Allotrope Cellulosic Development Company, LLC

Cottonwood Cellulosic Biorefinery

A value-added end use for forest and orchard residue in Shasta County, California



Mario De La Ossa

ABLC 2026 · San Francisco

22 October 2026

www.acdcbio.com

FEL-3 under way. Figures are design-basis or modeled.

acdc future fuels

The Project at a Glance



PARTNERS

Axens	Merrick	Oil major	Lignin Industries	USDA
Technology licensor	FEL engineering	Ethanol offtake	Lignin LOI	Section 9003 loan guarantee

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Completing the Value Chain



WILDFIRE RISK

1M

acres/yr treatment goal in California

Residue needs an end use



END USE

411k

BDT/yr forest residue (ex-ag)

Completes the value chain



PRODUCTS

3

markets: fuel, gas and materials

Multiple revenue streams



RURAL ECONOMY

$177M

annual output in Shasta County

Builds local support

One plant links wildfire risk reduction, three product markets and rural jobs

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Practical Tools for a Shared Problem

SHARED PROBLEM Wildfire risk, unused forest residue, rural jobs and fuel supply

FORESTS	**Shared stewardship** California–USFS goal of 1M acres/yr	**Executive orders** Timber and wildfire prevention
FUELS	**Renewable Fuel Standard** RINs for cellulosic derived fuels	**45Z and LCFS** Federal and state clean fuel credits
RNG	**Utility/voluntary market procurement** CPUC biomethane targets (SB 1440)	**RFS and LCFS** Credits for RNG as truck fuel
MATERIALS	**USDA BioPreferred** Federal biobased product preference	**USDA Section 9003** Loans for biorefineries and materials

Federal and state tools, adopted across administrations, for fuel, gas and materials

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

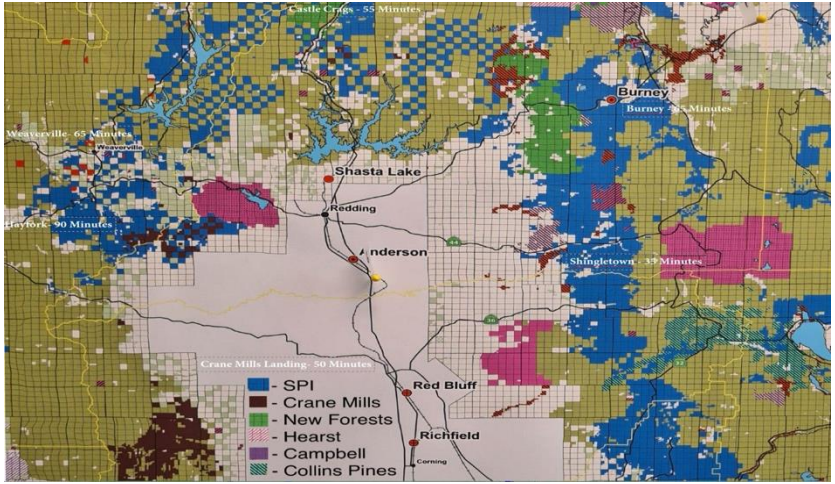
Six Stages, Each Building on the Last

	STAGE	ACDC APPROACH	SETS UP
1	**Feedstock and logistics**	Local supply chains since 2014	**Basis for technology**
2	**Technology**	Futurol, licensed from Axens	**Lignin as a third product**
3	**Customers and markets**	Oil major ethanol offtake	**Revenue basis for lenders**
4	**Certification and CI**	D3 RIN-eligible process feed	**Credit value beyond sales**
5	**Site, permits, community**	Brownfield site, local partners	**Permit path, local support**
6	**FEL-3 to FID**	All tracks run in parallel	**Investment decision**

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

510k BDT/yr Within a 90-Minute Haul



Timberlands and federal lands within ~90 minutes of the site

330k **BDT/yr process feed**
Forest and orchard residue, D3-eligible

180k **BDT/yr boiler fuel**
Federal and tribal restoration residue

~90 **minute haul radius**
Electric chipping; ethanol by truck

2014–2022 Team ran the adjacent Anderson Biomass Complex

Supply agreements advancing with regional suppliers

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Futurol: From Demonstration to Plant 1

Demonstrated

Two years at the 100 tpd Futurol demonstration plant

Industrial equipment

Pulp-and-paper pretreatment; 50,000-gallon fermenters

Licensor guarantees

Yield and consumption guarantees set in FEL-3

ENGINEERING

Axens
Licensor and process design

Merrick
FEL engineering

LICENSE

Exclusive North America
Milestone-based Futurol license

Six plants
Cottonwood is Plant 1

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

Three Products, Three Markets

ETHANOL	RNG	LIGNIN
~24M	596k	122k
gal/yr	MMBtu/yr	MT/yr
Road fuel · SAF · chemicals	Utilities · local trucking · LCFS and D3	PE, PP and ABS plastics
Oil major	**Buyers**	**Lignin Industries**
Offtake executed	**In discussion**	**LOI**

Revenue product sales plus D3 RIN, LCFS and 45Z credits

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Carbon Intensity and Certification Path

CARBON INTENSITY

16.53

gCO_2e/MJ modeled base case

CA-GREET 3.0

CO_2 CAPTURE OPTION

Storage geology near the site. Capture would take CI below zero; outside the base design.

