

North America Airborne Wind Energy Market By Platform Design (Kite Systems, Tethered Drones, Buoyant Airborne Turbines), By Application (Utilityscale Power Generation, Community-scale Energy, Industrial Energy), By Country, Competition, Forecast and Opportunities, 2020-2030F

https://marketpublishers.com/r/NCC7860FFC1AEN.html

Date: May 2025 Pages: 120 Price: US\$ 4,000.00 (Single User License) ID: NCC7860FFC1AEN

Abstracts

Market Overview

The North America Airborne Wind Energy Market was valued at USD 297.82 million in 2024 and is projected t%li%reach USD 1996.46 million by 2030, growing at a CAGR of 37.31% during the forecast period. Airborne wind energy (AWE) systems represent a transformative approach t%li%wind power generation by utilizing devices such as kites and drones t%li%capture stronger, more consistent winds at higher altitudes. Unlike conventional turbines, these systems are more adaptable, require less ground infrastructure, and can be deployed in challenging locations including offshore and remote areas. As the demand for sustainable and decentralized energy solutions increases, AWE technologies offer an efficient alternative that addresses limitations of traditional wind systems, such as land availability and high installation costs. The market's growth is further supported by intensified efforts t%li%reduce greenhouse gas emissions, enhanced governmental support, and corporate climate initiatives. Lightweight designs, improved mobility, and advancements in control systems are positioning AWE systems as a practical and scalable renewable energy solution for the evolving North American energy landscape.

Key Market Drivers



Technological Advancements in Airborne Wind Energy Systems

Technological progress is a key catalyst driving the North America Airborne Wind Energy Market, particularly with drone-based and kite systems that harness wind energy from high altitudes. Innovations in lightweight materials, smart control systems, and energy capture mechanisms are significantly improving the performance and efficiency of AWE technologies. These advancements allow airborne systems t%li%access stronger, more stable wind currents well above the operational limits of traditional wind turbines. Their flexibility in deployment, especially in off-grid and terrainconstrained areas, enhances their appeal across diverse use cases. As R&D continues t%li%push boundaries in aerodynamics and energy electronics, AWE systems are achieving greater efficiency at reduced costs. In 2024, airborne wind systems demonstrated up t%li%15% higher energy capture rates compared t%li%conventional turbines at lower altitudes, indicating their potential t%li%outperform traditional models in suitable environments.

Key Market Challenges

Technological Barriers t%li%Commercialization

Despite strong innovation, the North America Airborne Wind Energy Market faces substantial hurdles in transitioning from pilot projects t%li%widespread commercial deployment. Many AWE systems remain in early development stages, with challenges surrounding aerodynamic design optimization, energy conversion efficiency, and operational reliability under variable wind conditions. Maintaining consistent performance at high altitudes requires precise control algorithms and durable materials capable of withstanding atmospheric forces. Furthermore, the efficient transfer of generated power from airborne platforms t%li%ground-based grids poses significant engineering challenges. These unresolved technical issues contribute t%li%a limited number of commercially viable prototypes and increase perceived investment risks. The uncertainty regarding long-term reliability and scalability continues t%li%hinder investor confidence and delays large-scale adoption of airborne wind energy solutions.

Key Market Trends

Growing Interest in Renewable Energy Alternatives

A key trend shaping the North America Airborne Wind Energy Market is the increasing interest in diversified renewable energy sources beyond traditional wind and solar



technologies. Airborne wind energy offers a compelling solution t%li%the limitations of ground-based systems, such as land constraints and fluctuating output. By leveraging higher altitude wind currents, AWE systems can generate more consistent and efficient power, making them suitable for integration int%li%broader clean energy strategies. The global urgency t%li%combat climate change, reduce emissions, and achieve energy independence is prompting governments and utilities t%li%explore novel technologies like airborne wind. As awareness and demand for sustainable alternatives grow, investment in airborne wind energy R&D and commercialization is accelerating, indicating a shift toward wider acceptance and deployment of these systems across North America.

Key Market Players

Altaeros Energies, Inc.

Windlift, Inc.

SkySails Power GmbH

Tethered Aerostat Systems, Inc.

