



BLACKHORN
VENTURES

2023 Annual Impact Report



TABLE OF CONTENTS

Who We Are	3
Measuring Impact for Scale	8
Company Case Studies	17
Appendix	30



The Blackhorn team is headquartered in Denver with offices in Silicon Valley and New York City. Our team's diversity of backgrounds and perspectives, yet dedication to a common mission, is key to our success.

FROM BLACKHORN'S MANAGING PARTNERS

“At Blackhorn, our mission is to **transform how we build, power, and move our world**. Investing to decarbonize our industrial economy and empower our workforce addresses critical global challenges while unlocking tremendous economic opportunity. The solutions we’re investing in are essential to mitigate climate change and reduce our greenhouse gas emissions. **But reducing emissions is not enough**; we must also empower workers with the skills and tools needed for the clean energy transition, driving greater productivity, safety, and satisfaction.

Our Limited Partners recognize that this multi-dimensional investment approach drives business resilience, high-quality jobs, and economic upside. To us, **it’s simply smart investing**. When done right, **pairing people with technology has always transformed society**. We believe digital solutions hold the key to industrial transformation; Blackhorn portfolio companies are capturing, processing, and leveraging data that enable greater resource efficiency and reduce costs at scale.

As sector specialists, we understand the rapid changes occurring across the industrial economy. Our team and extended network **help our startups anticipate and tap into future economic value creation**. This is evident in the recent convergence of AI and Manufacturing Supercycles, rising energy demand, and structural labor shortages, which create ripe conditions for transformative companies. In the pages that follow, you’ll see direct impact examples; of companies **improving resource efficiency in manufacturing facilities, reducing source emissions from vehicles, and enabling the workers that manufacture, operate, maintain, and repair the grid** infrastructure critical for the energy transition.

Calculating impact is hard—especially early in a company’s lifecycle and for software-oriented solutions. Over this past year, we refined our impact methodology to create a simple, data-driven approach to assess impact that scales as company commercial success scales. In this year’s report, our portfolio companies identified the most relevant metric (e.g., units deployed) and impact metric (e.g., energy saved/unit) for their business. While some companies have modest metrics today, our report provides a **clear vision for their future impact through 2028, which is often 100X what it is today**. Despite a number of near-term uncertainties, a challenging fundraising environment, and pushback against DEI and ESG mandates, we remain optimistic for the future. **The best is yet to come.**”

Phil O’Connor & Melissa Cheong
MANAGING PARTNERS, BLACKHORN VENTURES



Watch [this 10-minute video](#) for a summary of our impact methodology

Impact Report Contributors:
Omar Smith, *Senior Associate*
Amanda Rohrer, *Principal*
Mark Loch, *Operating Partner*

**Blackhorn Ventures
invests in world-class
entrepreneurs
transforming how we
build, power, and move
our world.**

Blackhorn Ventures was founded in 2017. Industrial Impact Fund I (IIF 1) was launched in 2019, and Industrial Impact Fund II (IIF 2) was launched in 2022.



36

Active Investments

\$255M

Committed Capital

\$2.2B

Enterprise value

Blackhorn invests from Seed to Series A, and then supports companies as they scale.

Blackhorn's portfolio companies are transforming our industrial economy with conviction and grit, making us optimistic for a better future.

Our Portfolio at a Glance



9

UN Sustainable
Investment Goals
addressed



6,330

Employees or
contractors across our
portfolio companies

9 States

CA, CO, IL, MA, NJ, NY, TX, UT, WA

4 Countries

Canada, The United Kingdom,
Germany, Australia

3.4 Years

Average IIF 1
investment age

1.2 Years

Average IIF 2
investment age

2023 PORTFOLIO SNAPSHOT



Decrease GHG emissions

215,000

Metric tons of CO2 emissions avoided

7,500

Metric tons of carbon sequestered



Drive workforce enablement

26,312

People whose workplace safety or job quality improved

53%

Of portfolio companies measure worker safety, job quality, or productivity



Improve resource efficiency

7,677 MWhs

of energy saved or delivered

2,462

Metric tons of waste diverted from landfills

71,500 sq.ft
of carbon-neutral buildings retrofitted or built

2023 BLACKHORN SNAPSHOT



Catalyze impactful solutions

85%

Of IIF 1 companies have had a follow-on investment round

250+

Co-investors of Blackhorn portfolio companies

108

VC syndication intros in 2023

5,095

Talent intros in 2023



Improve diversity and ESG

29%*

Of companies are led by a diverse founder

73%

Of companies are measuring one or more impact metrics

90%

Of companies have policies that integrate material ESG risk (e.g., data security, employee safety, etc.)

81%

Of IIF 2 portfolio companies reporting Scope 1, 2 and 3 emissions

Measuring Impact for Scale

“The Blackhorn impact framework, review processes, measurement methodology, and reporting standards follows **leading market standards and principles**. Their thoughtful, consistent and transparent approach leads early-stage VC firms”



Hugh Simpson

*Director - Sustainable Investing and ESG
Integration, Petra Funds Group*



BLACKHORN'S THEORY OF CHANGE

By investing in impact-driven startups and partnering with our companies, we strive to transform our industrial economy toward a more **resource efficient, worker enabled, decarbonized future.**

INPUTS

- Timely Tailwinds
- Thesis-Driven
- Digital Solutions



ACTIVITIES

1. Invest in Impact-Driven Startups
2. Partner Closely to Scale
3. Learn & Evolve



OUTPUTS

- Industrial Impact
- Financial Returns



OUTCOMES

- Resource Efficient
- Worker Enabled
- Decarbonized Future

Footnote: A Theory of Change framework hypothesizes how change will be created given specific actions and interventions to achieve a desired impact or outcome. Given that this is a theory, it will continue to evolve and grow.

