

美国风电机组为何在运行10年后性能大降？

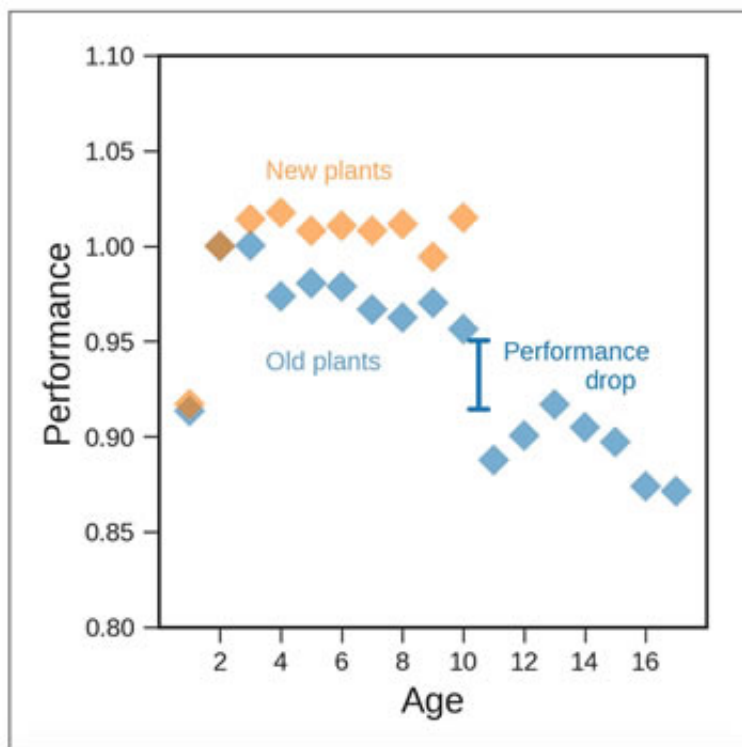
美国劳伦斯·伯克利国家实验室研究人员在《焦耳》杂志发表论文，研究美国风力发电厂的性能随着运营时间的增长下降的规律。

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How Does Wind Project Performance Change with Age in the United States?



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HIGHLIGHTS

We show an analysis of the United States wind-plant performance decline with age

New wind plants show less decline than older plants over their first 10 years

A performance drop occurs when plants lose eligibility for production tax credits

The performance decline rate is sensitive to particular characteristics of wind plants

根据917个风电机组的记录，研究人员发现，186个较老的风电机组（2008年以前投运）每年发电产出平均下降到0.53%，而731个新建风电机组（2008年以后投运）每年发电平均产出下降0.17%，均优于欧洲风电机组的数据。但是，在美国有一个特殊现象，运行10年机组每年平均产出下降幅度高达3.6%，因为这些风电机组在运行10年后失去了政府给与的“生产税抵免（production tax credit）”。

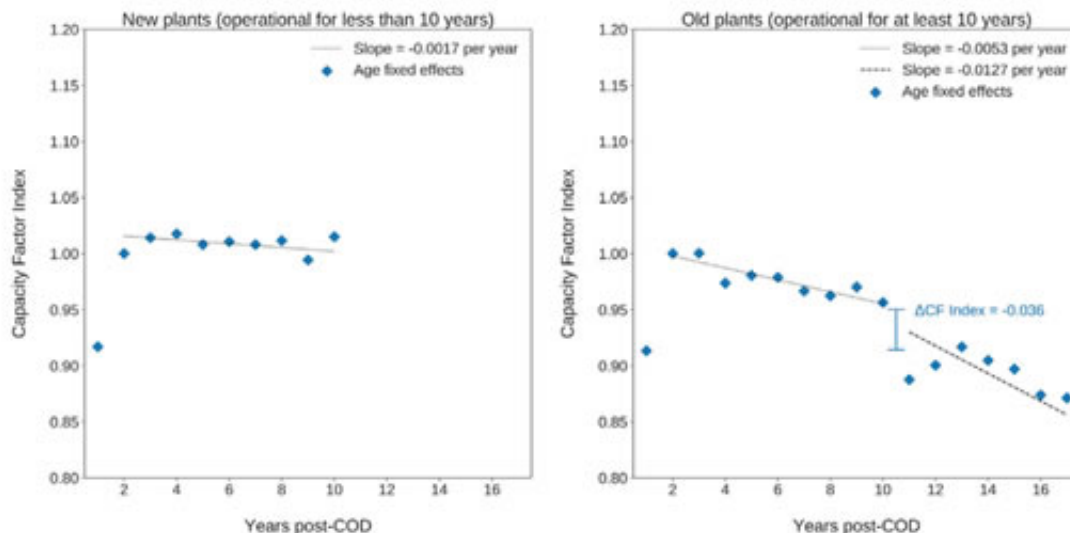


Figure 2. The Results of the Fixed-Effects Regression Shown for Old (n = 186) and New Plants (n = 731) Separately

The fixed effects and trends are normalized by the average capacity factor found for the second year after commercial online date for each cohort. All slopes shown have a p value less than 1E-5.

风电机组性能对于税收抵免税的敏感性表明，风电机组业绩下滑不仅仅是物理过程，也是受维护成本效益影响权衡。因此，风电机组的运行性能部分地受到政策和管理因素的影响。

Table 1. Summary of Performance Trends and Performance Drop for Old (n = 186) and New (n = 731) Plants

Cohort	Metric	%	Cfpp
New	Year 1–10 performance	–0.17 %/year	–0.06 cfpp/year
Old	Year 1–10 performance	–0.53 %/year	–0.17 cfpp/year
Old	Year 10+ performance	–1.23 %/year	–0.40 cfpp/year
Old	Year 10 drop	–3.6 %	–1.5 cfpp

Note the year-10 drop was calculated as the difference between years 8–10 and 11–13 (narrowing the set of years on either side of the drop leads to a somewhat larger calculation of the year-10 drop but does not change the general conclusions, see Table S1).

原文地址：<http://www.china-nengyuan.com/baike/5953.html>