



# IMPACT REPORT

2022 Impact Report



# ABOUT PHLOW, A PUBLIC BENEFIT CORPORATION

Phlow was founded with the mission to reliably supply affordable, high-quality essential medicines through U.S.-based advanced manufacturing processes. In order to protect and pursue this mission as well as develop a leading pharmaceutical sustainability culture, we were incorporated as a Delaware public benefit corporation in January 2020. A public benefit corporation (PBC) is a company designed to create public good while operating in a sustainable and responsible manner. In Phlow's case, the public good we aim to create is reflected in our mission: to reliably supply affordable, high-quality, essential medicines through U.S.-based advanced manufacturing processes. We also operate with the triple bottom line of social, environmental, and economic performance in mind to ensure we are both sustainable and responsible.

PBCs like Phlow are held to a higher standard of purpose, accountability, and transparency. Through striving toward a greater mission to achieve public benefit, we hold ourselves to a higher standard of purpose. Through the consideration of all stakeholders in important decision-making, we hold ourselves to a higher standard of accountability. And through the publication of a biennial impact report which details social and environmental performance, we hold ourselves to a higher standard of transparency.

Phlow is proud to be a public benefit corporation and uphold these higher standards in order to ensure that the pursuit of our mission is a protected priority.

## Mission

To reliably supply affordable, high-quality essential medicines through U.S.-based advanced manufacturing processes.

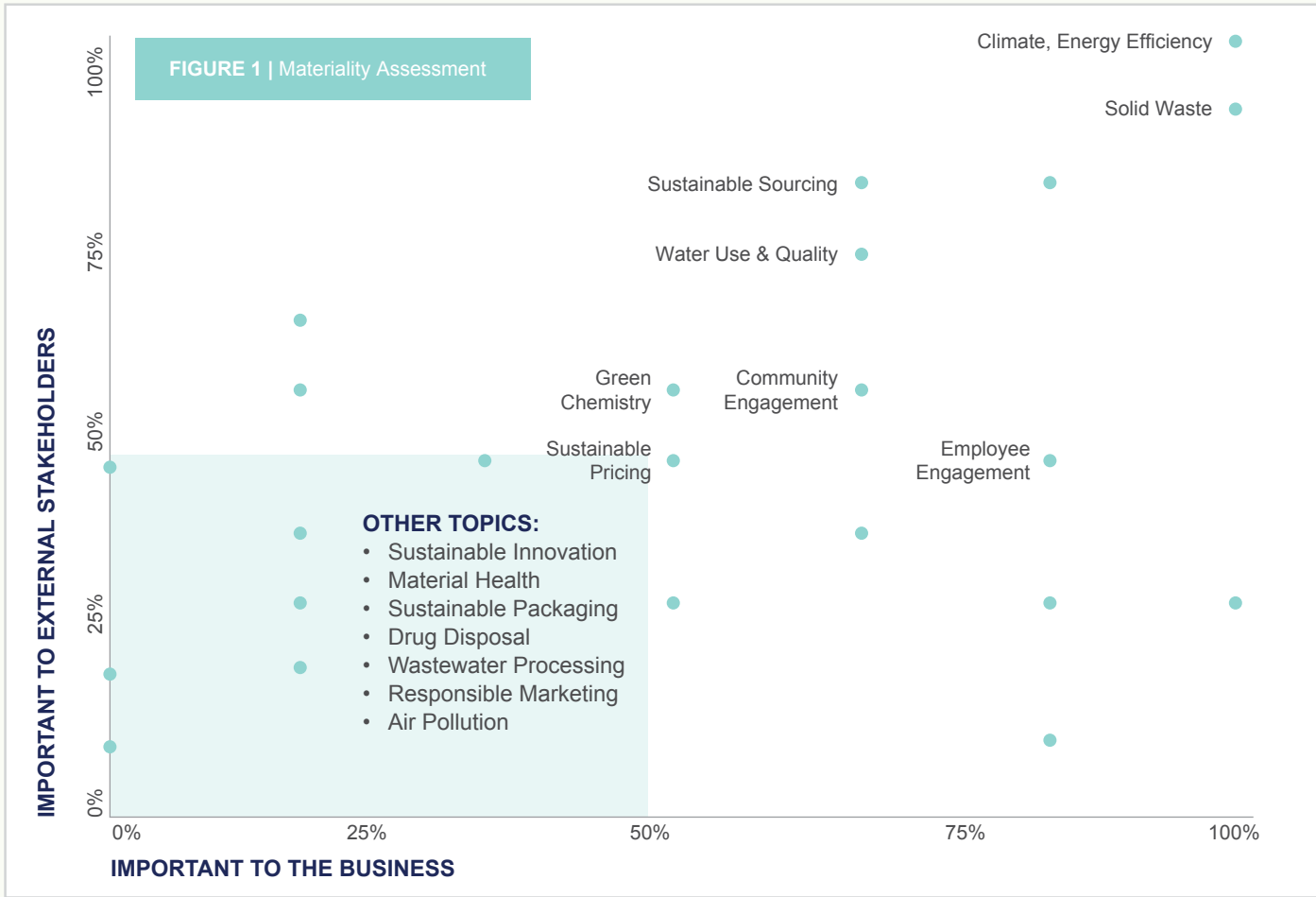
## Vision

Make the U.S. a country where every human being has access to the essential medicines necessary to sustain life and conquer disease.



