Webinar July 30[h], 2024

Life Cycle Assessment for BIOGAS: Current Status, New Tool Trends, and Future Potential

P6 TECHNOLOGIES

Quick Notes

You should be able to hear me talking now. If you can't, use the questions module to describe your issue.

Two Audio Options: Phone or Computer Choose one and connect

Pro tip: Don't call in on our phone if your audio is set to "Mic and Speakers"

Ask questions using the Questions Panel on the right side of your screen at any time.

The recording of the webinar and the slides will be available after the event. We will post them online and send you a link.

Audio

Questions

Heather Dziedzic – Moderator, VP of Policy at ABC

Vice President of Policy for americanbiogascouncil.org

Heather joins ABC after nearly a decade in the utility industry, where she developed several industry-leading Net Zero strategies, stood up a new RNG development program, and led long term investment planning and policy development to support gas utility decarbonization.

Her experience in energy regulation and policy covers both electric and gas, from distributed energy and net metering to RNG and energy storage.

Prior to her work in biogas and other decarbonization technologies, Heather worked in the environmental, sustainability, and conservation space, leading restoration and mitigation projects, siting due diligence, environmental compliance and other conservation-focused field studies.

BS in Environmental Science from the University of Notre Dame, and a Masters in Energy Policy and Law from Vermont Law School.

Joe Berti – CEO of P6 Technologies

CEO of p6technologies.com (SaaS-Based LCA Solution)

Entrepreneur (has launched 20+ software products)

Author of thebookonsoftware.com

Was chief product office at IBM for Sustainability Software

- Mission was to apply AI across a 1.5B+ portfolio of products.
- In charge of Envizi, Supply Chain, B2B weather business, Maximo, Tririga and the Environmental Intelligence Suite.

CEO of Oniqua

- similar problem (millions of spare parts attempting to cleanse and match data)

Degree

- MS MIS, Finance - The Ohio State University

Kira Breslauer – Director of Product and Product Specialist Biogas/RNG

Director of Product of **p6technologies.com**   (SaaS-Based LCA Solution)

P6 Life Cycle Analysis

- industry leader who has been focused on delivering software solutions in carbon accounting and life cycle analysis

Persefoni

- Product lead on carbon accounting software launch

IBM

- Kira was part of a specialized team who launched the Environmental Intelligence Suite at IBM, a solution that combined weather data, AI, and analytics to solve some of the planet's most complex weather-related problems.

Degree

- Masters in Product Development & Innovation, Carnegie Mellon University
- BA in Psychology, Boston College

In this session, participants will:

- Gain insight into where companies are on their LCA journey

- Understand the key drivers of LCA software adoption

- Learn how to meet the requirements from varying regulatory bodies, supported with software

- Discuss the challenges with the current approach

- Learn why scenario analysis is a critical part of designing and improving existing sites

- Discover how to extract more value from LCAs through leveraging an integrated, enterprise, solution

- Discuss how software solutions work with verifiers/ auditors

The Biogas LCA maturity model

Beyond LCA

Level 5

Level 4

Level 3

Level 2

Level 1

Level 1

People: Little/no LCA expertise internally

Process: Use consultants to generate LCA

Technology: None

Level 2

People: Some in-house LCA analysts/engineers

Third party Verifier

Process: Manual data gathering and summarization, provided to consultants

In-house team attempts scenarios on Tier ½ calculators

Technology: Excel-based LCAs

Level 3

People: Dedicated team of LCA analysts/engineers

Third Party Verifier

Process: Some automated data gathering, mostly manual

Technology: LCA software with manual data entry

Level 4

People: Dedicated LCA team with support from internal stakeholders who are not active software users

Third Party Verifier

Process: Integrated data, automated data ingestion

Technology: Integrated LCA software with data pre-processing, quality features, moderate analysis, and automated reporting

Level 5

People: Dedicated LCA team, engineering, finance and suppliers integrated

Third Party Verifier

Process: Integrated data, automated data ingestion, forecasting, engineering scenarios

Technology: Enterprise deployment of integrated LCA software with automated data ingestion, AI-enabled features, and near real-time LCA generation

Beyond LCA

Expanding use of impact categories within the LCA process

Electronically consuming LCAs for streamlined calculations and real-time decision making

Electronic submission to regulatory bodies

| Initial | ► | Managed | ► | Defined | ► | Integrated | ► | Optimized | ► | Leading |

Optimization & Innovation

Compliance

Reporting & Communication

Consultant led   Internal led, consultant supported   Software-led

The regulatory environment is becoming more complex

Prior World

Simpler or no regulatory requirements for transportation fuels

Current Paradigm

Multiple regulatory agencies including LCFS (California), CFR (Canada), CFP (Oregon), CFS (Washington), IRA (Federal), ISCC, Red II (EU)

