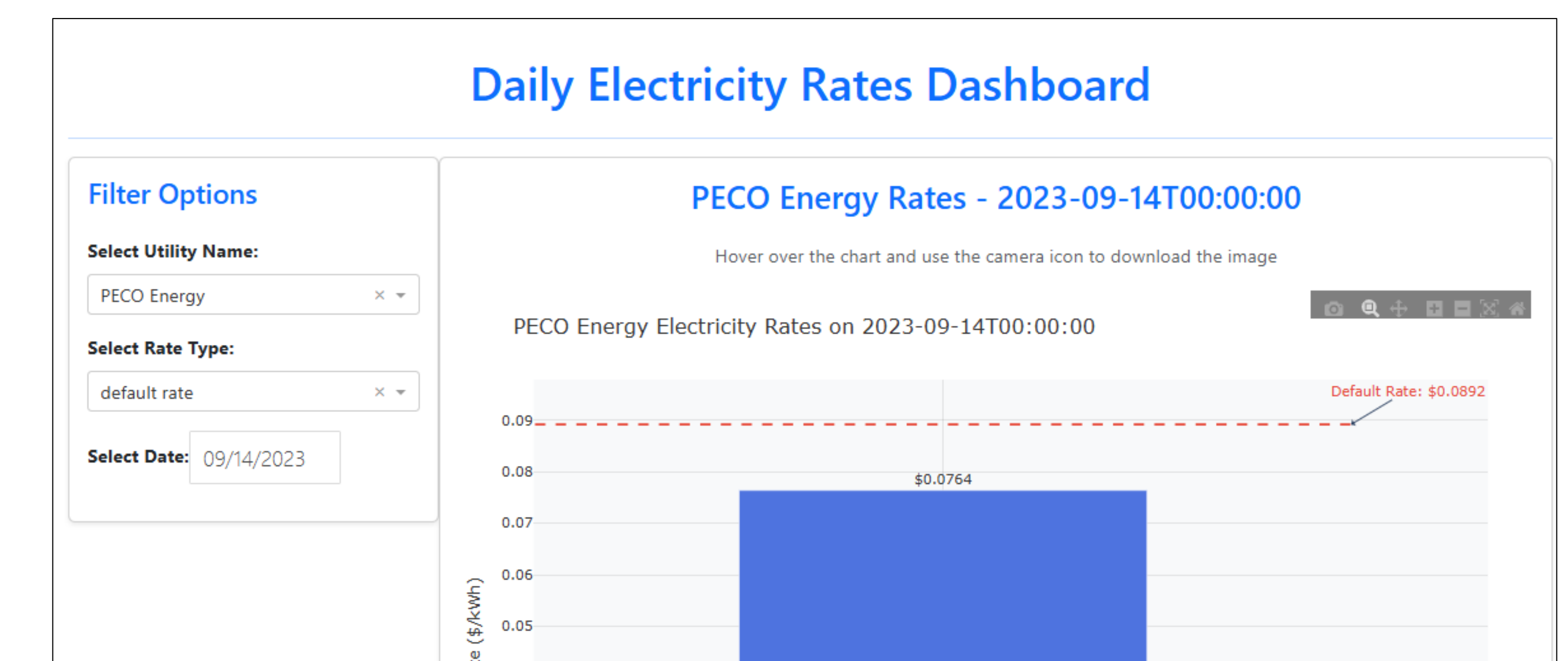


Figure 8: Daily Rates Dashboard

Conclusion

- Public electricity price records can contain inaccuracies, necessitating additional resources for validation.
- Default utility provider rates typically fall between the more expensive and less expensive competitive supplier rates.
- Standardized, invariant features should be publicly available to aid decision-making.

Next Steps

Analyze comparable competitive supplier plans to generate insights that inform policies protecting consumers and ensuring fair market practices.

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