# IMPACT FRAMEWORK

<div>  <b>ESSENTIAL MEDICINES SECURITY</b> </div>	<div>  <b>ENVIRONMENTAL STEWARDSHIP</b> </div>	<div>  <b>THRIVING COMMUNITIES</b> </div>	<div>  <b>LEADING WITH INTEGRITY</b> </div>
Access to a <b>Secure</b> Supply of Essential Medicines	Green Chemistry ..... Water, Waste, Energy Climate & Greenhouse Gases (GHGs)	Community Support & Engagement ..... Employee Engagement	Transparent Pricing ..... Sustainable Sourcing



Phlow’s materiality assessment visually represents the importance of the evaluated sustainability topics to both stakeholders and Phlow.

## Methodology Behind Priority Development

In 2022, Phlow set out to define priorities relating to impact and sustainability. To identify and establish our priority topics, or the topics which are most critical both to the business and our stakeholders, Phlow completed external benchmarking, a materiality assessment (Figure 1) as well as internal stakeholder discussions.





# ESSENTIAL MEDICINES SECURITY



# ESSENTIAL MEDICINES SECURITY



*When we need life-saving medicines, we expect them to be available and affordable. But our country's supply chain is complex, broken, and dangerously dependent on foreign suppliers for our most essential medicines. Phlow aims to create public benefit primarily by providing a solution to the broken essential medicine supply chain.*



## Government

Thanks to funding by HHS/ASPR/BARDA, Phlow is rebuilding critical infrastructure here at home while actively accelerating the advanced manufacturing of affordable, high-quality essential medicines.

**IN 2022, PHLOW MET 100%  
OF ITS GOVERNMENT  
CONTRACT COMMITMENTS.**

## OBJECTIVE

Phlow will execute on its U.S. government commitments by building the key infrastructure required to establish its end-to-end, U.S.-based supply chain capability to produce Active Pharmaceutical Ingredients (APIs) and essential medicines, including those on the national drug shortage list, and medical countermeasures utilizing advanced manufacturing processes.

# ESSENTIAL MEDICINES SECURITY



## Children's Hospital Coalition

The care of America's children is disproportionately impacted by shortages of essential medicines that may result in compromised patient care, clinician frustration, and increased hospital pharmacy costs and inefficiencies.

As a solution, the Children's Hospital Coalition (CHC) brings together some of the top children's hospitals across the nation, in collaboration with Phlow, to provide certainty in availability, quality, access, and affordability for key medicines necessary to sustain life and conquer disease and to address the nation's broken essential medicines supply chain.

As a founding member of the CHC, Phlow is helping to gather an unprecedented coalition of best-in-class children's hospitals in order to help ensure the reliable and affordable supply of high-quality essential medicines and help prevent pediatric drug shortages. Products within the portfolio are recommended by the CHC's Clinical Advisory Council, which ensures generic injectable products that are in shortage as well as new presentations and concentrations designed to specifically meet pediatric population needs.

*Phlow commits to ensuring access for Children's Hospital Coalition members to the pediatric essential medicines the Coalition prioritizes. Phlow will work to grow the Children's Hospital Coalition to expand access to pediatric essential medicines.*

**AS OF 2022, THERE ARE  
28 MEMBERS  
OF THE CHC  
AND PHLOW OFFERED A  
SECURE SUPPLY OF 4  
FINISHED DRUG PRODUCTS  
TO THESE MEMBERS.**

### FOUNDING CHC MEMBERS





# ENVIRONMENTAL STEWARDSHIP



# ENVIRONMENTAL STEWARDSHIP



*Phlow aims to imbed green chemistry in our manufacturing and operations, from the construction and operations of our sites to manufacturing at contracted facilities. Phlow's advancement of leading practices such as continuous manufacturing has the potential to significantly reduce the environmental impact of Phlow and the larger pharmaceutical industry.*

## Green Chemistry

Phlow will consider the potential to convert process steps into continuous flow for every project, and, when not possible, will look to leverage process chemistry routes that reduce solvents that are harmful to our environment.

- 100% of projects were evaluated for continuous manufacturing in 2022.

Phlow tracks PMI and will evaluate processes using the 12 principles of green chemistry indicators.

- In 2022, Phlow tracked PMI for 100% of projects. Phlow also evaluated the processes for every project using the 12 principles of green chemistry in order to reduce the environmental impact of established processes.

Phlow will share best practices to educate the industry as well as students on continuous flow and the Green Chemistry benefits.

- Phlow is actively developing educational materials to share best practices on continuous flow in 2023.

