



March 21, 2016

VIA EMAIL: carpenter.thomas@epa.gov

Mr. Thomas Carpenter,
Designated Federal Officer (DFO)
EPA Science Advisory Board (1400R)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

RE: Quality Review of a Draft SAB Report on an Accounting Framework for
Biogenic Carbon Dioxide Emissions

Dear Mr. Carpenter:

Attached please find comments of Accordant Energy® LLC (Accordant) to the Chartered Scientific Advisory Board regarding the Biogenic Carbon Emissions Panel Draft Report on the EPA *Framework for Assessing Biogenic CO2 Emissions from Stationary Sources* (2014).

Accordant grants permission for all content of these comments, including attachments, to be posted to the SAB Website and otherwise copied, printed or emailed.

We thank the SAB for its consideration of these comments.

Sincerely,

Paula A. Calabrese
Accordant Energy, LLC
Senior Vice-President & Chief Strategy Officer

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COMMENTS OF ACCORDANT ENERGY® LLC
to the
CHARTERED SCIENTIFIC ADVISORY BOARD
regarding the
BIOGENIC CARBON EMISSIONS PANEL DRAFT REPORT
on the
FRAMEWORK FOR ASSESSING BIOGENIC CO₂ EMISSIONS
FROM STATIONARY SOURCES (2014)
by the
ENVIRONMENTAL PROTECTION AGENCY

March 21, 2016

Accordant Energy® LLC (Accordant) submits these comments to the Chartered Scientific Advisory Board (SAB) as it reviews the Draft Report¹ for the SAB review of EPA’s 2014 *Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources* (Framework).²

Accordant is a fuel technology company offering an innovative, renewable fuel—ReEngineered Feedstock® (ReEF)—to enable cleaner coal power generation with improved environmental performance.³ Appendix A provides an overview of the company and of ReEF. We believe that ReEF is a win-win-win for municipalities, power plants and the environment. Recognition of its carbon neutrality will promote adoption of this technology. We therefore urge the SAB to ensure its comments to EPA do not unwarrantedly block incentives to the use of ReEF (or any other similarly beneficial new technology).

The SAB Report Should Recognize the Value of Flexibility in the Framework

ReEF is sourced from municipal solid waste (MSW) and so is largely biogenic. The waste undergoes a sophisticated process that results in enhanced recycling, reduced need for landfill space, and a fuel that can be used in coal-fired power plants. Use of the fuel (ReEF) not only

¹ Science Advisory Board (SAB) Draft Report (2-8-16) for Quality Review (Draft Report), [https://yosemite.epa.gov/sab/SABPRODUCT.NSF/ea5d9a9b55cc319285256cbd005a472e/2376043e71bb1aa485257f5300704604/\\$FILE/2-8-16%20Biogenic%20Carbon_Clean%20-%20sr%20mk_pt.pdf](https://yosemite.epa.gov/sab/SABPRODUCT.NSF/ea5d9a9b55cc319285256cbd005a472e/2376043e71bb1aa485257f5300704604/$FILE/2-8-16%20Biogenic%20Carbon_Clean%20-%20sr%20mk_pt.pdf).

² See Notification of a Public Meeting of the Chartered Science Advisory Board, 81 Fed. Reg. 10619 (March 1, 2016), and EPA, *Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources* (November 2014), <https://www3.epa.gov/climatechange/downloads/Framework-for-Assessing-Biogenic-CO2-Emissions.pdf>.

³ ReEF originally was developed by ReCommunity, Inc., a recycling company, which submitted comments concerning ReEF during SAB review of the 2011 Framework. ReCommunity established a wholly-owned subsidiary, ReCommunity Energy, and transferred the ReEF-related assets and personnel to that entity to continue ReEF development and commercialization. Finally ReCommunity “spun out” those assets as a new company – Accordant Energy® LLC. The prior comments regarding the benefits of ReEF still apply.

reduces the carbon footprint of the power plant; it also results in reductions of sulphur dioxide, nitrogen oxides, hydrogen chloride, and mercury. *See* Figure 1.