THE INPUTS FOR OUR THEORY OF CHANGE

Timely Tailwinds

Invest in core industrial sectors that:

- Represent **\$3 trillion of economic value** annually
- Contribute to **over 80% of greenhouse gas emissions**
- **Face significant labor shortages**
- Have incumbents investing in innovation and **ready to adopt new technologies.**

Thesis Driven

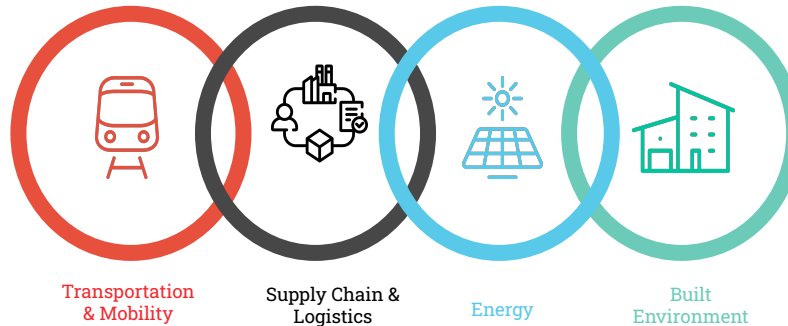
Utilize our team's domain expertise to proactively:

- **Identify critical customer pain points**
- Leverage cutting-edge technologies for paradigm shifts
- Target **high-potential areas for disruption** within our sectors

Digital Solutions

Invest in enterprise software that:

- Scales **proven technologies** and equips our workforce **for a decarbonized future.**
- Focus on **capital-efficient, easy-to-implement solutions** over novel hardware
- **Prioritize market and execution risk** over technical risk.



THE ACTIVITIES OF OUR THEORY OF CHANGE

1

Invest in Impact-Driven Startups

We invest in entrepreneurs transforming our industrial sectors to be safer, more efficient, and carbon-free.

2

Partner to Scale

We engage founders and our industry partners to help enhance our companies' probability of success and scale. As the company grows, its impact grows.

3

Learn and Evolve

We are committed to learning, growing, and adapting our investment and impact approach alongside our portfolio companies.

WE TRACK IMPACT THROUGH TWO KEY PATHWAYS:

1. Invest in Impact-Driven Startups

The positive contributions of our portfolio companies' products and services

Improve resource efficiency

Decrease GHG emissions

Drive workforce enablement

2. Partner Closely to Scale

Blackhorn's role in increasing the positive impact of our portfolio companies

Catalyze impactful solutions

Improve diversity and ESG

EXAMPLE METRICS FOR EACH IMPACT OUTCOME

INVEST IN IMPACT-DRIVEN STARTUPS



Improve resource efficiency

kWhs of energy saved

Metric tons of waste diverted from landfill



Decrease GHG emissions

Metric tons of CO2 emissions avoided



Drive workforce enablement

People whose workplace safety improved



PARTNER CLOSELY FOR SCALE



Catalyze impactful solutions

Successful commercial growth

\$ follow-on capital raised



Improve diversity & ESG

% Diversity of senior leadership

% Implementation of ESG policies

A PURPOSE-BUILT MEASUREMENT APPROACH FOR OUR INVESTMENT STRATEGY

What are we solving for?

- Calculating impact for **early-stage companies** just beginning commercial operations
- Quantifying the impact of **software and/or enabling technologies**
- **Holistically capturing our impact** objective (not just GHG emissions reduction) through our multi-sector strategy

Our Approach

- Use a **per unit impact methodology** to help companies easily estimate their impact
- Estimate a company's **5-year potential impact** based on their commercial forecasts
- Estimate and **sum the various effects** of enabling technologies
- Track a **variety of impact metrics** based on what is most relevant for each company
- **Maintain flexibility** for us to enhance it annually as we learn and grow

CALCULATING AND FORECASTING COMPANY IMPACT

The Basic Formula

2023 Units deployed

X

**Average
impact per
Company
Unit***

=

2023 Realized Impact

2028 Forecasted units

X

=

2028 Potential Impact

*Our portfolio companies measure and forecast impact by identifying the most relevant unit (e.g., miles traveled using the product) and impact metric(s) (e.g., metric tons of CO₂e) for their business. Some companies can measure impact directly, while others estimate and sum their effect relative to an existing baseline. For Seed and Series A stage companies, this is one part art and one part science. A per unit impact is not comprehensive or ideal for every company – establishing an initial framework is what is most important at this stage.

We Align and Collaborate with the Leaders in Impact

- Our processes and reporting are aligned with key **International Standard-Setting Bodies**
- We leverage recognized **Industry Measurement Frameworks**
- We utilize external **Advisory Support** and act as a **Thought Leader** in key organizations
- We have received **Industry Acknowledgement** for our impact work



IMPACT FRONTIERS

PROJECT
FRAME



Petra



Portfolio Snapshot

“Blackhorn Ventures is at the **forefront of implementing sustainability and impact performance management** across their portfolio companies. They have adopted a **practical impact framework** that portfolio companies can use to more precisely monitor, forecast, and report their impact.”



