

# SOL03: Renewable Utility Economics

Technical Analysis Report | February 01, 2026

## 1. Data Overview

**Subject:** NextEra Energy (NEE)  
**Analysis Period:** 2016-02-03 to 2026-01-30 (~10.0 years)  
**Total Observations:** 13,760 rows across 4 datasets  
**Stock Data:** 2,513 daily OHLCV observations  
**Data Sources:** Yahoo Finance API (yfinance), synthetic operational metrics

## 2. Methodology

### 2.1 Metrics Computed

- Generation capacity by source (Solar/Wind)
- Capacity factor analysis
- PPA pricing trends (\$/MWh)
- Development pipeline tracking
- Operational efficiency metrics
- Renewable energy credits (REC)
- Grid interconnection queue

### 2.2 Risk Analytics (CFA Standards)

- **Sharpe Ratio:**  $(\text{Return} - R_f) / \text{Volatility}$  ( $R_f = 0$  for relative comparison)
- **Sortino Ratio:**  $\text{Return} / \text{Downside Deviation}$
- **Value at Risk (VaR):** Historical 95% and 99% confidence levels
- **Maximum Drawdown:** Largest peak-to-trough decline in cumulative returns

### 2.3 Technical Indicators

- **Moving Averages:** SMA/EMA (20, 50, 200 day)
- **Volatility:** Rolling standard deviation (20, 60, 252 day)
- **Momentum:** RSI-14, Price momentum (20-252 day)

## 3. Risk Metrics Summary

Ticker	Total Return	Ann. Return	Volatility	Sharpe	Max DD
NEE	295.8%	14.8%	25.2%	0.59	-45.0%

## 4. Detailed Risk Profile

### Return Distribution

Metric	Value
Positive Days	54.2%
Best Day	13.69%
Worst Day	-13.42%
Sortino Ratio	0.75

### Value at Risk

Confidence	Daily VaR
95%	-2.23%
99%	-4.60%

VaR indicates expected maximum daily loss at given confidence level.

## 5. Data Quality Assessment

**Completeness:** All trading days covered for analysis period  
**Adjustments:** Prices adjusted for splits and dividends  
**Validation:** Stock data cross-referenced with Yahoo Finance

## 6. Key Observations

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- Solar sector exhibits higher volatility than broad market indices
- Strong correlation with energy sector and interest rate movements
- Policy sensitivity (IRA, tax credits) impacts valuation multiples
- Technology improvements driving efficiency gains and cost reductions

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Data Source: Yahoo Finance (stock), Synthetic (operational) | Report Code: SOL03  
Portfolio Sample - Demonstrates data engineering methodology, not investment advice  
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