The SAB draft report criticizes the degree of flexibility in the Framework.⁴ We do not opine on whether the Framework should have been more proscriptive with respect to forest or agricultural biomass. However, ReEF clearly is of a different order than traditional uses of MSW for electricity generation. With respect to MSW biomass, the existence of ReEF demonstrates the wisdom of a flexible approach, as calculation of a Biogenic Accounting Factor (BAF) does not fit exactly into the models EPA has provided in Appendix N to the Framework.

The use of biomass as an energy source on the scale of modern energy requirements is a new and rapidly developing field. It is likely that other innovative technologies such as ReEF will appear. It is crucial that EPA's approach to biogenic CO₂ maximize rather than hinder such innovation. If we are to meaningfully reduce use of fossil fuels and their emissions of CO₂, such innovation must not be stymied by an overly prescriptive Framework or regulations. It is simply impossible to envision every possible application of biomass technology that may be available in the coming years. Therefore, we urge the SAB to acknowledge that there are contexts in which a flexible Framework is wise – perhaps especially in the context of MSW-sourced fuels.

The SAB Report Should Encourage Accounting of Corollary Benefits of Waste-Derived Fuels

In discussing the Framework's approach to MSW, the Draft Report states: "In the 2014 Framework, the EPA has conducted extensive alternate fate calculations in Appendix N; however, the agency drew a narrow boundary around point source emissions and neglected other significant considerations that affect the GHG footprint of alternative municipal solid waste (MSW) management scenarios."⁵ The Draft Report specifically discusses use of MSW for electrical generation and capture and flaring of methane as such considerations.

We agree that in evaluating the overall effect of a MSW-sourced fuel on CO₂ emissions, factors such as these should be considered. We believe that additional factors that go to the overall greenhouse gas footprint and other benefits of the fuel should be considered as well. For ReEF, such factors would include:

- That replacement of a portion of coal with ReEF causes removal of criteria pollutants (SO₂, NO_x, Hg). This forestalls or lessens the need for control equipment that itself requires significant amounts of energy to operate, and thus eliminates the CO₂ emissions that would have been associated with that control equipment.
- That the enhanced recycling that is a part of the ReEF-production technology means reduced need for virgin production of materials, with their associated energy needs and thus CO₂ emissions.

⁴ Draft Report at ii.

⁵ Draft Report at 13.

