

The WaterVault Index: An Algorithm Quantifying the Cost of Water Rights

Introduction

In the dynamic landscape of the American West, water rights play a pivotal role in sustaining agricultural productivity and meeting burgeoning municipal demands. Recognizing the significance of water rights transactions, we embark on the creation of a Western Water Rights Index. This index is designed to meticulously track transaction pricing data between agricultural and municipal water rights in the most active Western states markets, employing acre-foot volume and location-based weighting methodologies. Our aim is to provide portfolio managers with a robust tool for assessing the pricing dynamics of water rights, facilitating informed investment decisions in this critical sector.

WaterVault Index Token (WVI)

The WaterVault Index Token (WVI) serves as the foundational asset for measuring the performance of WaterVault America's (WVA) portfolio of Real-World Assets (RWA), consisting primarily of Western water rights. Under the agreement, the RWA pays the WaterVault Index a fixed number of tokens based on the value of the portfolio, along with 20% of the appreciated gain per quarter and a 2% annual fee on the total value of the portfolio. As a floating index of a previously unquantified essential commodity, WVI's value is determined not only through the value increase provided by the WVA contract but also by market participants. WVI provides municipal, agricultural, and commercial end-users with a hedging mechanism, allowing investors to enter the water rights market. The market activity will provide the initial founding holders of the WVI with a highly leveraged method of profiting from the growing demand for water rights.

1. Scope Definition

Commodity Selection: Our index focuses on water rights transactions, distinguishing between agricultural and municipal usage, within the most active Western states markets.

Data Source: Reliable sources for historical and ongoing sales data include local water boards, irrigation districts, and governmental agencies, ensuring comprehensive coverage of transaction pricing data.

2. Data Collection and Cleaning

Gathering Data: Our data source meticulously collect historical and current transaction pricing data for agricultural and municipal water rights, encompassing key metrics such as date of sale, volume of transaction (in acre-feet), price per acre-foot, and geographic location.

Data Cleaning: Rigorous cleansing processes are implemented to ensure data accuracy and consistency, including outlier removal, unit standardization, and verification of data integrity.

3. Weighting Scheme Design

Volume Weighting: Each transaction is assigned a weight based on the volume of water traded (in acre-feet), ensuring that larger transactions exert greater influence on the index.

Location-based Weighting: We incorporate location-based weights to reflect the varying market dynamics across different regions, enhancing the index's accuracy in capturing localized pricing trends.

4. Index Calculation Methodology

Base Period Selection: A historical base period, selected to capture significant market trends, serves as the benchmark against which subsequent pricing data is compared.

Price-Weighted Average: The index value is calculated through a price-weighted average of transaction prices, with adjustments made for volume and location-based weights to accurately reflect market dynamics.

5. Index Management and Maintenance

Regular Updates: The index is updated on a monthly basis to reflect evolving transaction pricing trends and ensure its relevance for portfolio management decisions.

Transparency: Methodology documentation is comprehensive and transparent, providing stakeholders with clarity on data sources, weighting schemes, and calculation methodologies.

Additional Considerations:

Data Quality: Stringent quality control measures are employed to uphold the integrity of the index, safeguarding against inaccuracies and ensuring reliability.

Market Dynamics: The index is designed to adapt to evolving market dynamics, with provisions for adjusting weighting schemes and methodologies as needed to reflect changing trends.

Conclusion

The Western Water Rights Index, in conjunction with the WaterVault Index Token (WVI), represents a valuable resource for portfolio managers seeking to navigate the complexities of water rights transactions in the American West. By meticulously tracking transaction pricing data between agricultural and municipal water rights, weighted by acre-foot volume and location, this index provides actionable insights into market trends and facilitates informed investment decisions. With its robust methodology, transparency, and regular updates, the Western Water Rights Index and WVI stand as trusted tools for assessing pricing dynamics and identifying investment opportunities in this critical sector.