## CONTINUOUS FLOW MANUFACTURING

For more than 50 years, pharmaceuticals have been produced using a method known as “batch manufacturing,” a stop-and-go process which involves multiple steps and outputs. In contrast to the traditional “batch” mode of production, continuous flow is a process that involves material being continuously loaded, processed, and unloaded seamlessly without interruption, effectively increasing yield and reducing waste.

## WHAT IS PMI?

One method of measuring the impact of our green chemistry is through Process Mass Index (PMI), a comprehensive process metric first introduced by the EPA and American Chemical Society in 2007.  $PMI = \text{total raw materials (kg) for the process} / \text{Total bulk API production (kg)}$ . A lower PMI indicates less material used to make API, and helps create a greener process.



# ENVIRONMENTAL STEWARDSHIP



## PRINCIPLES OF GREEN CHEMISTRY

The 12 Principles of Green Chemistry, developed by Paul Anastas and John Watner in 1998, provide a framework for minimizing the use or generation of hazardous substances during the life cycle of a chemical product.

- Prevention
- Atom Economy
- Less Hazardous Chemical Syntheses
- Designing Safer Chemicals
- Safer Solvents and Auxiliaries
- Design for Energy Efficient
- Use of Renewable Feedstocks
- Reduce Derivatives
- Catalysis
- Design for Degradation
- Real-time analysis for Pollution Prevention
- Inherently Safer Chemistry for Accident Prevention

<https://www.epa.gov/greenchemistry/basics-green-chemistry>  
<https://www.acs.org/content/acs/en/greenchemistry/principles/12-principles-of-green-chemistry.html>

## Water, Waste, Energy, & GHG Emissions

We will imbed green chemistry in our manufacturing and operations, from the construction and operations of our sites to manufacturing at contracted facilities, including:

- Track and monitor water and energy use, waste, and GHG emissions
- Conserve resources and engage in reduction efforts
- Advance leading practices in continuous manufacturing processes to increase PMI and improve solvent recovery and reuse

Phlow is currently in the process of developing an environmental management system in order to track important environmental metrics, which will be launched in 2023.



At Phlow, we strive daily to be good environmental stewards by considering and reducing our impact on the planet. In 2022, Phlow began partnering with Natural Organic Process Enterprises (NOPE) RVA to introduce a composting program at Phlow headquarters and reduce the amount of waste sent to the landfill. As of November 2022, Phlow has diverted 940 lbs of organic waste from the landfill through composting.



# THRIVING COMMUNITIES





# THRIVING COMMUNITIES



*Phlow supports the communities where we operate as well as organizations working to increase access to essential medicines through volunteerism and philanthropic partnerships. Phlow also provides a competitive living wage and leading benefits to employees to ensure the flourishing of our internal Phlow community.*



## Community Support & Engagement

Phlow will support communities where we operate through volunteerism and philanthropic partnerships.

- In 2022, we continued our commitment to engaging and empowering the students of Petersburg through our partnership with Petersburg City Public Schools. In June, Phlow hosted 27 incredible elementary school students at Phlow headquarters, for a day of learning and celebration, which included Science, Technology, Engineering, and Mathematics (STEM) demonstrations and inspiring stories of innovation and resilience.
- In August 2022, Phlow joined forces with the YMCA to host a Health Fair and Family Fun Day at the Petersburg YMCA. At the health fair, students had access to education on asthma, diabetes, and high blood pressure, while also enjoying complimentary food, haircuts, and fun activities.

Phlow commits to supporting organizations working to increase access to essential medicines.

- Phlow is proud to be a Champion sponsor for Angels for Change, a nonprofit which fights against drug shortages through advocacy and awareness.

Phlow will provide paid employee volunteer time.

- Phlow provides 30 days of paid time off as well as 12 holidays to every employee. Currently, Phlow does not provide separate paid employee volunteer time, but aims to provide opportunities for company-wide days of service as well as share information on opportunities to serve and engage with the community in order to encourage employee volunteer activity.





# LEADING WITH INTEGRITY



# THRIVING COMMUNITIES



## Employee Engagement

Phlow provides leading benefits to employees for health care and wellbeing.

- In 2022, Phlow provided:
  - 100% healthcare, dental, and vision coverage for employees and families
  - 401(K) matching up to 6%
  - 30 days PTO, 12 holidays

Phlow pays employees a competitive living wage.

- 100% of employees were paid a competitive living wage in 2022.

Phlow will survey employees each year on sustainability and employee engagement and supports continuous improvement with an employee-led sustainability committee.

- Phlow currently utilizes the Great Place to Work assessment to evaluate employee engagement. 95% of employees considered Phlow a great place to work during the most recent assessment in November 2021. In 2023, Phlow will target adding sustainability engagement to this assessment as well as forming the employee-led sustainability committee.

Phlow will tie a portion of employee and executive leadership annual bonus objectives to company sustainability and ESG performance.

- In 2022, Phlow's corporate growth objectives included a focus on company sustainability performance and development. As a part of this corporate objective, Phlow developed corporate impact and sustainability objectives. Moving forward, Phlow will develop a plan to incorporate these impact and sustainability objectives into the bonus structure of employees and executive leadership.

## 2022 Impact Report

US-00038