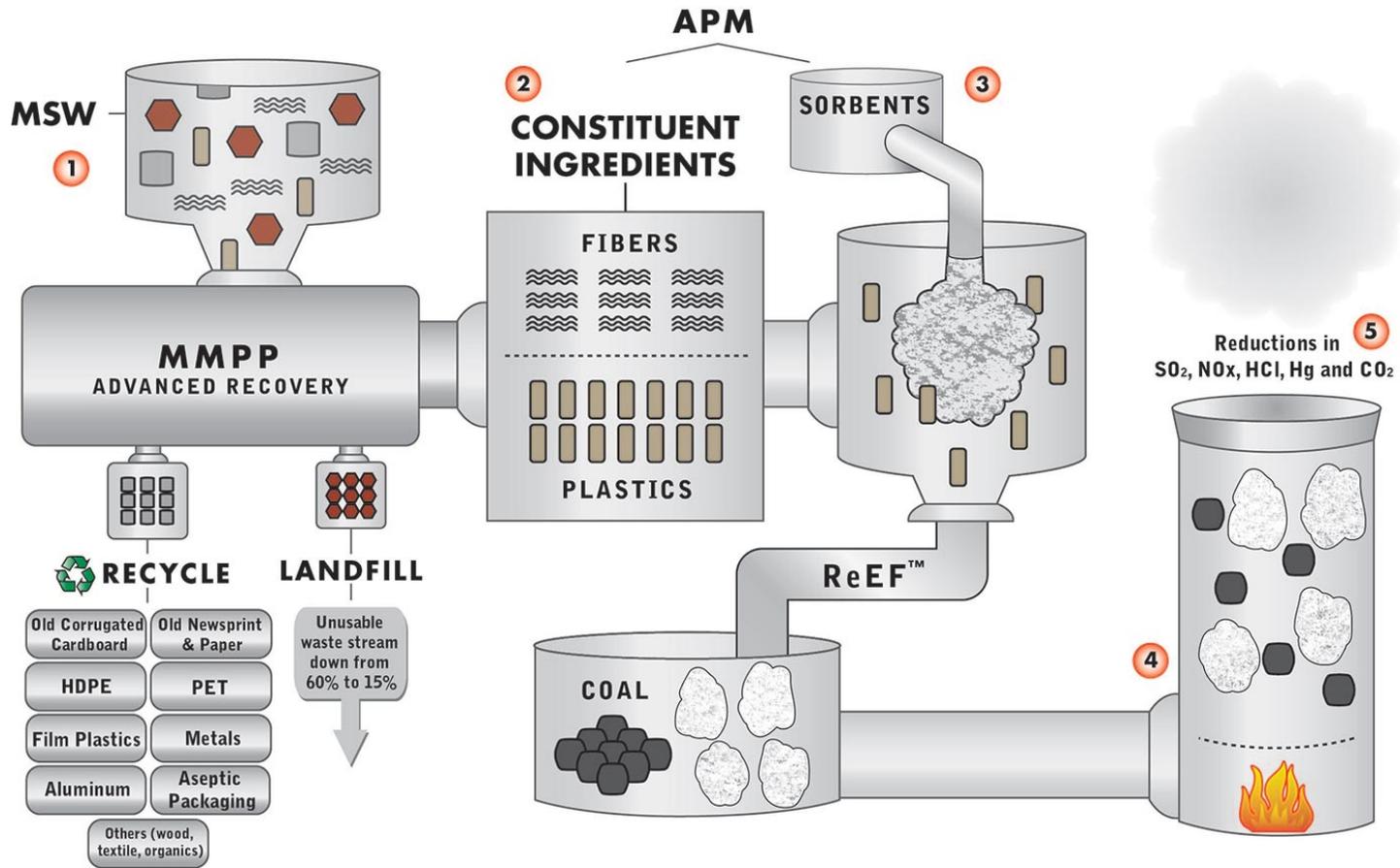
- That use of ReEF (which replaces coal) means reduced CO₂ emissions from mining and transportation of coal.

It may be difficult to precisely quantify all such factors; however, they should be considered at least in a qualitative manner. For example, if the calculated BAF is close to 1, consideration of such factors could provide EPA assurance that fuel may be considered to be carbon neutral.

To return to the flexibility theme – EPA should have flexibility to consider a wide number of parameters when evaluating how to treat CO₂ emissions from a MSW-sourced fuel, and should do so in a manner that encourages innovative technologies that have multiple benefits. We urge the SAB to encourage such an approach by EPA.

Thank you for your consideration of these comments. If you have any questions, please contact Paula Calabrese, Chief Strategy Officer & Co-Founder, at (802) 772-7368 or paula.calabrese@accordantenergy.com.

FIGURE 1



- 1 Municipal Solid Waste (MSW) contracted through municipalities and solid waste companies.
- 2 Our advanced Multi-Material Process Platform (MMPP) recovers all usable fibers and plastics for sale into the recycling market and uses only non-recyclable fibers and plastics as ingredients for the fuel.

- 3 Non-recyclable fibers and plastics are processed in our proprietary Advanced Product Manufacturing (APM) system, where the plastics are dechlorinated and synthesized with virgin materials, such as sorbents and additives, and joined with fibers to create an integrated fuel particle.

