Impact of Power Market Reform on New Energy Power Generation Enterprises in Jilin Province: A Case Study of Jilin Electric Power Co., Ltd.

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Abstract. This study focuses on the market-oriented reform of new energy grid-connected electricity prices in Jilin Province and analyzes its impacts on local new energy power supply enterprises. By adopting policy analysis and case study, it discusses the reform from financial, strategic and short-term market perspectives. The results show that the dual-track design for existing and incremental assets under the reform has changed enterprises' profit models and valuation logic, driving their transformation from single power generators to entities with diversified consumption scenarios including source-grid-load-storage integration and green hydrogen-based energy. The reform has pushed the industry to shift from resource and scale expansion to cost control and ecological competition, and the evaluation of its effects offers a reference for understanding the practice of China's power market-oriented reform.

Keywords: Electricity Market; Electricity Price Reform; New Energy Companies, Policy Analysis

1 Introduction

In January 2025, the NDRC and NEA jointly issued the *Notice on Deepening the Market-oriented Reform of New Energy Grid-connected Electricity Prices and Promoting High-quality New Energy Development,* stipulating that all grid-connected electricity from wind, solar and other new energy sources be integrated into the electricity market in full.In November 2025, China's electricity market transaction volume hit 548.4 billion kWh; green electricity transactions reached 33.6 billion kWh, surging 42.8% year-on-year from October[1],as show in Fig. 1.

On October 14, 2025, Jilin Province issued the *Implementation Plan for the Market-oriented Reform of New Energy Grid-connected Electricity Prices in Jilin Province*, centering on market-oriented reform to drive full participation of wind, PV and other new energy power in electricity market transactions and realize full marketization of their grid-connected prices.The policy pushes for the full integration of new energy grid-connected power into the electricity market and market-based formation of their grid-connected prices, sets up a supporting price settlement mechanism for new

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energy's sustainable development, adopts category-specific policies, and boosts the industry's sustainable and healthy development.

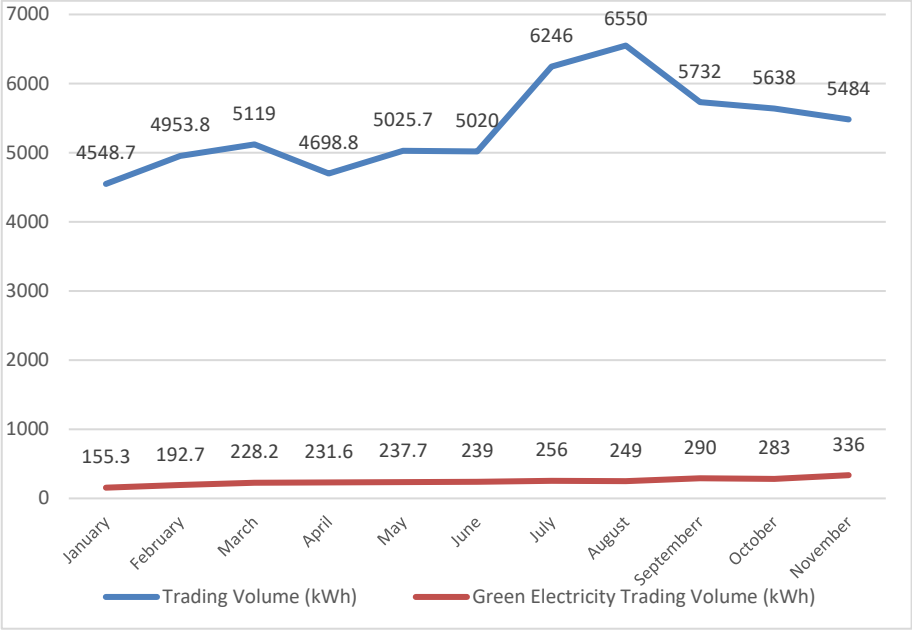

Fig. 1. National Electricity Market Trading Volume (Including Green Electricity) from January to November 2025

2 Research Ideas and Theoretical Basis

By analyzing the policy-driven macro market performance with industry reports and combining micro case performance, this study evaluates policy effects. It emphasizes the mutual corroboration of multiple evidence, adopts regression test methods, and is supplemented by literature analysis[2]. Based on the latest 2025 plan, it focuses on the impacts of local detailed rules for cutting-edge timeliness, and its focus on specific enterprises enhances the research's pertinence and practical reference value.

