U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Feedstock Technologies

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Program Goals

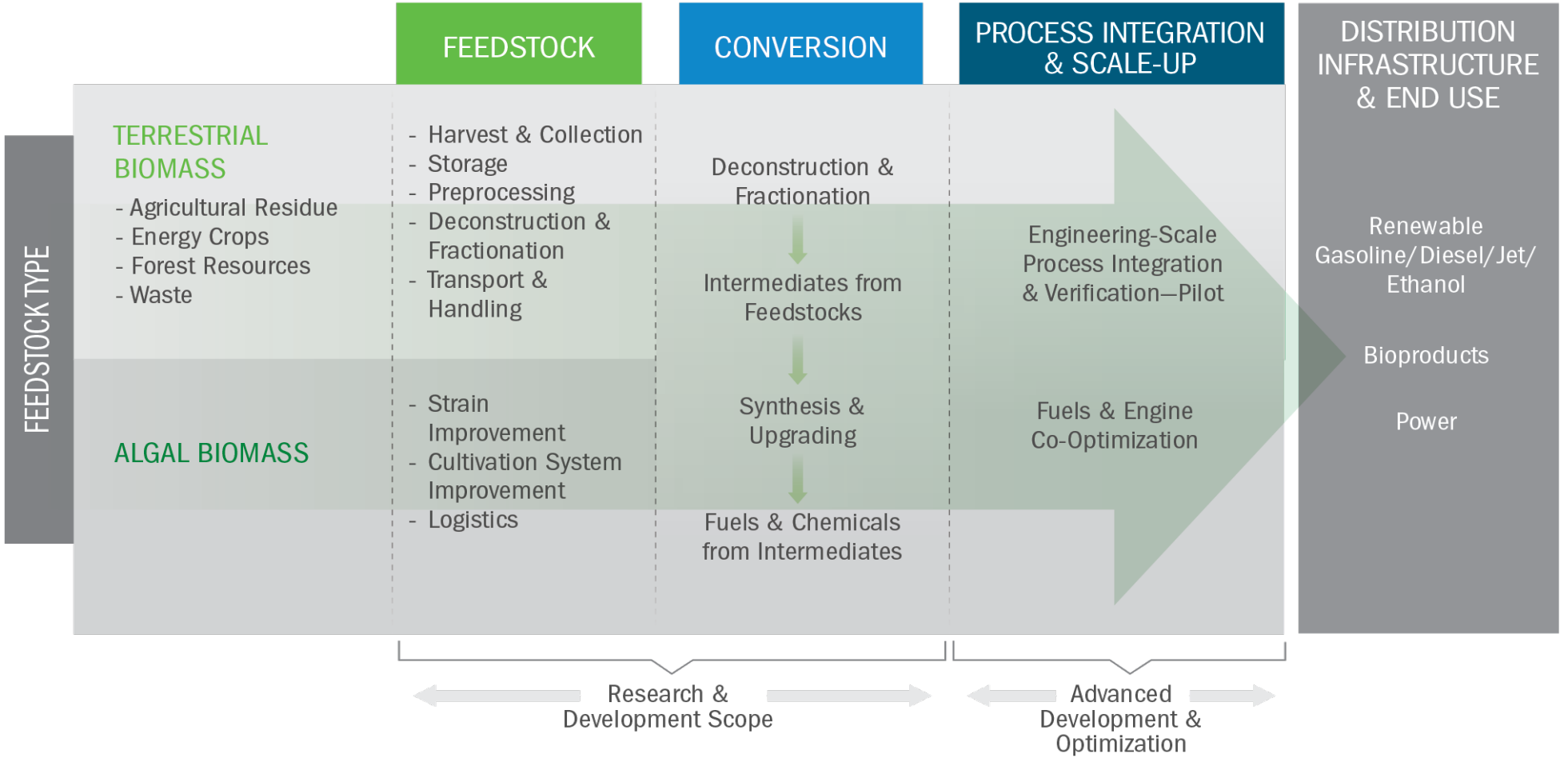
Strategic Goal: ***Develop science-based strategies and technologies to cost-effectively transform renewable carbon sources into high-quality, sustainable, conversion-ready, and energy-dense feedstocks for biofuels, bioproducts, and biopower.***

Approaches:

- Defining requirements and specifications for high-quality, conversion-ready intermediates
- Developing fundamental understanding of the interactions between feedstock properties and conversion performance
- Identifying the key feedstock quality and performance factors affecting biorefineries
- Improving the efficiency of feedstock logistics operations

Cost-effective, high-quality, sustainable, and energy-dense feedstocks

Feedstocks Pathways



Focus Areas of Feedstock Technologies

Improve the Quality and Quantity of Renewable Carbon Feedstocks

Reduce Cost of Renewable Carbon Feedstocks

Strategies focus on improving the *efficiency* and *reliability* of harvesting/collection, storage, preprocessing, and transportation.