- 4 ReEF is co-fired with coal in combustion units.
- 5 The combined fuel/sorbent technology of ReEF helps reduce environmental air pollutants.

APPENDIX A
ACCORDANT ENERGY® COMPANY OVERVIEW



**ACCORDANT
ENERGY**

Company Overview
March 2016

Enabling zero waste objectives: landfill diversion and clean, renewable energy production

Our mission

Create value by diverting waste from landfills and delivering a unique, clean and renewable fuel to the global power market

Our value proposition

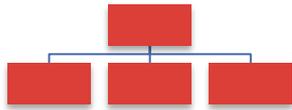


Accordant Energy offers the only waste diversion technology that is fuel-based and allows power generators to achieve fuel flexibility and emission reduction targets in one, easy to deploy solution

Our company

We will deliver strong returns to our shareholders by bringing a fuel-based, waste diversion solution with pollution control capabilities to the global power market

Licensee &
BOO
business
model



An **asset-light technology company** that takes its IP to market through a network of experienced licensees and selective build, own, and operate opportunities

Proprietary
solution



ReEngineered Feedstock®: A fuel-based, waste diversion solution with pollution control capabilities that is co-fired with coal or biomass in power plants or industrial boilers

Target
market



Electricity generators with coal and biomass-fired plants subject to SO_x, mercury, HCl, NO_x, and CO₂ regulations or renewable energy standards

Growth
potential



As regulation increases, **the U.S. market will be \$8B** per year, with strong markets in China and Europe

Investment thesis: economic, environmental and social impact

Environmental

- Increases MSW landfill diversion
- Increases net energy recovery
- Increases recovery of commodity products
- Reduces greenhouse gas emissions from avoided landfill activities and displacement of virgin material using recycled commodities
- Complements source separation recycling programs in operation and provides options for communities with no recycling
- By displacing coal in energy generation, reduces criteria pollutants and GHG emissions
- Provides communities with a base load or peak load renewable energy resource
- Provides long term landfill life extensions

Social

- Actively addresses the paradigm shift in zero waste objectives; ReEF is an enabling technology
- Integrates the needs of private and public entities in addressing growing MSW liabilities
- Supports the environmental communities' desire to slow the growth in waste generation, increase the recycling recovery rate, and provide clean fuel for needed energy generation
- Creates meaningful jobs in resource recovery and energy generation that require state of the art job skills

Accordant Energy investment offers SROI: sustainable return on investment



Market opportunity

Coal and biomass are and will continue to be critical to our global energy mix because of its abundance and reliability

However, coal combustion releases pollutants such as SO_x, mercury, hydrogen chloride, NO_x, and CO₂

Biomass has been adopted as replacement fuel in EGUs, but concerns surrounding sustainability and energy content have been raised. ReEF mitigates those concerns

Tightening regulations in the U.S., China, and Europe call for greater reduction of pollutants and greenhouse gases

Coal-based power plants are at a crossroads: they must curb pollutants to sustain supply for their customers, or shut down

Existing air-pollution control technologies are inflexible, capital-intensive, and require long lead times

Power generators need an adaptable, economically defensible and easily deployed solution to meet local requirements and regulatory standards while sustaining operations for their customers

Our solution: ReEngineered Feedstock®

What makes ReEF an effective compliance solution for coal and biomass-fired power plants?