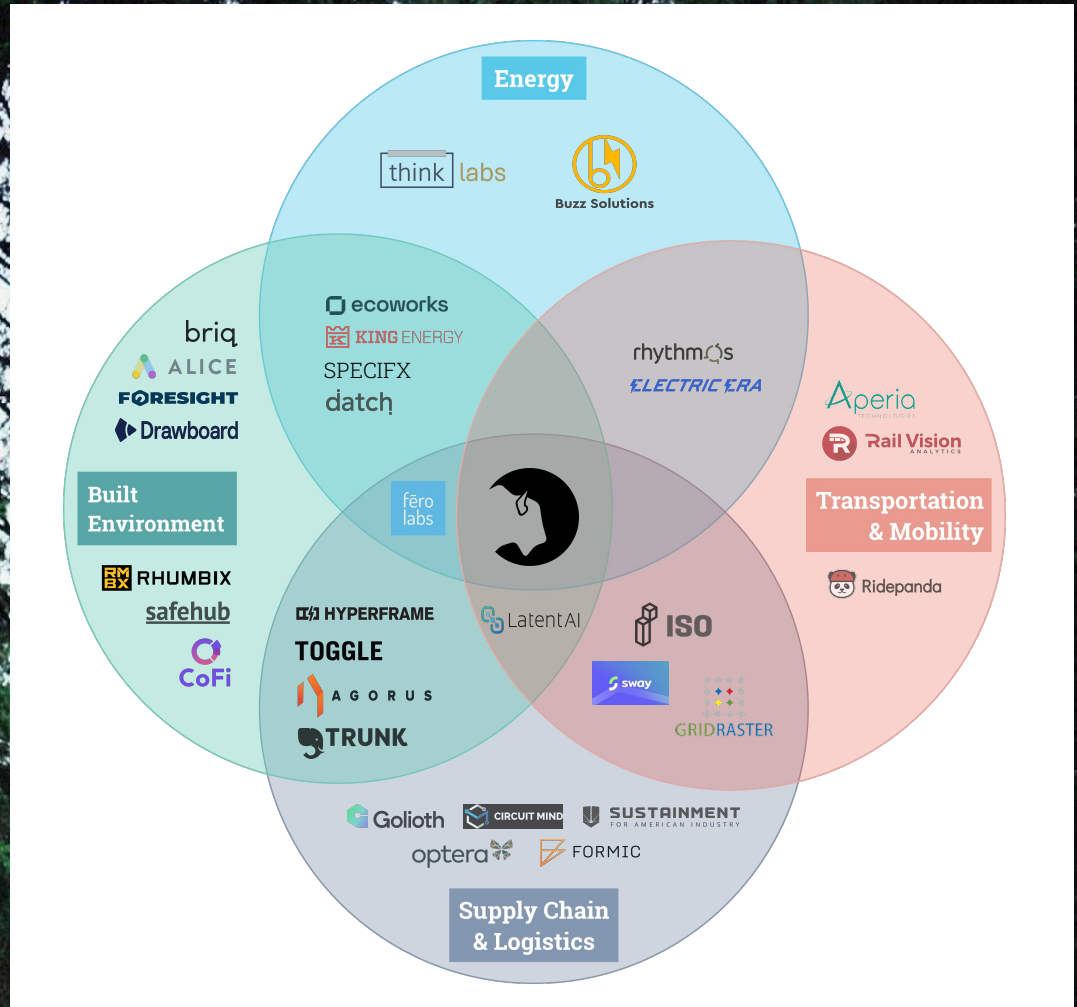
Miriam Roure

Founder and CEO of Kara, sustainability compliance platform



PORTFOLIO COMPANIES BY SECTOR

We invest in core industrial sectors that generate over \$3 trillion annually, contribute to over 80% of greenhouse gas emissions, face significant labor shortages, and have incumbents investing in innovation and ready to adopt new technologies. Opportunities that blur the line between different sectors provide interesting intersectional multiplier benefits.



Only reflects active investments in IIF 1 and IIF 2.

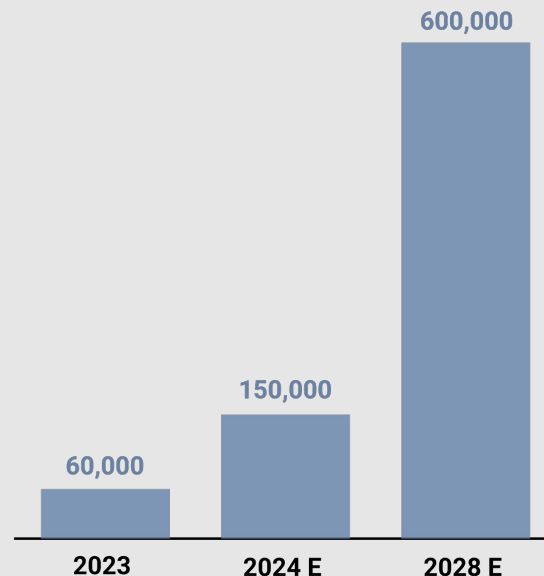
Optimizing Heavy Manufacturing

Fero Labs has developed a machine learning platform to optimize heavy manufacturing processes to reduce costs and emissions in 'hard-to-decarbonize' sectors like steel, chemicals, and cement. Fero Labs empowers process engineering teams with a no code application to generate and deploy machine learning models that drive cost and emissions reductions throughout the manufacturing lifecycle.