Requirements changing, making it more difficult to ensure compliance

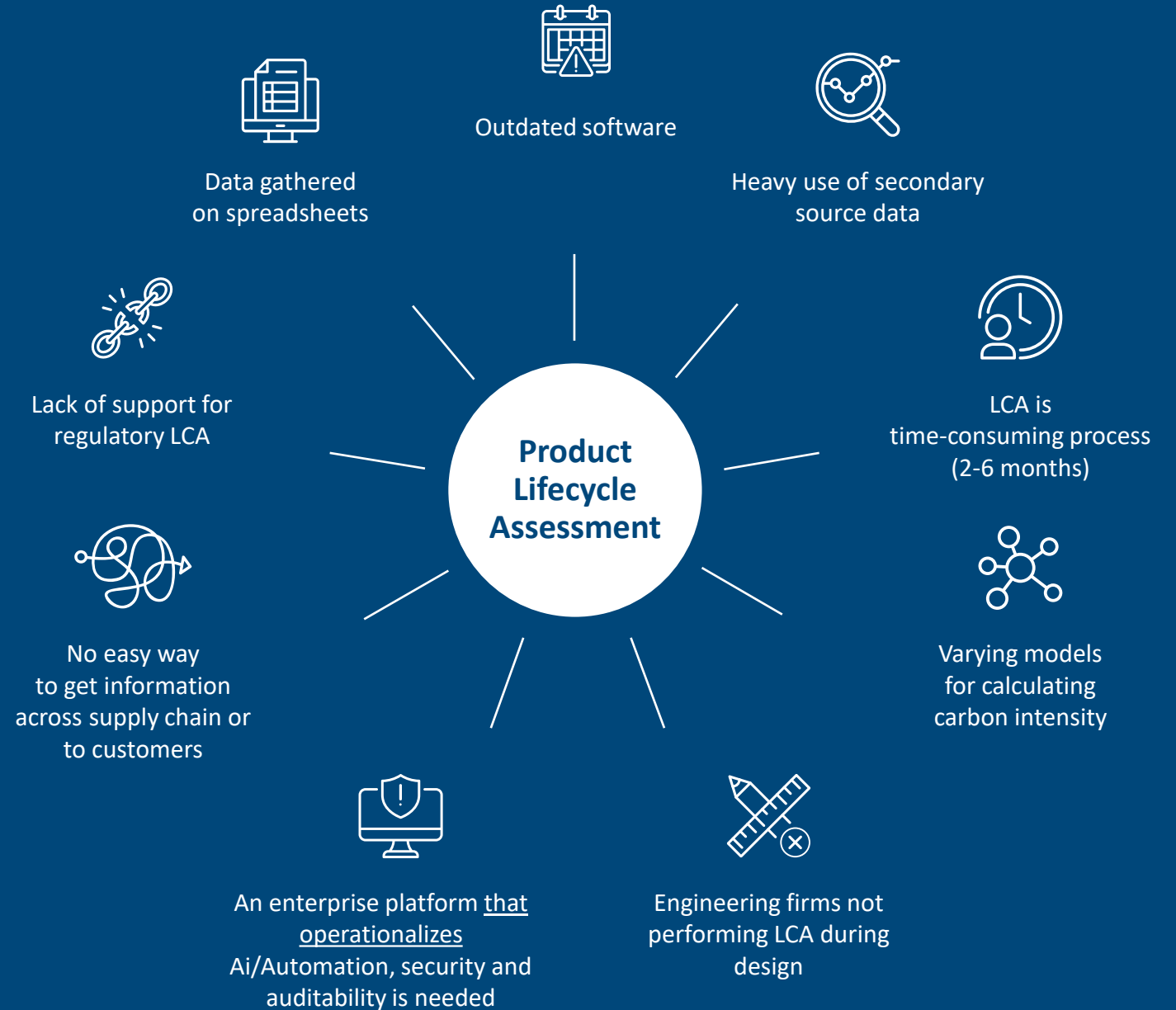Calculators and requirements vary by fuel type, regulatory body, geo

In Process

List others: Illinois, Hawaii, Michigan, Massachusetts, New Jersey, New York, & Vermont

What is the problem the LCA approach today?