Existing studies have found that electricity prices can significantly transmit power generation costs with a cost pass-through rate of about 55.7%, and the market structure is more non-competitive[3]. A coordinated optimization path of market mechanisms and technical support is proposed, which provides theoretical and practical references for high-proportion new energy power systems and raises higher requirements for new energy consumption[4].In empirical research, some scholars point out that as the "barometer" of electric power commodities, the electricity price formation mechanism is linked to reform effectiveness, supply-demand balance and energy efficiency, serving as an important link connecting power generation, transmission, distribution and consumption[5]. Others argue that China's power market is shifting from a planning-dominated management model to a market-oriented one[6].More studies show that power market

reform is expected to accelerate the replacement of thermal power by clean energy, and China should gradually relax electricity price regulation to realize the coordinated and sustainable development of the economy-energy-environment system[7]. Market-oriented power reform can boost the new productive forces by improving market efficiency, optimizing energy efficiency and reducing residential electricity consumption[8].

3 Analysis of Policy Impacts at the Macro Dimension

For Jilin Electric Power Co., Ltd. (hereinafter referred to as Company A), this reform has transformed its profit logic from a fixed income + subsidy model to benchmark electricity price + market premium + green power trading. For existing projects, the benchmark price applies within guaranteed purchase hours, with all excess electricity traded in the market; new projects must fully participate in market bidding in accordance with the *Rules for Electricity Market Transactions in Jilin Province*, with earnings entirely determined by market supply-demand and trading strategies.

In terms of strategic choices, project investment decisions require a three-dimensional evaluation model covering cost retrocalculation, electricity price forecasting and earnings hedging. Power generation enterprises must transform from single electricity producers to integrated energy service providers, hedging market risks through multi-business synergy to achieve a fundamental breakthrough in strategic positioning.

For risk management and control, market price fluctuation risks, trading decision risks and operational deviation assessment risks form a risk triangle for new energy enterprises, requiring a three-dimensional risk control system covering meteorological forecasting, market analysis and financial hedging.

4 Micro Analysis from the Enterprise Perspective

Taking the financial data and strategic layout of Company A, a key listed enterprise in Jilin's new energy power generation sector, as the micro window to observe the impacts of the current round of electricity price reform. Analysis of the company's financial report data over the past three years reveals that while its total installed capacity and grid-connected electricity volume have risen steadily, its average grid-connected electricity price, though rising in nominal terms, has seen a structural decline.

Table 1. Disclosure of Information such as Power Generation in Company A's Annual Reports Over the Past Three Years

	Total Installed Capacity (10,000 kW)	Power Generation (100 Million kWh)	On-grid Electricity Volume or Electricity Sales Volume(100 Million kWh)	Average On-grid Tariff or Electricity Sales Tariff (CNY/100 Million kWh, Including Tax)
2022	1,236.42	277.05	259.58(93.69%)	49,673,670.00
2023	1,342.12	285.78	266.80(93.36%)	49,828,507.25
2024	1,444.11	294.00	272.37(91.71%)	50,105,330.00

Table 2. Disclosure of Information Related to Power Products in Company A's Annual Reports Over the Past Three Years

	Operating Revenue (¥) and Its Percentage Share (%)	Operating Costs (¥)	Gross Profit Margin	Growth Rate of Gross Profit Margin
Thermal Power Products(2022)	4,710,404,687.96(31.5%)	4,003,376,729.40	15.01%	4.20%
Wind Power Products(2022)	2,988,466,807.66(19.98%)	1,411,304,863.97	52.77%	-1.15%
Photovoltaic Products(2022)	3,711,814,269.57(24.82%)	1,942,821,087.28	47.66%	0.84%
Thermal Power Products(2023)	4,837,718,753.13 (33.50%)	3,950,637,148.53	18.34%	3.33%
Wind Power Products(2023)	2,970,046,069.84 (20.56%)	1,475,653,444.54	50.32%	-2.45%
Photovoltaic Products(2023)	3,930,784,787.53 (27.22%)	2,184,534,934.68	44.42%	-3.24%
Thermal Power Products(2024)	4,803,272,073.19(34.96%)	3,899,913,270.82	18.81%	0.47%
Wind Power Products(2024)	3,252,384,999.29(23.67%)	1,620,625,513.97	50.17%	-0.14%
Photovoltaic Products(2024)	3,955,755,653.19(28.79%)	2,401,952,276.12	39.28%	-5.15%

As show in Table 1 and Table 2, data shows that despite potential revenue growth, gross profit margins and other profit margins have been squeezed. This fully indicates that the original government-set pricing can no longer adapt to the current demand for green and clean energy, and a new driving force is needed to reshape the new energy electricity price market.