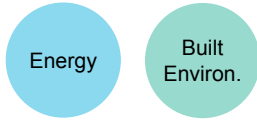
Fero Labs enables its customers to reduce their CO2 emissions footprint and costs by 10%-20% on average

60,000 Metric tons of CO2 emissions avoided in 2023



“What makes Blackhorn special is **their willingness to tackle hard problems in hard to decarbonize sectors.** We continue to benefit from their learnings, insights, and network as we seek **to minimize the carbon footprint of heavy manufacturing while simultaneously cutting costs.**”

- Berk Birand, Co-Founder & CEO



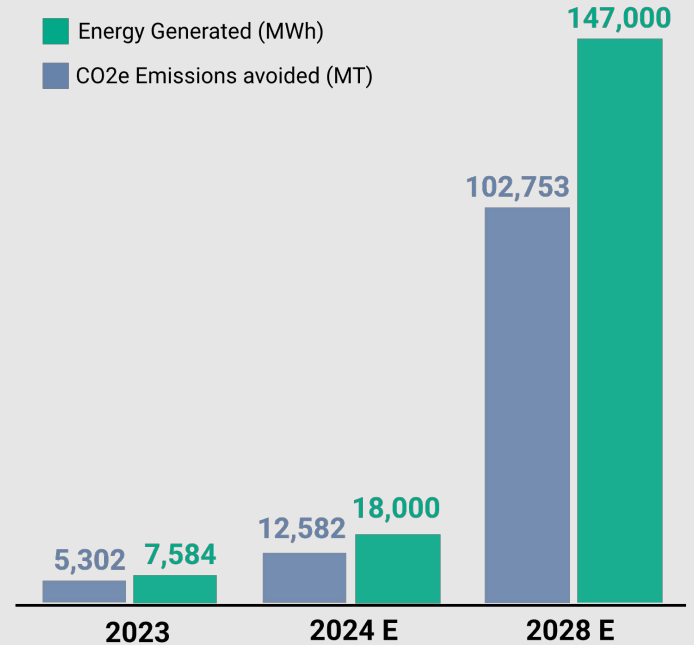
Unlocking Solar for Multi-Tenant Properties

King Energy's proprietary software unlocks commercial-scale solar at multi-tenant commercial buildings (e.g., neighborhood shopping centers). By renting unused roof space and installing solar panels on-site, King Energy accelerates the deployment of solar in underserved communities. King increases NOI for property owners while delivering clean energy to local tenants at a discount to traditional utilities.



60% of 2023 projects based in LMI communities with tenants receiving energy at an average **10% discount**

7584 MWh of solar energy generated in 2023

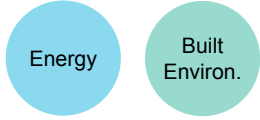


“Sustainability progress happens when it makes financial sense for everyone.”

- John Witchel, Co-Founder & CEO



Current Stage: Series A
[Datch.io](https://datch.io)



Empowering the Industrial Workforce

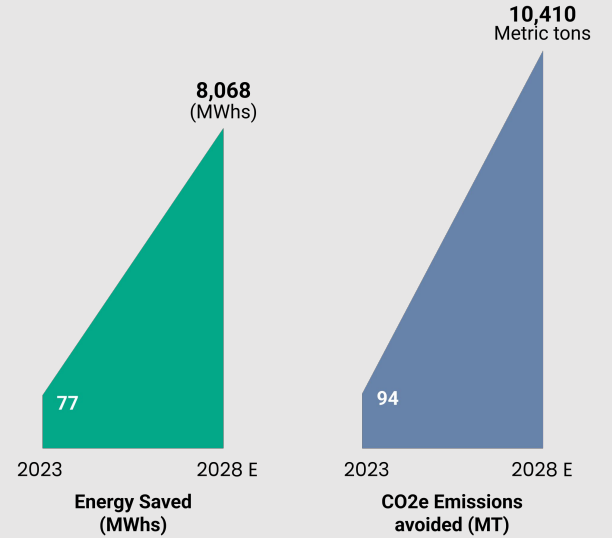
Datch's AI voice interface learns from frontline workers talking through their jobs conversationally, structures their data, and provides insights to maximize operational efficiency. Across all industrial markets, better in-field data collection solves a critical bottleneck for the adoption of digital processes that drive labor productivity and resource efficiency.



21% Reduction in downtime due to reactive maintenance

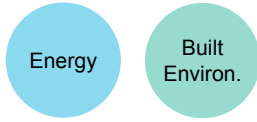
9%+ Increase in worker productivity

77 MWhs of energy saved in 2023



"A significant but often overlooked factor in emissions is the close relationship between asset availability and the grid. Planned and unplanned **asset downtime results in entire plants emitting greenhouse gases when they aren't producing goods, unnecessarily increasing industry emissions by 30%**. With Blackhorn's support, Datch is tackling this problem head-on. By empowering frontline workers with AI-powered mobile asset management, Datch is dramatically reducing unnecessary emissions."