Flying Power Supply Technology Co., Ltd.

Teraloop Technologies

Odin Energy LLC

Green Bird Company

Report Scope:

In this report, the North America Airborne Wind Energy Market has been segmented int%li%the following categories, in addition t%li%the industry trends which have als%li%been detailed below:

North America Airborne Wind Energy Market, By Platform Design:

Kite Systems

North America Airborne Wind Energy Market By Platform Design (Kite Systems, Tethered Drones, Buoyant Airborne...



Tethered Drones

Buoyant Airborne Turbines

North America Airborne Wind Energy Market, By Application:

Utility-scale Power Generation

Community-scale Energy

Industrial Energy

North America Airborne Wind Energy Market, By Country:

United States

Canada

Mexico

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the North America Airborne Wind Energy Market.

Available Customizations:

North America Airborne Wind Energy Market report with the given market data, TechSci Research offers customizations according t%li%a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up t%li%five).

North America Airborne Wind Energy Market By Platform Design (Kite Systems, Tethered Drones, Buoyant Airborne...



Contents

1. SOLUTION OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
- 1.2.1. Markets Covered
- 1.2.2. Years Considered for Study
- 1.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Formulation of the Scope
- 2.4. Assumptions and Limitations
- 2.5. Sources of Research
- 2.5.1. Secondary Research
- 2.5.2. Primary Research
- 2.6. Approach for the Market Study
- 2.6.1. The Bottom-Up Approach
- 2.6.2. The Top-Down Approach
- 2.7. Methodology Followed for Calculation of Market Size & Market Shares
- 2.8. Forecasting Methodology
 - 2.8.1. Data Triangulation & Validation

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

4. VOICE OF CUSTOMER

5. NORTH AMERICA AIRBORNE WIND ENERGY MARKET OUTLOOK

5.1. Market Size & Forecast

North America Airborne Wind Energy Market By Platform Design (Kite Systems, Tethered Drones, Buoyant Airborne...



5.1.1. By Value

5.2. Market Share & Forecast

5.2.1. By Platform Design (Kite Systems, Tethered Drones, Buoyant Airborne Turbines)

5.2.2. By Application (Utility-scale Power Generation, Community-scale Energy, Industrial Energy)

- 5.2.3. By Country (United States, Canada, Mexico)
- 5.2.4. By Company (2024)
- 5.3. Market Map

6. UNITED STATES AIRBORNE WIND ENERGY MARKET OUTLOOK

6.1. Market Size & Forecast6.1.1. By Value6.2. Market Share & Forecast6.2.1. By Platform Design6.2.2. By Application

7. CANADA AIRBORNE WIND ENERGY MARKET OUTLOOK

7.1. Market Size & Forecast7.1.1. By Value7.2. Market Share & Forecast7.2.1. By Platform Design7.2.2. By Application

8. MEXICO AIRBORNE WIND ENERGY MARKET OUTLOOK

8.1. Market Size & Forecast8.1.1. By Value8.2. Market Share & Forecast8.2.1. By Platform Design8.2.2. By Application

9. MARKET DYNAMICS

9.1. Drivers

9.2. Challenges



10. MARKET TRENDS & DEVELOPMENTS

- 10.1. Merger & Acquisition (If Any)
- 10.2. Product Launches (If Any)
- 10.3. Recent Developments

11. COMPANY PROFILES

- 11.1. Altaeros Energies, Inc.
- 11.1.1. Business Overview
- 11.1.2. Key Revenue and Financials
- 11.1.3. Recent Developments
- 11.1.4. Key Personnel/Key Contact Person
- 11.1.5. Key Product/Services Offered
- 11.2. Windlift, Inc.
- 11.3. SkySails Power GmbH
- 11.4. Tethered Aerostat Systems, Inc.
- 11.5. Flying Power Supply Technology Co., Ltd.
- 11.6. Teraloop Technologies
- 11.7. Odin Energy LLC
- 11.8. Green Bird Company

12. STRATEGIC RECOMMENDATIONS

13. ABOUT US & DISCLAIMER



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 - Product link: https://marketpublishers.com/r/NCC7860FFC1AEN.html
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