Event Day (Day 0) is the date of the plan's first official release. The event window covers 7 trading days around Event Day, and the interval from approximately the 60th to the 30th trading day prior to the event is selected to avoid the contamination of estimated parameters by the event itself. The research sample is Company A, a new energy listed company in Jilin Province. For comparison, the CSI 300 Index is adopted to estimate normal returns, with the market model assuming a stable linear relationship between market returns and individual stock returns. The market model is selected as the expected return model, which postulates the above-mentioned stable linear relationship and is applied for the following regression:

$$R_0 = a + b * R_1 \tag{1}$$

R_0 is the actual return of the stock on day t; R_1 is the market return; a and b are the parameters to be estimated, representing the abnormal return and the market risk coefficient of the individual stock, respectively. The estimated values of a and b are obtained through regression analysis:a≈-0.0015,b≈0.5261

Calculate the abnormal return (AR), cumulative abnormal return (CAR) over the event window, and the t-statistic:

$$AR = R_0 - (a + b * R_1) \tag{2}$$

$$CAR(T1, Tn) = AR_{T1} + \cdots + AR_{Tn} \tag{3}$$

$$t = CAR/\sigma AR * \sqrt{\Delta \mathrm{T}} \tag{4}$$

At this point, CAR=-3.66%, t≈-1.03.

A t-value is generally deemed statistically significant when its absolute value exceeds 1.96. In this case, 1.03 < 1.96, so the 7-day data alone is insufficient to confirm a strong market response.

Expanding the event window to 15 trading days around Event Day and 30 trading days after it, a re-conducted t-test yielded a consistent t-value of approximately 0.72 for both periods.The stable t-value indicates that relevant information may have been fully priced in by the market. A review of relevant financial news and Company A's public disclosures before and after the policy release shows that in response to Jilin's reform, the company, supported by policy incentives, has actively deployed source-grid-load-storage integration projects and green power supply for industrial parks in the province, broken away from the single power generation and grid-connection model, realized coordinated production and distribution of multiple energy types via a central intelligent control platform, and built a smart energy system featuring horizontal multi-energy complementarity and vertical coordination of source, grid, load, storage and consumption. In addition, relying on the *Medium and Long-Term Plan for the Hydrogen Energy Industry (2021-2035)*, Company A has leveraged Jilin's resource endowments to develop large-scale renewable energy-powered green hydrogen production via water electrolysis, extended its business downstream to produce green ammonia, green methanol and other derivatives, and driven the transformation of its business model from a single power supplier to an integrated provider of green energy and chemical products[9][10].

5 Conclusions

Based on Jilin Province's market-oriented reform plan for new energy grid-connected electricity prices, and combining market information with case analysis, this study explores the comprehensive impacts of the reform on Company A, a provincial representative enterprise.

The core conclusion is that this reform ends Jilin's long-standing benchmark electricity price era for new energy power development, ushering it into a new stage of full participation in electricity market transactions.

The study finds the reform has clear and differentiated arrangements for existing and incremental projects, posing short-term challenges to enterprises' electricity price and earnings stability. In the long run, however, market competition will drive a fundamental shift in investment decision-making from a resource-oriented to a cost and market competitiveness-centered approach, fueling Company A's strategic transformation. On the one hand, the company has broken away from the traditional single business model by deploying source-grid-load-storage integration projects and green power supply for industrial parks. On the other hand, it has strategically invested in hydrogen-based

green energy, producing hydrogen from wind and solar resources as well as green ammonia and other products, thus opening up brand-new industrial development space.

This study suggests future research can deepen in two directions: first, conduct longitudinal tracking to observe the long-term impacts of the reform on corporate investment and innovation; second, carry out horizontal comparisons by contrasting Jilin's practices with those of other provinces with distinct policy designs, analyze micro-level differences in policy tool effects, and provide more refined local experience and decision-making basis for national electricity market construction.

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