- Mark Fosdike, Co-Founder & CEO



Transforming Buildings for a Greener Future

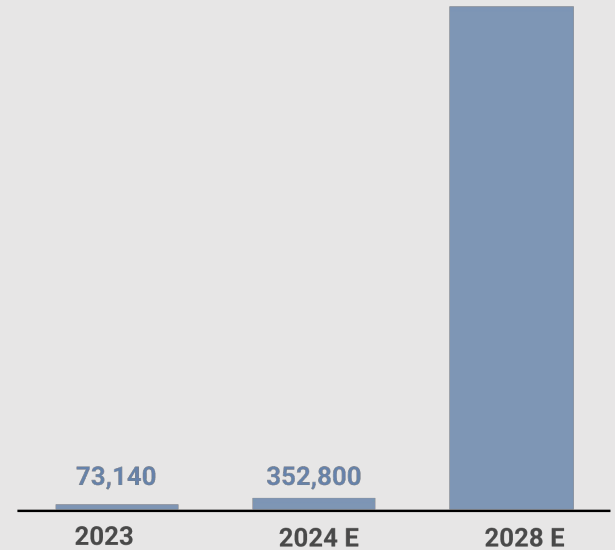
ecoworks provides innovative solutions for sustainable building renovations, transforming buildings to EU Net Zero standards within a few weeks of construction. The company is shifting work from the construction site to prefabrication, producing facade and roof elements in automated factories with a prefab-level of up to 90%. With the end-to-end software they are automating planning, project management and on-site management. By serially renovating buildings, they are creating affordable housing with a climate neutral and circular technology.



Old buildings contribute up to 40% of global CO2 emission. ecoworks reduces the retrofit **timeline from 4-6 months to under 3 weeks**

73,140 Metric tons of CO2 emissions
avoided in 2023

102,213,881

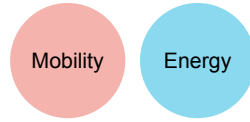


"It's incredible to have a mission-aligned investor like Blackhorn supporting our vision. Since their investment, **their depth of sector expertise coupled with their commitment to impact** have made them a critical addition to our cap table."

- Emanuel Heisenberg Co-Founder & CEO



Current Stage: Series A
ElectricEraTechnologies.com



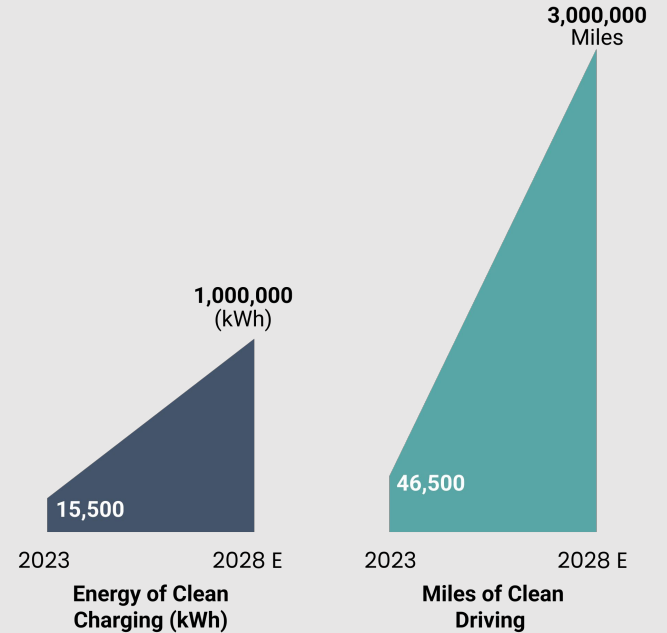
Powering the Transition to Cleaner Transportation

Electric Era is committed to promoting electrification and decarbonization in transportation by making EV fast charging widely available and cost-effective. 145M electric vehicles are expected to be on the road by 2030, but the supply of EV fast charging infrastructure isn't keeping pace. Electric Era's modular electric vehicle battery and smart charging system enables convenient stores and gas stations to install EV fast chargers without the need for costly grid upgrades and reduces the cost of energy for site owners and customers.



EVs emit 70%+ less CO2 relative to ICE vehicles. Electric Era's fast charging infrastructure addresses the limiting factor for EV adoption, range anxiety.

15,500 KWhs of clean charging in 2023

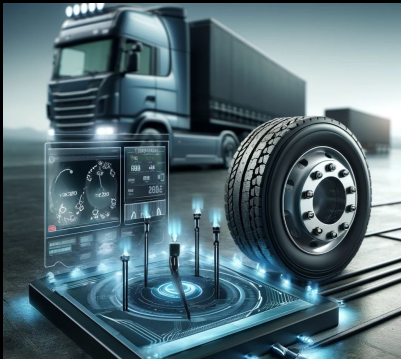


“Blackhorn has been an invaluable **partner that isn't afraid to dive deep into our strategic and impact approach**. They have provided invaluable guidance, industry insights, and a network of critical connections to help us succeed.”

- Quincy Lee, Co-Founder & CEO

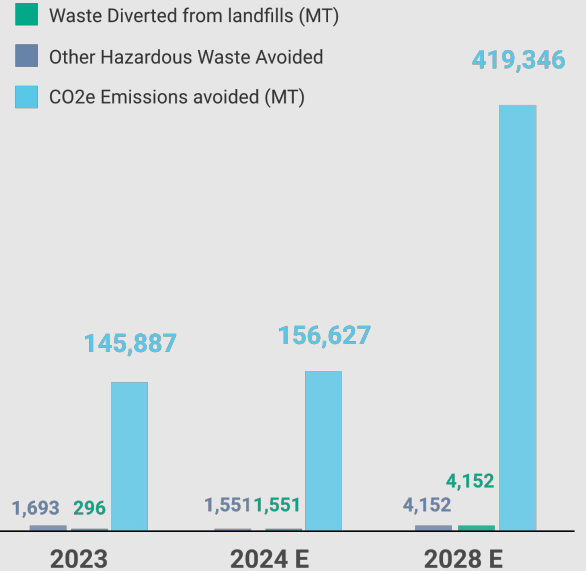
Revolutionizing Tire Management for Greener Trucking

Aperia's tire management solutions improves the efficiency and sustainability of commercial transportation. While global trade is highly reliant on trucking, the trucking industry is responsible for about 30% of transport CO2 emissions. Over 50% of trucks on the road have tires with incorrect pressure, which impacts fuel economy. Aperia's Halo Tire Management System ensures that tires are properly inflated, thereby improving fuel efficiency, extending tire life, and drastically lowering maintenance costs. With Aperia's innovative system, fleet operators can not only significantly cut down on operational costs but also contribute to a greener, more sustainable future for global transportation.