CERTIFICATION

CARB LCFS pathway Ethanol and RNG	In preparation
EPA D3 RIN pathway Cellulosic biofuel	In preparation
ISCC PLUS Lignin into polymers	Under evaluation
EU RED III Annex IX Eligible feedstocks for product export option	Option

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Site and Permitting Tracks Advancing

72 acres	No rezoning	2 × 110 kV	Geotech
former mill site	industrial zoning	lines on site	positive evaluation

SHASTA COUNTY

County-led project EIR	In preparation
Air permit, Shasta AQMD	In preparation
Water and wastewater	In development

CALIFORNIA

SB 149 certification	Filed 2026
Prevailing wage, skilled workforce	Committed
CARB LCFS pathway	In preparation

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

Earning Local Support

Local track record

- Anderson Biomass Complex, 2014–2022
- Local relations led from the site

County partners

- Shasta County EDC impact analysis
- County supervisor engagement
- Planning engagement; County-led EIR

Local workforce

- Shasta College operator training
- Building Trades apprenticeship
- Prevailing wage and local hiring

Community benefits

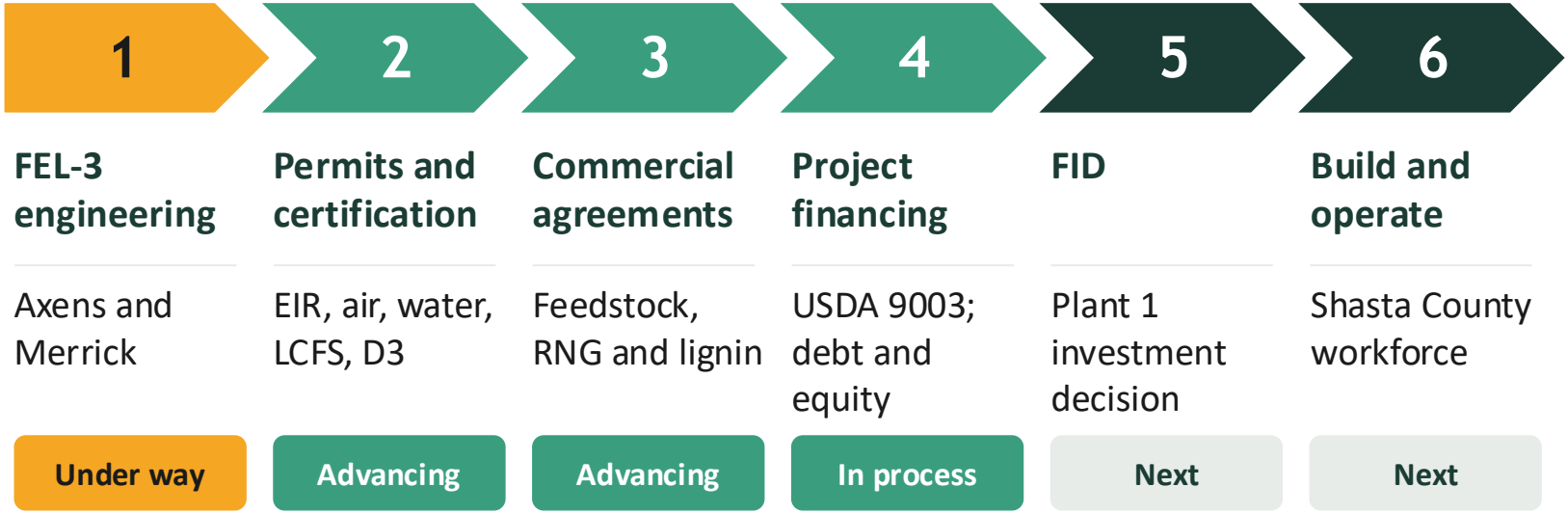
- Local RNG truck fuel under $2.00/DGE
- Less open pile burning
- Host-community mitigation commitment

500	50	145	$177M
construction jobs	plant jobs	indirect and induced jobs	annual local output

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels

FEL-3 Under Way: The Path to FID



Six FEL-3 gates lock engineering, permitting and commercial items before FID

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

How ACDC Aligns the Factors

Feedstock	Products	Customers	Community
Streams split by RIN eligibility at design	Lignin sold alongside ethanol and RNG	Ethanol offtake executed before FID	Local partners and workforce built in

Wildfire risk reduction · three product markets · rural jobs

Plant 1 of a six-plant exclusive North American Futurol license

investorrelations@acdcbio.com · www.acdcbio.com

Backup: Local Economic Impact

50 direct plant jobs	**145** indirect and induced jobs	**500** construction jobs
$177M annual economic output	**$17.5M** annual labor income	**$135M** direct construction labor

IMPLAN analysis, Shasta County EDC, 2025 dollars, steady-state operations.

Forward-looking: schedules, targets and modeled figures are estimates and not commitments.

acdc future fuels