

# Measuring the Carbon Footprint for Health Systems and Suppliers

## A Collaborative Field Study

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### Background & challenge

The carbon emissions from assets owned by health systems are a small fraction of their total carbon footprint. The emissions produced by their suppliers of products, and services, represent 65-75% of hospitals' emissions.\*

In 2025, BD partnered with a large US healthcare provider to track the emissions from manufacturing and transporting seven high-volume syringes to three hospital sites, and from their subsequent use and disposal. The study demonstrates how the E-Liability approach, through supplier-specific data collection and causal allocation, enables more accurate product-level carbon accounting, revealing where health system emissions accumulate across the healthcare value chain, and opportunities to lower those emissions.

While the study focused only on a single supplier of a single product category (syringes) sold to a single customer, its methodology is generalizable to multiple suppliers of multiple products sold to multiple customers. It can also be used to calculate the product and operational emissions from treating a patient's medical condition.

### Key challenge:

How can health systems access **accurate, credible, product-level** carbon data across complex supply chains to guide real decarbonization decisions?

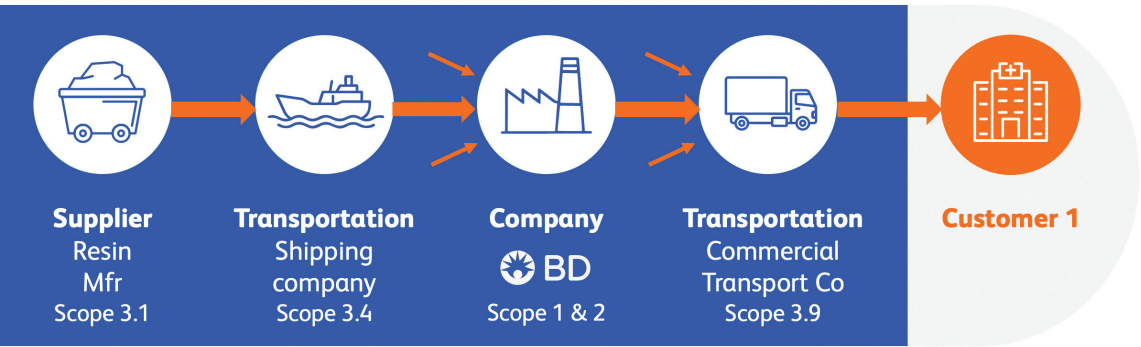
### Project goals:

- **Immediate goal:** Enable a large US healthcare provider\* to measure cradle-to-grave emissions of high volume syringes purchased from BD.
- **Methodological goal:** Apply E-Liability carbon accounting to trace emissions transparently and causally at product level.
- **Longer-term ambition:** Establish scalable, generalizable practices to support accurate carbon accounting across health systems and suppliers within 3–5 years.

### E-Liability carbon accounting method

Each entity needs only to know its direct emissions and the emissions embedded in the products and services (e.g., electricity) purchased from immediate suppliers. When an output product is sold, the entity transmits the accumulated emissions in that product to its immediate customer.

### Sample value chain



Scope categories shown are aligned with the GHG Protocol.

### Study design & methodology

- **Scope:** Seven high volume BD syringe types shipped to three hospitals.
- **Boundary:** Cradle to grave emissions—from raw materials through manufacturing, transport, use, and disposal.
- **E-Liability in Practice:** Manufacturing (BD), transportation and storage, use & disposal (Hospitals).

### Key Results

- Cradle-to-Grave Emissions (g CO<sub>2</sub> per syringe):**
- **Hospital X:** 72.5 g
  - **Hospital Y:** 57.1 g
  - **Hospital Z:** 86.8 g

### Key insights:

- Purchased materials dominate emissions (~60–90%).
- Transportation emissions exceeded manufacturing and in-hospital energy at two sites.
- Disposal contributes ~10–13% of total lifecycle emissions.
- Smaller syringes were not always lower-carbon.
- Product design matters.

### Why product-level data matters

- Spend based estimates varied from **22% to 209%** of true product emissions.
- Product-level visibility revealed actionable levers: Optimizing syringe mix, product and packaging redesign, rethinking logistics routes, improving waste segregation and disposal.

### Implications & scalability

- Method is fully generalizable across products, suppliers, and care pathways.
- Enables dual-value decision-making: Financial cost (TDABC) and Environmental cost (kg CO<sub>2</sub> per treatment).
- Enables health systems and their suppliers to jointly decarbonize supply chains.

### Where to start

1. Select high impact products or services
2. Engage key Tier 1 suppliers
3. Align partners, data, and governance
4. Secure executive sponsorship and multidisciplinary teams

### Takeaway

Accurate carbon accounting is a prerequisite for meaningful healthcare decarbonization.

E-Liability enables health systems and suppliers to move from estimates to evidence—and from ambition to action.