If all tractor-trailers in the US were equipped with Halos, it would reduce annual CO2 emissions by 9 million Tons

145,887 Metric tons of CO2 emissions avoided in 2023



“Aperia was founded, funded, and filled with passionate people who dedicate their time and energy toward **solving interesting and impactful problems**. We're deeply appreciative of the partners like Blackhorn who provide countless contributions that are enabling Aperia to deliver on our mission”

-Joshua Carter Co-Founder & CEO



Current Stage: Seed
Railvision.ca



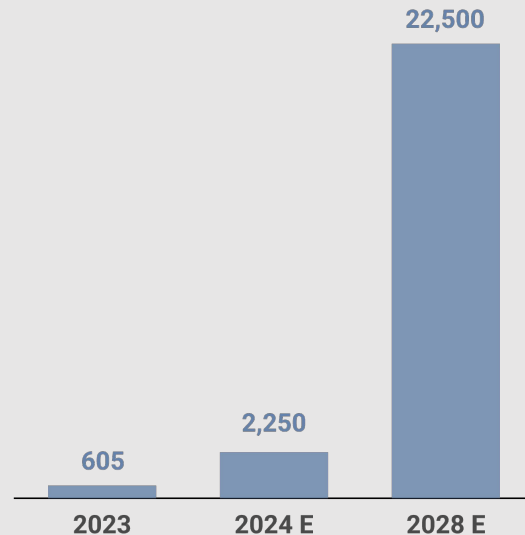
Pioneering Sustainable Rail Solutions

RailVision provides cognitive vision sensor technology and safety systems to maximize train efficiency and minimize GHG emissions for the railway industry. Its AI-powered software platform integrates train sensors, track sensors, weather data, and operational data to provide train operators with insights and decision support that enhance fuel efficiency, reduce costs, and improve service reliability. Railways often serve as the foundation of national and regional economies, facilitating trade and movement of goods. RailVision ensures that rail transport is sustainable, efficient, and reliable.



RailVision reduces fuel use and resulting GHG emissions by up to 20%

605 Metric tons of CO2 emissions avoided in 2023



“Every dollar our customers save on diesel fuel directly boosts our revenue while simultaneously reducing greenhouse gas emissions. We are thrilled to be supported by Blackhorn, whose commitment to our business success and greener rail transportation perfectly complements our vision.”

- Dev Jain, Co-Founder & CEO

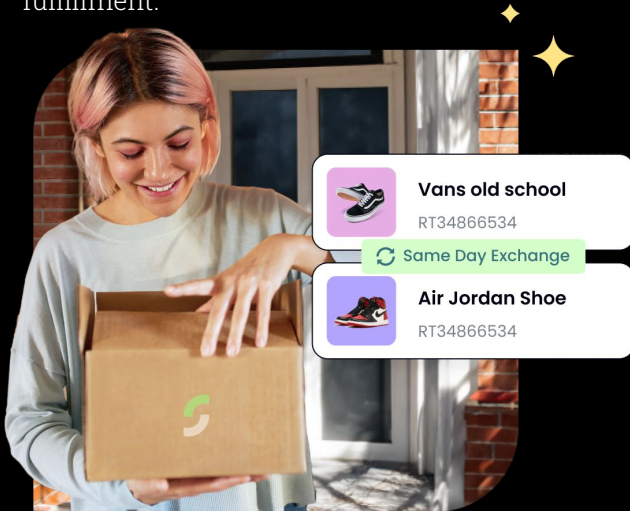


Current Stage: Series A
Shipsway.com



Enabling Circularity with Returns and Exchanges

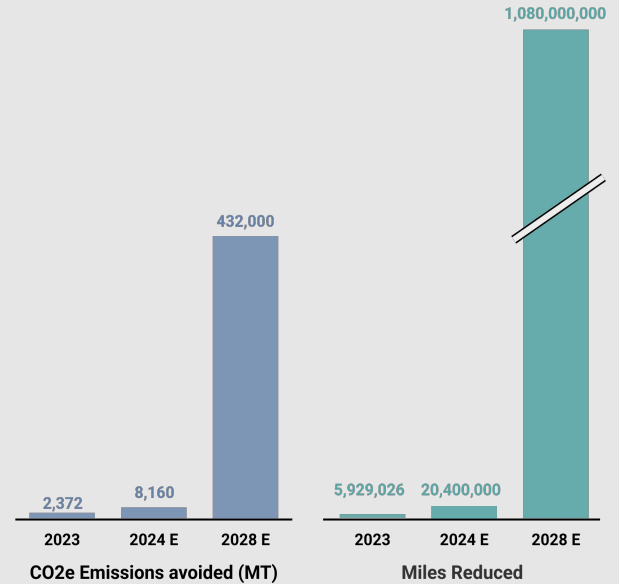
Sway is a white-glove delivery and home return pickup platform providing companies and their shoppers a transparent, speedy delivery service and box-less, label-less returns and exchanges. Sway's proprietary software platform combines warehouse management, returns management, and transportation management tailored to handle high-volume two-way fulfillment.



