

## 《A Set of New Tools to Measure the Effective Value of Probabilistic Forecasts of Continuous Variables》

### 《一套衡量连续变量概率预测有效值的新工具》

Probabilistic forecasts are increasingly recognised as essential in sectors such as energy, finance, and meteorology. Yet their actual value for decision-making has often been difficult to quantify. This new study provides a rigorous methodology to measure their economic value, specifically tailored to industrial decision-making problems characterised by piecewise linear cost functions.

在能源、金融和气象等领域，概率预测的重要性已被广泛认可，但其决策价值一直难以量化。本研究针对具有分段线性成本函数特征的工业决策问题，提出了一套严格评估概率预测经济价值的方法论。

The authors introduce novel visual diagnostic tools – including the Effective Value of Continuous forecasts (EVC) diagram and the Overall Effective Value (OEV) metric – to show when and why probabilistic forecasts outperform deterministic ones. These tools offer a clearer understanding of how forecasts translate into real-world economic benefits.

研究者引入了创新的可视化诊断工具——包括连续预测有效值（EVC）图和整体有效值（OEV）指标——以揭示概率预测在何时、为何优于确定性预测。这些工具能更清晰地展现预测如何转化为实际经济效益。

Key takeaways include:

核心成果包括：

A methodology to rigorously quantify the economic value of probabilistic forecasts for continuous variables.

严格量化连续变量概率预测经济价值的方法论

New tools such as the EVC diagram and OEV metric that demonstrate when probabilistic forecasts bring higher value compared to deterministic approaches.

EVC 图和 OEV 指标等新工具，可验证概率预测相比确定性方法的优势场景

Actionable insights for maximising the economic impact of forecasts in industrial

and energy applications.

为工业与能源领域最大化预测经济效益提供可行方案

A step forward in bridging the gap between forecast evaluation and decision-making practice.

在预测评估与决策实践之间架设了重要桥梁

Applied to case studies in the energy market, the methodology highlights that probabilistic forecasts deliver more stable and higher value than deterministic forecasts across varying market conditions.

能源市场案例研究表明：在不同市场条件下，概率预测比确定性预测能提供更稳定、更高经济价值的研究结果。

This new approach marks an important advance in forecast evaluation, supporting better-informed decision-making and improved integration of variable renewable energy such as PV into power systems.

这一新方法标志着预测评估领域的重大进展，有助于提升决策质量，并促进光伏等波动性可再生能源更高效地融入电力系统。

## **关于 IEA**

国际能源署（IEA）成立于 1974 年，是经济合作与发展组织（OECD）框架内的一个自治机构。技术合作计划（TCP）的创立是基于一种信念，即能源安全和可持续性的未来始于全球合作。该项目由政府、学术界和工业界的专家组成，致力于推进共同研究和特定能源技术的应用。

## **关于 IEA PVPS Task16**

Task16 旨在通过提升太阳能资源评估与预报的质量，降低大规模光伏部署的壁垒和成本——此类评估往往是发电量评估中不确定性的主要来源。该任务的研究内容包括：建立资源数据生成与基准测试方法、加强长期波动性评估、推进概率预测和临近预报等先进预报技术。通过提供可靠且具可融资性的数据集与最佳实践，Task16 支持电网整合、降低投资风险，并强化太阳能在可持续电力系统中的重要地位。