



LONDON
ECONOMICS

LEI Semi-Annual Regional Market Update and 10-year Energy and Capacity Price Forecast

New York

3rd Quarter 2023

717 Atlantic Avenue, Suite 1A
Boston, Massachusetts 02111
Tel: (617) 933-7200
Fax: (617) 933-7201

390 Bay Street, Suite 1702
Toronto, Ontario M5H 2Y2
Tel: (416) 643-6610
Fax: (416) 643-6611

www.londoneconomicspress.com

Description of Report

London Economics International LLC (LEI) provides semi-annual regional market updates and 10-year energy price forecasts for major markets in North America and around the world. In addition to providing price projections, the reports highlight major developments in each of the regions as well as the underlying structural dynamics. LEI also provides more detailed regional market price forecasts tailored to a client's individual needs, including longer time horizons and forecasting of plant-specific revenues or the impact of structural or market design changes.

Disclaimer

The contents of this report do not constitute investment advice. The provision of analysis by LEI does not obviate the need for an investor to make further appropriate inquiries as to the accuracy of the information included therein, and to undertake his/her own analysis and due diligence. This report is not intended to be a complete and exhaustive analysis of all the factors impacting the regional market. LEI, its officers, employees, and affiliates make no representations, warranties, or recommendations.

Table of contents

TABLE OF CONTENTS	2
LIST OF FIGURES	5
1 MARKET OVERVIEW AND RECENT DEVELOPMENTS	6
1.1 MARKET OVERVIEW	6
1.2 NYCA TRANSMISSION SYSTEM	8
1.3 NEW YORK POLICY MANDATES	9
1.3.1 <i>Climate Leadership and Community Protection Act</i>	11
1.3.2 <i>Clean Energy Standard</i>	11
1.3.3 <i>Peaker Rule: Ozone Season NOx Emission Limits</i>	13
1.3.4 <i>NYS Accelerated Renewable Energy Growth and Community Benefit Act</i>	13
1.3.5 <i>New York City Residual Oil Elimination</i>	14
1.3.6 <i>Climate Mobilization Act: New York City Local Law 97</i>	14
1.3.7 <i>New York City and Statewide Gas Ban</i>	15
1.4 RECENT DEVELOPMENTS	16
1.4.1 <i>Large-scale renewables procurements</i>	17
1.4.2 <i>Offshore wind procurements</i>	17
1.4.3 <i>Long Island public policy transmission need for offshore wind export</i>	18
1.4.4 <i>New York City public policy transmission need for delivery of offshore wind</i>	18
1.4.5 <i>New York outlines climate priorities with cap-and-invest program</i>	19
1.4.6 <i>New procurement schedule to reach 6 GW energy storage by 2030</i>	19
1.4.7 <i>Enhanced public-owned renewable portfolio</i>	20
1.4.8 <i>Deficient transmission security margin for identified in NYC</i>	21
2 MODELING ASSUMPTIONS	22
2.1 MARKET TOPOLOGY	22
2.2 FUEL PRICE PROJECTIONS	23
2.2.1 <i>Natural gas</i>	24
2.2.2 <i>Oil</i>	25
2.3 CARBON EMISSION COSTS	25
2.4 COST OF NEW ENTRY	26
2.5 IMPORT AND EXPORT FLOWS	27
2.6 SUPPLY	29
2.6.1 <i>Renewable generation</i>	29
2.6.2 <i>Storage resources</i>	30
2.6.3 <i>Hydrology</i>	30
2.6.4 <i>New entry</i>	31
2.6.5 <i>Retirements</i>	32
2.7 DEMAND	33
2.7.1 <i>Supply demand balance</i>	35
2.8 CAPACITY MARKET DEMAND CURVE	37
2.9 TRANSMISSION SYSTEM	39
3 10-YEAR PRICE FORECAST	42
3.1 ENERGY MARKET PRICES	42
3.2 IMPLIED MARKET HEAT RATES	43
3.3 CAPACITY MARKET PRICES	43

4 APPENDIX A: OVERVIEW OF FORECASTING METHODOLOGY46
5 APPENDIX B: INTRODUCTION TO LEI AND ITS WORK IN NYISO.....47

List of figures

FIGURE 1. INSTALLED CAPACITY AND GENERATION BY TECHNOLOGY TYPE	7
FIGURE 2. INSTALLED CAPACITY AND GENERATION BY OWNER.....	8
FIGURE 3. NYCA TRANSMISSION INTERFACES	8
FIGURE 4. SUMMARY OF NEW YORK’S POLICY MANDATES.....	10
FIGURE 5. SUMMARY OF RECENT DEVELOPMENTS AND MARKET IMPACT	16
FIGURE 6. NEW ENERGY STORAGE PROGRAM PROCUREMENT SCHEDULE	20
FIGURE 7. AGGREGATED NYISO ZONES.....	22
FIGURE 8. NYISO CAPACITY ZONES.....	23
FIGURE 9. FOSSIL FUEL PRICE PROJECTIONS (NOMINAL \$/MMBTU AND \$/BBL)	24
FIGURE 10. CARBON ALLOWANCE PRICES (NOMINAL \$/TON).....	26
FIGURE 11. GROSS COST OF NEW ENTRY (CONE) FOR COMBINED CYCLE AND SIMPLE CYCLE GT IN DIFFERENT ZONES OF NEW YORK	27
FIGURE 12. EXTERNAL TRANSFER LIMITS.....	28
FIGURE 13. MODELED ANNUAL IMPORTS AND EXPORTS (GWH)	28
FIGURE 14. ADDITIONAL RENEWABLE GENERATION AND INSTALLED CAPACITY PORTFOLIO BY 2033	30
FIGURE 15. AVERAGE MONTHLY HYDROELECTRIC ENERGY GENERATION FOR ENTIRE CONVENTIONAL HYDROELECTRIC FLEET IN NEW YORK UNDER TYPICAL CONDITIONS (GWH/MONTH).....	31
FIGURE 16. NEW GENERATION ENTRY OVER MODELING HORIZON (NAMEPLATE CAPACITY, MW)	32
FIGURE 17. GENERATION RETIREMENT OVER MODELING HORIZON (NAMEPLATE CAPACITY, MW).....	33
FIGURE 18. FORECAST NET ENERGY AND PEAK DEMAND IN NEW YORK	34
FIGURE 19. IMPACT OF BTM SOLAR GENERATION ON NET LOAD	35
FIGURE 20. PROJECTED STATEWIDE DEMAND-SUPPLY BALANCE FOR LEI’S BASE CASE.....	36
FIGURE 21. INDICATIVE INTERNAL SUPPLY CURVE OF NEW YORK RESOURCES FOR 2029	37
FIGURE 22. CAPACITY MARKET LOCALITY PARAMETERS (2023-2024).....	38
FIGURE 23. 2023-2024 ICAP SPOT AUCTION DEMAND CURVES	39
FIGURE 24. FORECAST ENERGY MARKET PRICES IN NYISO (NOMINAL \$/MWH)	42
FIGURE 25. FORECAST IMPLIED MARKET HEAT RATES (BTU/KWH).....	43
FIGURE 26. FORECAST ANNUAL AVERAGE CAPACITY MARKET PRICES IN UCAP TERMS (NOMINAL \$/KW-MONTH)	45
FIGURE 27. POOLMOD’S TWO-STAGE PROCESS.....	46