15%+
Reduction in CO2
emissions relative to
traditional delivery

Sway is reducing the
9.5 billion pounds of
returns that end up in
landfills today

5.9 million transport miles reduced in 2023



“Blackhorn is **not your typical Venture Capital investor**; they are true partners in our business providing guidance, hands-on support and access to their deep network. This has enabled us to build a business that delivers a win for shoppers, retailers and the environment.”

- Eric Wimer, Co-Founder & CEO



Current Stage: Series A
OpteraClimate.com

Supply Chain

The Numbers to Power Climate Action

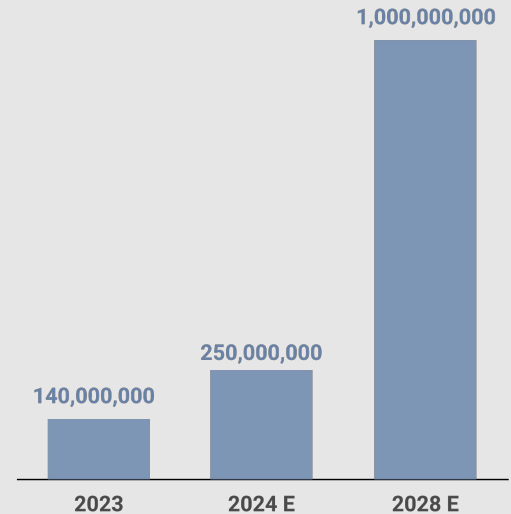
Optera's platform calculates and forecasts corporate carbon emissions while providing customers with the tools needed to drive strategic decision-making towards greater resource efficiency. Optera's Supply Chain Manager tool calculates emissions, tracks supplier progress, and enables supplier collaboration and engagement.



5% of US companies report Scope 3 emissions even though they are

5.5x higher than companies' direct emissions

140 Million metric tons of CO2 emissions under management in 2023



"We started Optera with a simple mission: **to empower the corporate sector to stop Climate Change**. This mission has led us to work with many of the largest companies in the world on tackling Scope 3 emissions. **The Blackhorn team has provided invaluable support, guidance, and connections to accelerate our growth and pursue our mission.**"

- Tim Weiss, Co-Founder & CEO



Current Stage: Series C
[GetForesight.com](https://getforesight.com)

Built
Environ.

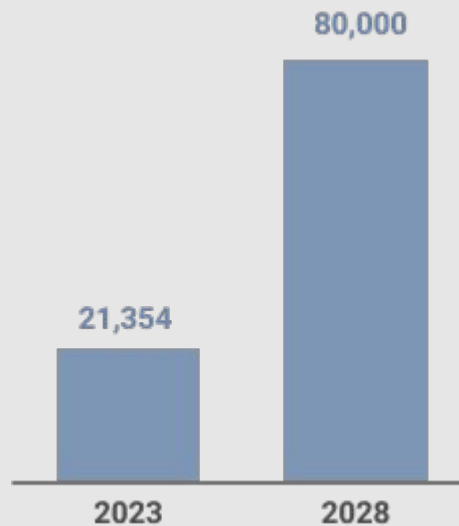
Reducing Workplace Incidents in High-Risk Industries

Foresight's integrated solutions enhance workplace safety and provide comprehensive workers' compensation insurance across various high-risk industries. In sectors like construction, manufacturing, and agriculture, workplace incidents can lead to significant financial losses and operational disruptions. Foresight tackles these challenges through their Safesite platform, which embeds advanced safety technologies and virtual coaching into every insurance policy. This system not only reduces workplace incidents but also helps businesses maintain compliance and manage risks more effectively.



The Safesite platform ensures workers are complying with planned safety actions, resulting in 17% less reports of workplace safety incidents on average.

21,354 people whose workplace safety improved in 2023



“Partnering with Blackhorn allows Foresight to amplify its commitment to enhancing sustainability across American businesses and **safeguarding the livelihoods of hardworking men and women** in blue-collar industries, ensuring they return safely to their families after every shift.”

- Peter Grant Co-Founder and CEO



BLACKHORN
VENTURES

Appendix



Focus on Empowering Our Team and Our Founders

The Blackhorn Ventures Portfolio Growth Platform provides our founders with targeted resources and hands-on assistance to accelerate growth. The Platform makes Blackhorn partners more efficient and impactful by optimizing engagement processes, and creates accountability for actions that positively impact companies trajectories.

Blackhorn Platform Offerings

TALENT ACQUISITION	CUSTOMER INTRODUCTIONS	FINANCE AND FUNDRAISING	IMPACT MEASUREMENT	LEADERSHIP DEVELOPMENT
MARKETING & COMMS	COMMUNITY	OPERATIONS	EVENTS	

PORTFOLIO COMPANY IMPACT OUTPUTS

Improve resource efficiency

Improving resource efficiency is critical, but not easily captured by one metric. We believe buildings, forms of transportation, new energy generated, the energy efficiency of existing assets, material use/recovery, and people are all key resources within our industrial economy.

Decrease GHG emissions

A reduction in greenhouse gas emissions is necessary but insufficient as it often does not fully capture the enabling impact a technology may have.

