



Case Study

Building individual renewable energy projects into a managed fleet of services



CleanChoice Energy at a glance

- All energy sourced from wind, solar, or hydro close to consumers.
- Expanding development portfolio over 300MW with development plan.
- Goal to become the first U.S. company to generate and supply 100% green energy.
- Building a cleaner future motivated by past industrial exposures.

Introduction

Founded in 2012 with a goal of revolutionizing the generation, distribution, and delivery of clean energy, CleanChoice Energy has transitioned into owning and operating their own fleet of solar generation farms.

Embracing a “farm-to-table” approach, the company develops utility-scale solar projects and sells 100% clean electricity to homes and businesses. CleanChoice Energy has experienced rapid growth in the U.S. power market by capitalizing on two key trends:

1. The rise of third-party energy providers as an alternative to legacy utility monopolies, giving consumers and small businesses more flexibility in how their power is generated and delivered and the rates they pay.
2. The continuously increasing demand for renewable sources of energy as consumers become more conscious about the energy choices they make and their impact on the environment. CleanChoice has a mandate to deliver 100% of their end-users’ power supply from renewable sources.

Each new renewable energy project adds long-term fixed-cost supply to the fleet, reduces exposure to volatile energy markets, and expands the company’s ability to manage internal risk. As a result, CleanChoice has grown to deliver energy to over 200,000 customers across the Northeastern U.S., Minnesota, and New Mexico. But what energy trading and risk management (ETRM) software can support the company’s farm-to-table vision for clean energy?

“Our goal isn’t to build the most solar. It’s to build the most valuable clean energy platform —and that means managing the entire offering as a system.”

Anthony Hoang

CTO, CleanChoice Energy

The Challenge

Given their position in the power value chain between wholesale renewable energy providers, legacy utility distributors, and end consumers, CleanChoice needed to manage their exposure in several different areas.

First, they wanted to optimize their residential load delivery, to maintain the balance between a power shortage and a surplus, so that they minimize the additional costs of temporary energy storage or covering a shortage.

CleanChoice also wanted a mechanism for hedging the cost of the power that they purchase, which can come from either short-term agreements subject to significant fluctuations or long-term power-purchase agreement (PPA) contracts, which require complex forecasting and advanced commodity risk analytics.

Finally, CleanChoice wanted to ensure that they take full advantage of government incentives by maximizing the green energy credits that they get from the U.S. environmental protection agency (EPA).

To analyze these areas of exposure and opportunity, CleanChoice wrote some proprietary models with a number of inputs, manually updated several times a day, to match a continuously changing market environment and inform their power trading and risk management software.

Many scenarios, especially those related to PPAs, include varying time horizons, which require extensive processing capacity. CleanChoice realized that to get a better understanding of the values and risks to their business, identify the best hedging opportunities, and lock-in favorable contracts, they needed the tools and capabilities delivered by Beacon by CWAN, a cloud-based ETRM and development platform.

“The bigger the breadth of services that we offer, the more intentional we have to be. Scale amplifies both good decisions and bad ones.”

Anthony Hoang
CTO, CleanChoice Energy

Enhanced risk visibility, hedging, and contract management

- ✓ Ability to use and optimize their own models and analytics.
- ✓ Full control over proprietary algorithms and inputs.
- ✓ Ready integration with multiple internal and external data sources.
- ✓ Sufficient compute resources to power valuations, sensitivity, and risk dashboards.

The Solution

“Fleet scale is where clean energy stops being aspirational and starts being operational.”

Anthony Hoang

CTO, CleanChoice Energy

Collaborating closely with the team of commodity experts and quantitative developers supporting the Beacon by CWAN platform, CleanChoice were able to produce their own energy risk management software toolkit, fitting specific needs across their business.

The tools they created include:

- An energy valuation engine which combines CleanChoice’s inputs with marketplace assumptions based on historical price activity, to determine the optimal price which CleanChoice should offer to the market. Inputs to the engine include wholesale power costs, projected customer migration on and off the service, infrastructure charges, and desired profitability margins.

- A sensitivity analysis tool which leverages Beacon’s forecasting model capabilities to predict the impact of price fluctuations on CleanChoice’s overall costs and revenue.
- A set of risk dashboards and reports with outputs customized for audiences both within CleanChoice as well as their investors, giving all stakeholders a view of risk and exposure in a way that they can understand.

All these proprietary tools and the underlying complex models which power them are hosted in Beacon’s cloud-based ETRM and development environment, ensuring secure access for the entire CleanChoice team wherever they are, without having to worry about storage or computing power limitations.

Essential deliverables

- ✓ Effective data ingestion of power and infrastructure costs and related variables.
- ✓ Proprietary energy valuation engine for optimal price offering.
- ✓ Sensitivity analysis to predict market fluctuations.
- ✓ Customizable dashboards and reports, all backed by a cloud-native platform.

Results

Since deploying Beacon by CWAN, energy and commodity risk management software, CleanChoice continues to increase its market share among third-party power providers, by offering rates that are competitive to traditional utility providers but profitable for their renewable energy business.

As the energy marketplace evolves, CleanChoice can deploy new models and analytics, while retaining the ability to rerun calculations as of any historical date. Beacon's cloud computing capabilities, workflow, and energy trading automation

“Data is what tells you which option to take. Beacon helps us answer a simple but powerful question: are our expanding capabilities actually making the business stronger?”

Anthony Hoang
CTO, CleanChoice Energy

software give them a comprehensive and real-time view of markets and positions. With support for renewable energy credits and other emerging energy instruments, CleanChoice helps meet increasingly demanding sustainability targets driven by consumers.

As CleanChoice grows, they rely on Beacon to track asset-level performance within a portfolio, model the impact of incremental generation on market share, stress test multiple scenarios, and maintain a clear and consistent narrative for company executives, board members, and investors.

Supporting renewable energy risk management

- ✓ Wide range of risk management and hedging strategies tailored to specific needs.
- ✓ Automated evaluation of different market scenarios.
- ✓ Help customers meet sustainability targets from regulators and investors.
- ✓ Translate growth from installed capacity into realized value.

Model, monitor, and manage risk with clarity.

See how top-tier financial firms succeed with Beacon by CWAN.

Connect with an expert →