Life cycle assessment is the agreed upon approach, but it needs to scale

Value will come from running scenarios to make site/product improvements vs just for tax credits
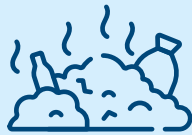
Data gathered on spreadsheets

Outdated software

Heavy use of secondary source data

Lack of support for regulatory LCA

LCA is time-consuming process (2-6 months)

Product Lifecycle Assessment

No easy way to get information across supply chain or to customers

Varying models for calculating carbon intensity

An enterprise platform that operationalizes Ai/Automation, security and auditability is needed

Engineering firms not performing LCA during design

The four main types of biomass-related LCA

Dairy / Swine

Landfill Gas

Waste Water
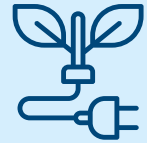
Biomass

The requirements for performing an LCA

Regulatory Market

Voluntary Market

Benefits of using software

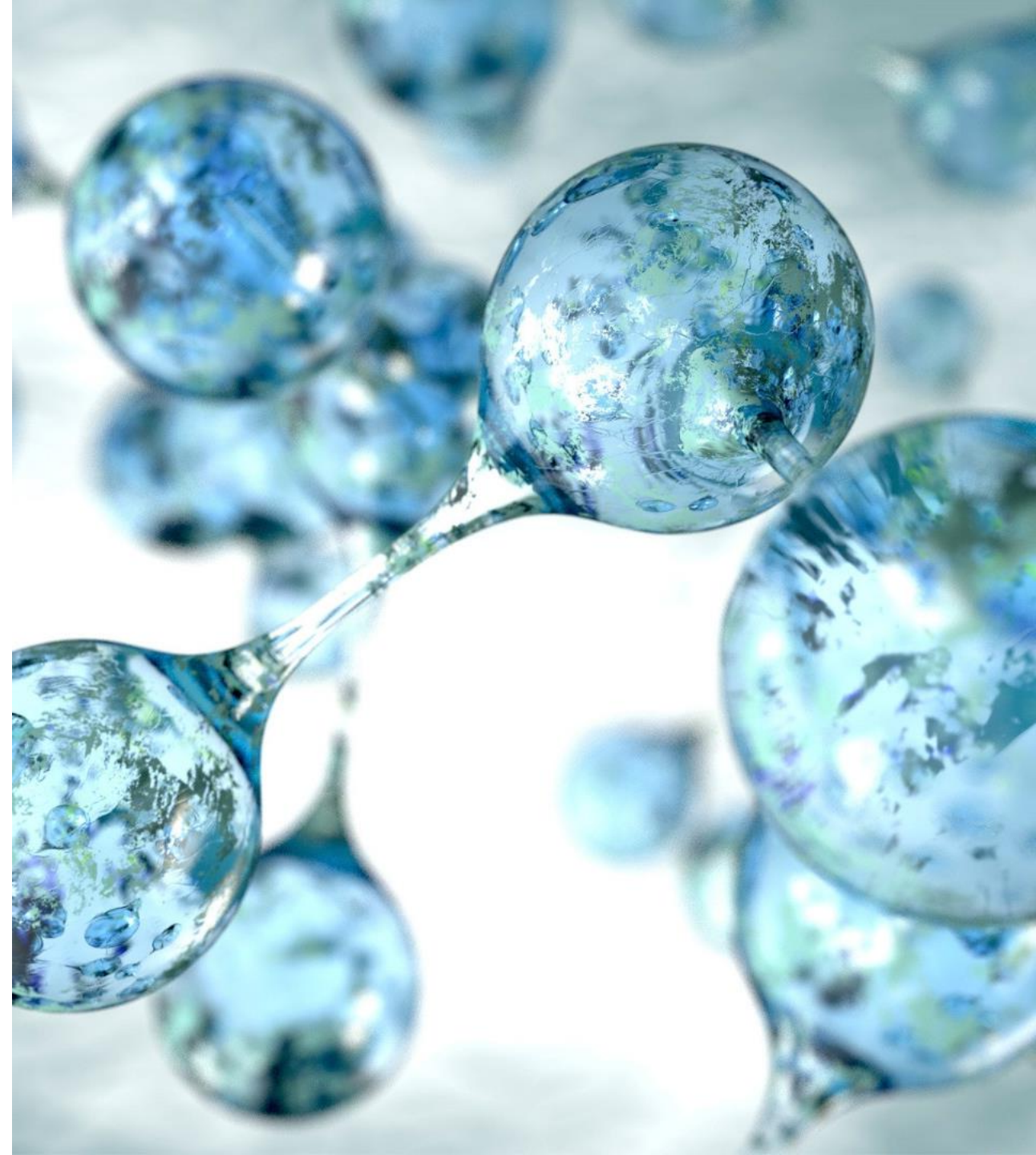Input data once, then generate varying regulatory reports