Drive workforce enablement

Enabling our workforce with safe, high-quality jobs and the skills and tools necessary for those jobs is critical to the success of the 4th industrial revolution and clean energy transition.

BLACKHORN IMPACT OUTPUTS

Catalyze impactful solutions

Accelerating the scale and success of our portfolio companies is critical to their impact. We help our portfolio companies through syndication building, customer introductions, and more.

Improve diversity and ESG

Research shows that diverse teams and strong ESG factors lead to better performance. We provide strong stewardship and support through talent introductions, policy templates, and more.

IMPACT & ESG ANALYSIS THROUGHOUT THE INVESTMENT LIFECYCLE



Sourcing

Proactively source and screen deal opportunities based on thesis alignment

Pipeline

Identify relevant impact outcomes within our initial deal screening rubric

Due Diligence

Conduct thorough impact analysis as part of our investment due diligence including:

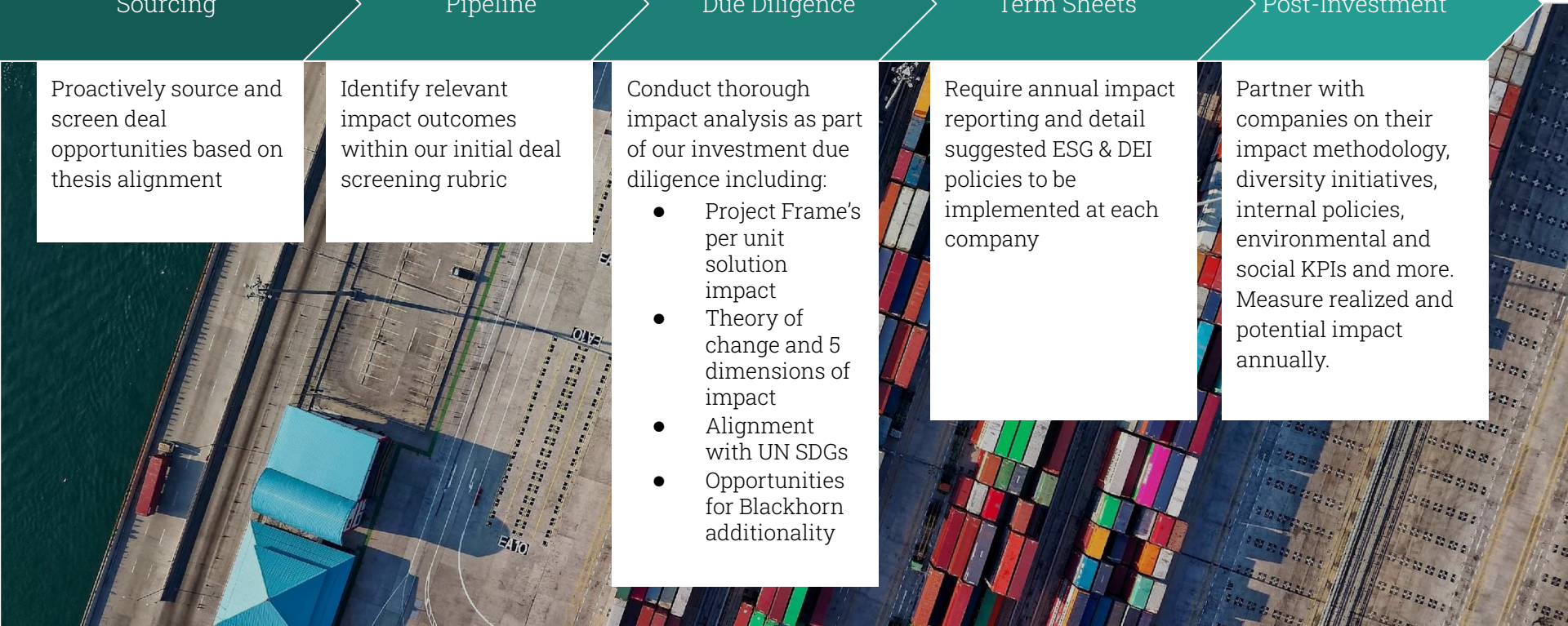
- Project Frame's per unit solution impact
- Theory of change and 5 dimensions of impact
- Alignment with UN SDGs
- Opportunities for Blackhorn additionality

Term Sheets

Require annual impact reporting and detail suggested ESG & DEI policies to be implemented at each company

Post-Investment

Partner with companies on their impact methodology, diversity initiatives, internal policies, environmental and social KPIs and more. Measure realized and potential impact annually.



Blackhorn's stewardship approach reflects how our portfolio companies deliver impact responsibly by taking into consideration Environmental, Social, and Governance factors and Blackhorn's role as a steward and board member.

1

ESG Integration in Investment Process

Incorporate ESG review during due diligence to assess potential risks and areas for improvement that may not be apparent in traditional financial analyses, leading to more informed investment decisions and better long-term outcomes.

2

Active Portfolio & Board Engagement

Proactively engage with all portfolio companies by providing resource guides and templates, expertise, and regular support. Highly active board members.

3

Diversity & Inclusion Initiatives

Foster diversity and inclusion internally and across our portfolio companies. This not only aligns with our ESG principles, but leverages the proven benefits of diverse teams in driving innovation and performance.

4

Transparent Reporting & Engagement

Include side letter requirements for annual transparent reporting from portfolio companies in line with SFDR regulations. This includes each companies' operational emissions, internal governance policies, and key initiatives/KPIs.



BLACKHORN
VENTURES

Thank You