FT Goals FY 2021–FY 2030

By 2021, deliver feedstocks meeting the defined critical material attributes (CMAs) for the 2022 verification, supporting a modeled minimum fuel selling price of $3/GGE and a 60% reduction in GHG emissions relative to petroleum-derived fuels.

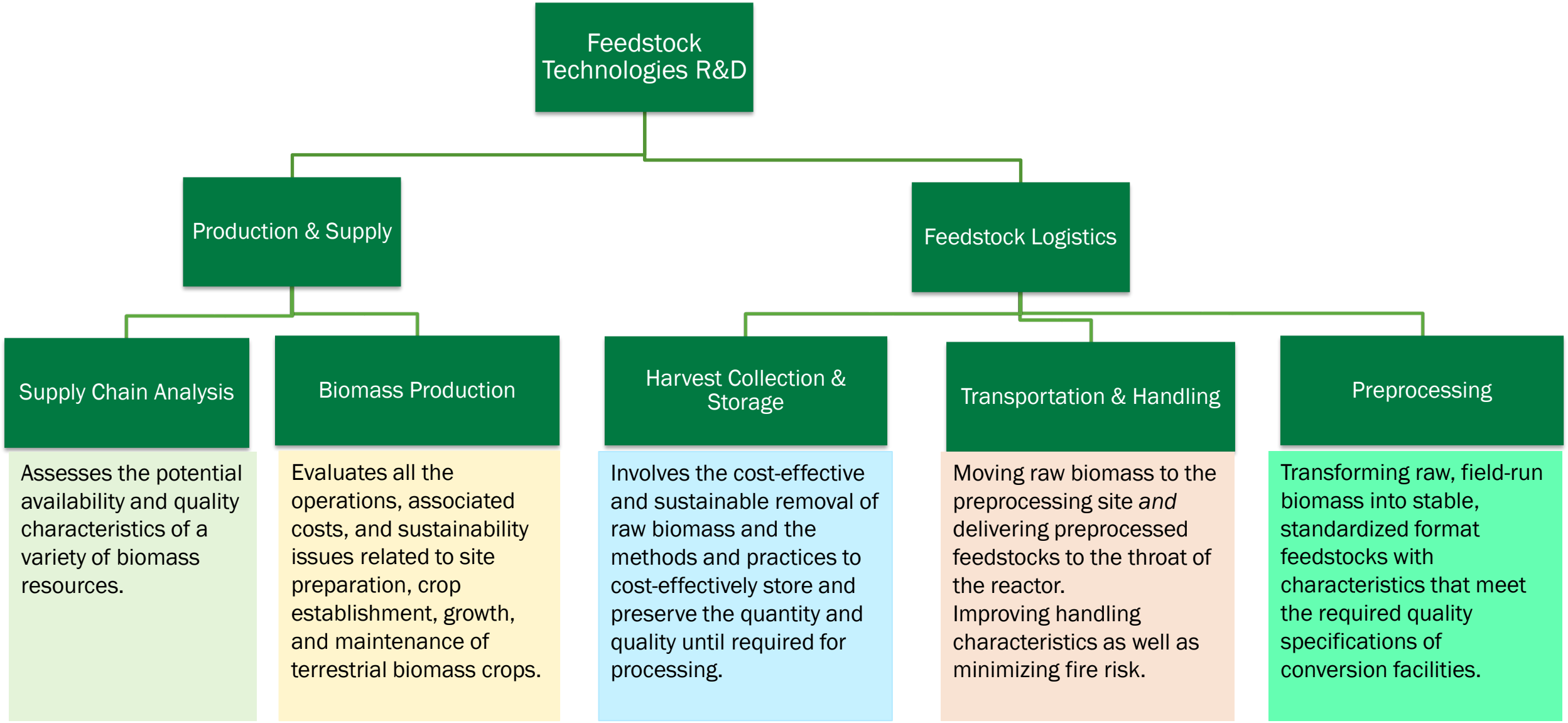
By 2022, identify the preprocessing system and critical processing parameters necessary to deliver the required critical material attributes for biochemical and thermochemical conversion at 90% operating effectiveness that meet a delivered cost of $86/dry ton. reliability.

