

ORIGIN

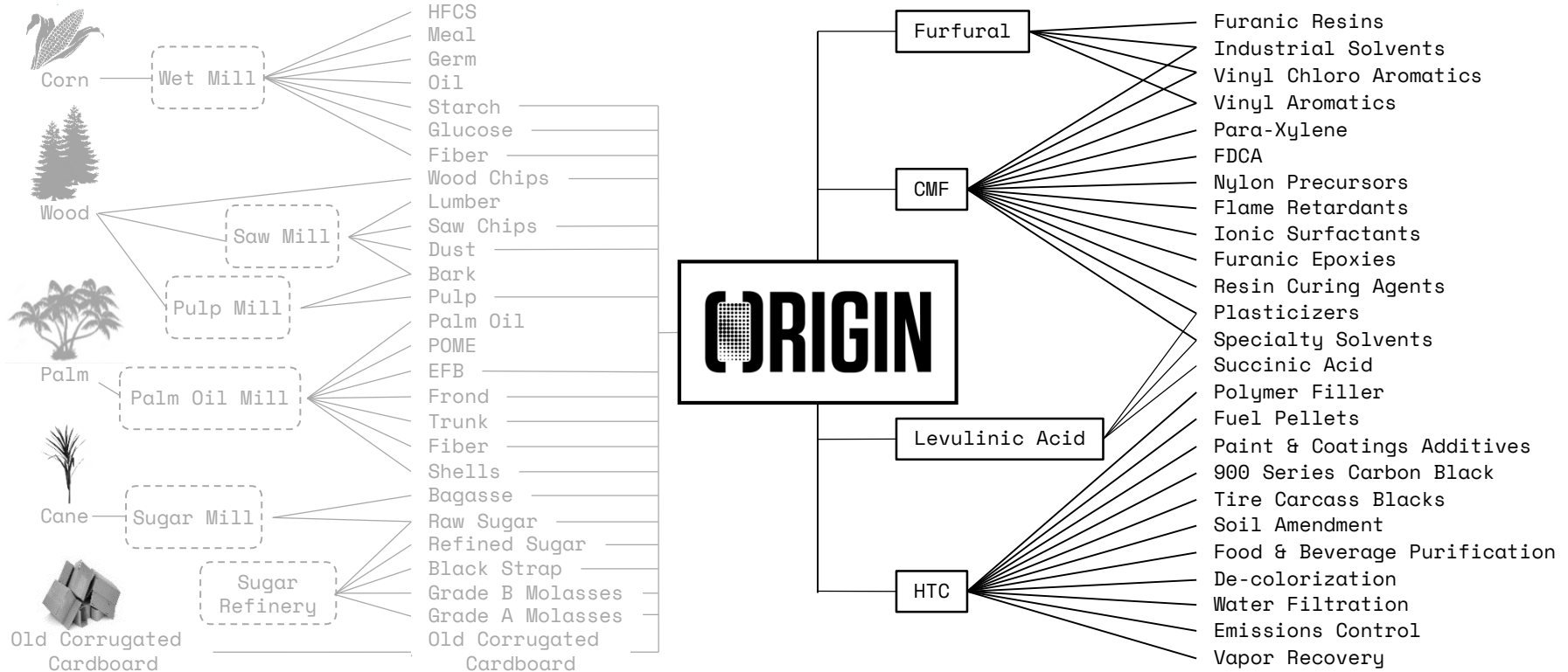
Steel in the Ground in Sarnia-Lambton
Transformation Within a Hybrid Chemistry Cluster

INTRODUCING ORIGIN

- Technology development & commercialization firm
- Founded in 2008
- 60 scientists, engineers, pilot plant operators, and support staff
- R&D headquarters and pilot facilities are located in Sacramento, CA
- Pioneer & 2nd Pilot facility in development in Sarnia Ontario
- Extensive global network of permanent consultants and advisors with deep technical expertise in catalyst design, kinetics, reaction engineering, synthetic chemistry, product development, and techno-economic analysis



TECHNOLOGY AS A PLATFORM



PILOT → PIONEER → FULL SCALE

- Pilot
 - Operating since 2014
 - Engineering data & know-how
 - Kg scale samples
- Pioneer
 - Demonstration-scale
 - 10,000 tpy of CMF
 - Start-up/Run-in 2019
- Full commercial-scale
 - End of 2022
 - 100,000 tons per year CMF



DECISION DRIVERS



- Extensive 3 year global site search driven by
 - Balance of plant infrastructure
 - High quality local labor pool
 - Strong local safety culture
- Greater Canadian ecosystem support
 - Limited role in initial Pioneer siting decision
 - Substantial impact on strategy and trajectory
 - Commitment and investment to Canadian R&D
 - Long-term strategic commercialization relationships

CANADIAN ECOSYSTEM –AN AMERICAN PERSPECTIVE

- U.S.-Strong VC community
- Europe – Strong basic research support
- Canada –Proven technologies w/ near term commercialization
- Smart and Strategic
 - Consistent, comprehensive and coordinated
 - Local, provincial, federal
 - Gov't/Academic/Industry
 - Late-stage Valley of Death



OXIDATION PILOT PLANT – CANADIAN BASED R&D

- Strong support from
 - Bioindustrial Innovation Canada
 - Western Sarnia-Lambton Research Park
- Contributions
 - Financial
 - In-kind
 - Strategic referrals
- Principal drivers in Origin's decision to commit to multi-prong Canadian R&D derivative program



Western
Sarnia-Lambton
Research Park

**Bioindustrial
Innovation Canada®**
A Sustainable Chemistry Alliance

ORIGIN OPEN INNOVATION PROGRAM

- The goal of the Open Innovation Development Program is to develop downstream derivative products through the Canadian R&D ecosystem
- Origin collaboration with Canadian academic institutions and industrial partners to participate in the program
- Industrial/academic partnerships ideal fit for many Canadian funding programs