Better analytics

Time can shift towards scenario analysis, improving process/sites

Automated forecasts

Scaling team and repeatability in process

Scenarios

Onsite generation

Input analysis

Equipment

Weather

What is needed is much broader than LCA

Collaboration across teams

AI / Automation

Security

Runs in cloud

Configurability

API / integration

Encryption

Backups

Regulatory compliance

Library of impact factor data

Version control

Global (at some point)
(9+ languages, unit of measures)

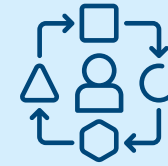Analytics

Collaboration across companies

Varying models

The verification process

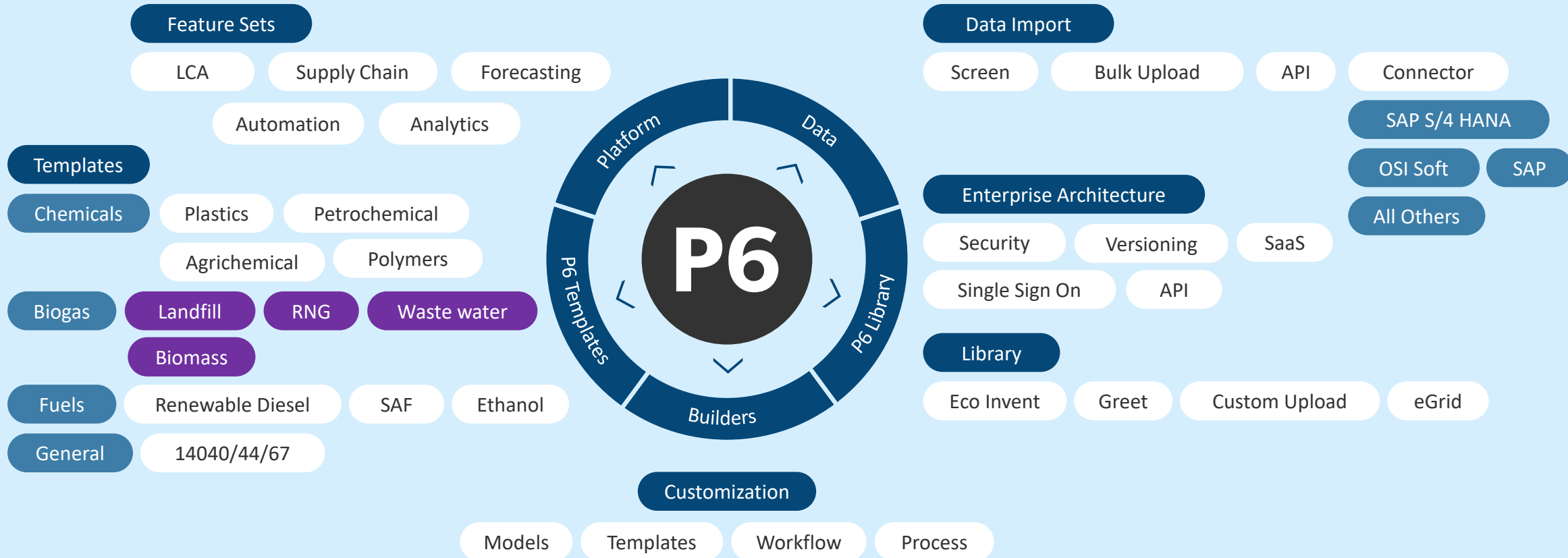Approval + workflow for internal approval and external verification

A documented methodology is needed for 100% automated environments

External verification will most not likely change much, but will adapt to new technologies

What does an enterprise software platform look like?

Life Cycle Analysis Phases

Raw material ⟩ Process material ⟩ Manufacture product ⟩ Transport ⟩ Consume product ⟩ End of life ⟩ Recycle

Feature Sets
- LCA
- Supply Chain
- Forecasting
- Automation
- Analytics

Templates

Chemicals
- Plastics
- Petrochemical
- Agrichemical
- Polymers

- Biogas
- Landfill
- RNG
- Waste water
- Biomass

Fuels
- Renewable Diesel
- SAF
- Ethanol

General
- 14040/44/67

Data Import
- Screen
- Bulk Upload
- API
- Connector
- SAP S/4 HANA
- OSI Soft
- SAP
- All Others

Enterprise Architecture
- Security
- Versioning
- SaaS
- Single Sign On
- API

Library
- Eco Invent
- Greet
- Custom Upload
- eGrid

Customization
- Models
- Templates
- Workflow
- Process

P6 — Platform · Data · P6 Library · Builders · P6 Templates

Q&A

Type in your questions under "Questions" in the toolbar.

Make sure to answer the survey at the close of this webinar.

Thank you!

Audio

Questions

American Biogas Council
www.americanbiogascouncil.org