By 2025, verify coproduct technologies that utilize fractions of biomass derived from feedstock logistics and preprocessing to increase the total feedstock value by 10%.

By 2030, develop science-based strategies and technologies to cost-effectively transform carbon sources into sustainable, energy-dense, and conversion-ready feedstocks at 90% operating effectiveness that meet a delivered cost of $71/dry ton.




Program Structure



Key Funding Announcements

Landscape Design for Sustainable Bioenergy Systems FOA

One project awarded ($9M), establish multi-disciplinary landscape design process, improve sustainability metrics, and assess logistics systems to deliver feedstocks to conversion facilities for bioenergy

Affordable and Sustainable Energy Crops (ASEC) FOA

Three projects awarded ($15M), using new varieties/cultivars of energy crops leading to increased availability, cost-effectiveness, and environmental sustainability of energy crop production systems

Bio-Restore: Biomass to Restore Natural Resources FOA

Three projects ($9M), will develop and employ new methods to quantify the environmental and economic benefits associated with growing energy crops on marginal and/or unproductive land with a focus on restoring water quality and soil health.

Biomass Component Variability and Feedstock Conversion Interface FOA

Seven projects ($8.6M), evaluate impact of biomass characteristics on feedstock performance in handling and conversion, design novel storage and handling approaches to control physical and chemical variability in biomass

Advanced Fractionation and Decontamination of Municipal Solid Waste for Improved Conversion Efficiency FOA

Four projects ($9M), develop advanced and techno-economically viable sorting and preprocessing methods tailored to MSW to address its known heterogeneity and variability, to produce high-purity, value-added feedstocks

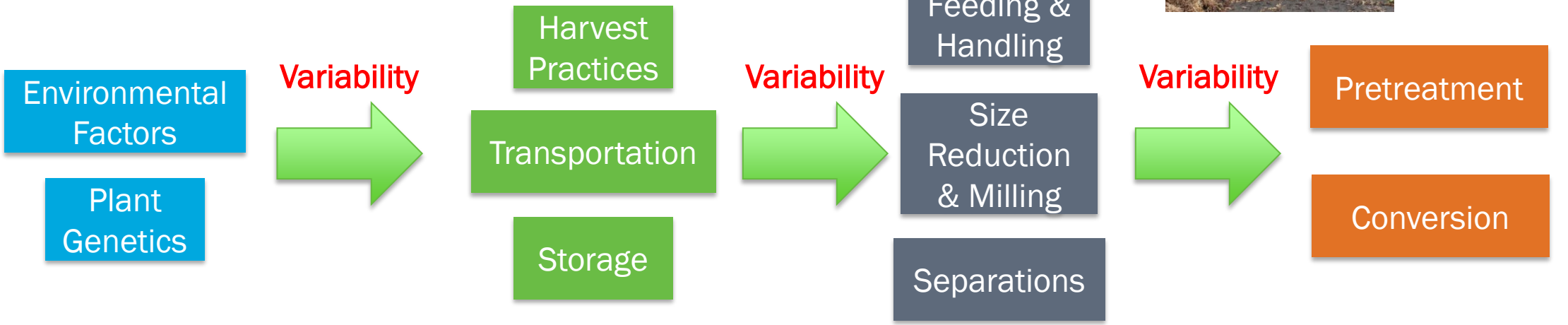
Feedstock-Conversion Interface Consortium

The Feedstock-Conversion Interface Consortium (FCIC) is led by DOE as a collaborative effort among 9 National Labs

Founding principles

- Biomass feedstock properties are **variable and different** from other commodities
- **Empirical** approaches to address these issues have been **unsuccessful**
- The biomass supply chain introduces **additional variability**: growth factors, during harvest/storage, during comminution, …

The FCIC seeks to systematically understand and mitigate this feedstock and process variability to reduce the risk for biorefineries



fcic FEEDSTOCK-CONVERSION INTERFACE CONSORTIUM

The Feedstocks Technologies Team- Thank You!

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