Green power

Reduces CO₂ emissions and water use

EPA designation

Has a non-waste fuel designation from the EPA, the only pollution control solution made from municipal waste to have this approval

Cost savings

Offers lower CAPEX than traditional controls with a lifetime of ongoing savings

Ease of deployment

Co-fires in existing power plants with minimal changes or lead time; technology is customized to each boiler

Pathway to zero waste

Diverts waste from landfills by sourcing municipal waste for the base fuel

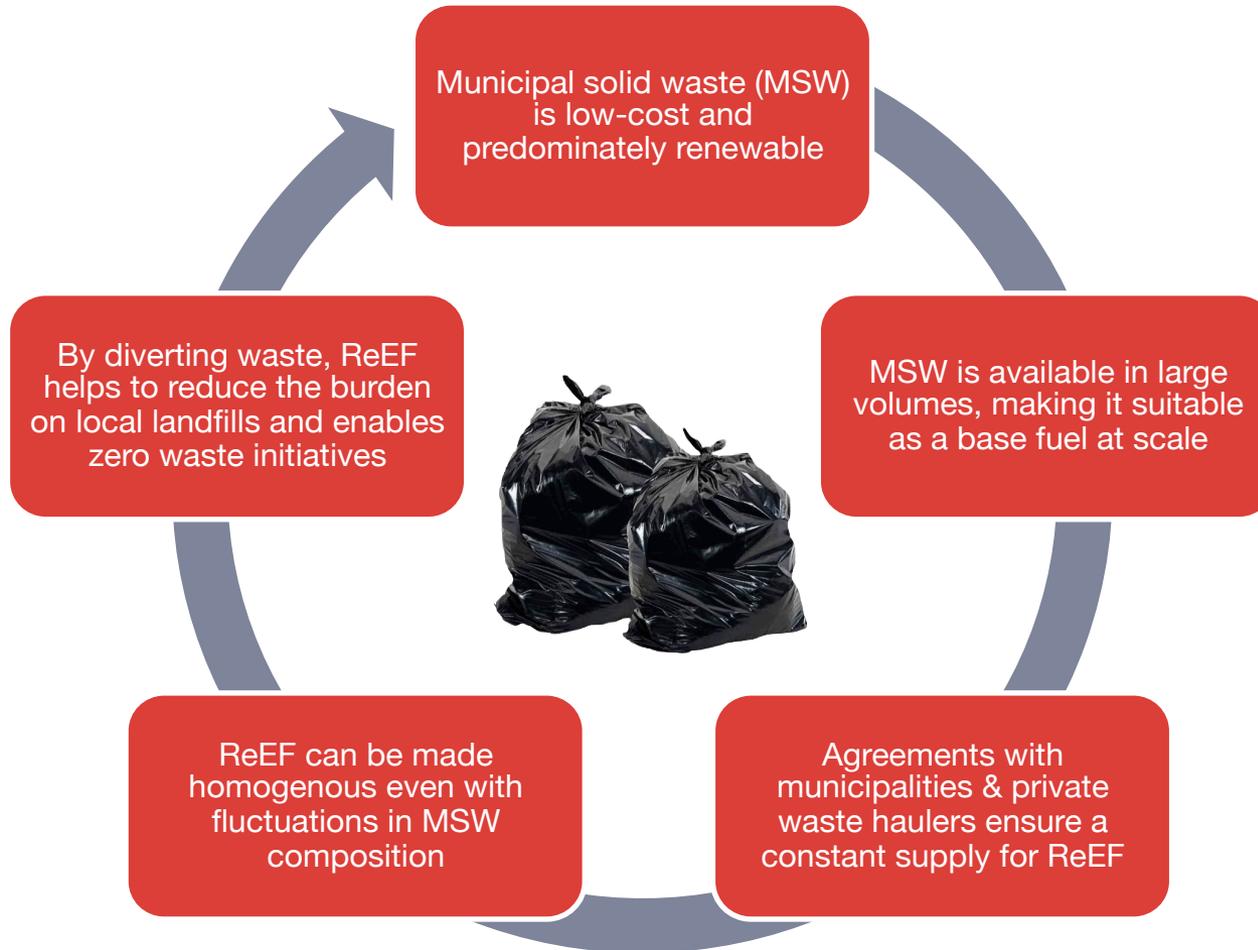
Multi-pollutant control

Addresses a range of pollutants: SO_x, mercury, hydrogen chloride, NO_x, and more

Local benefits

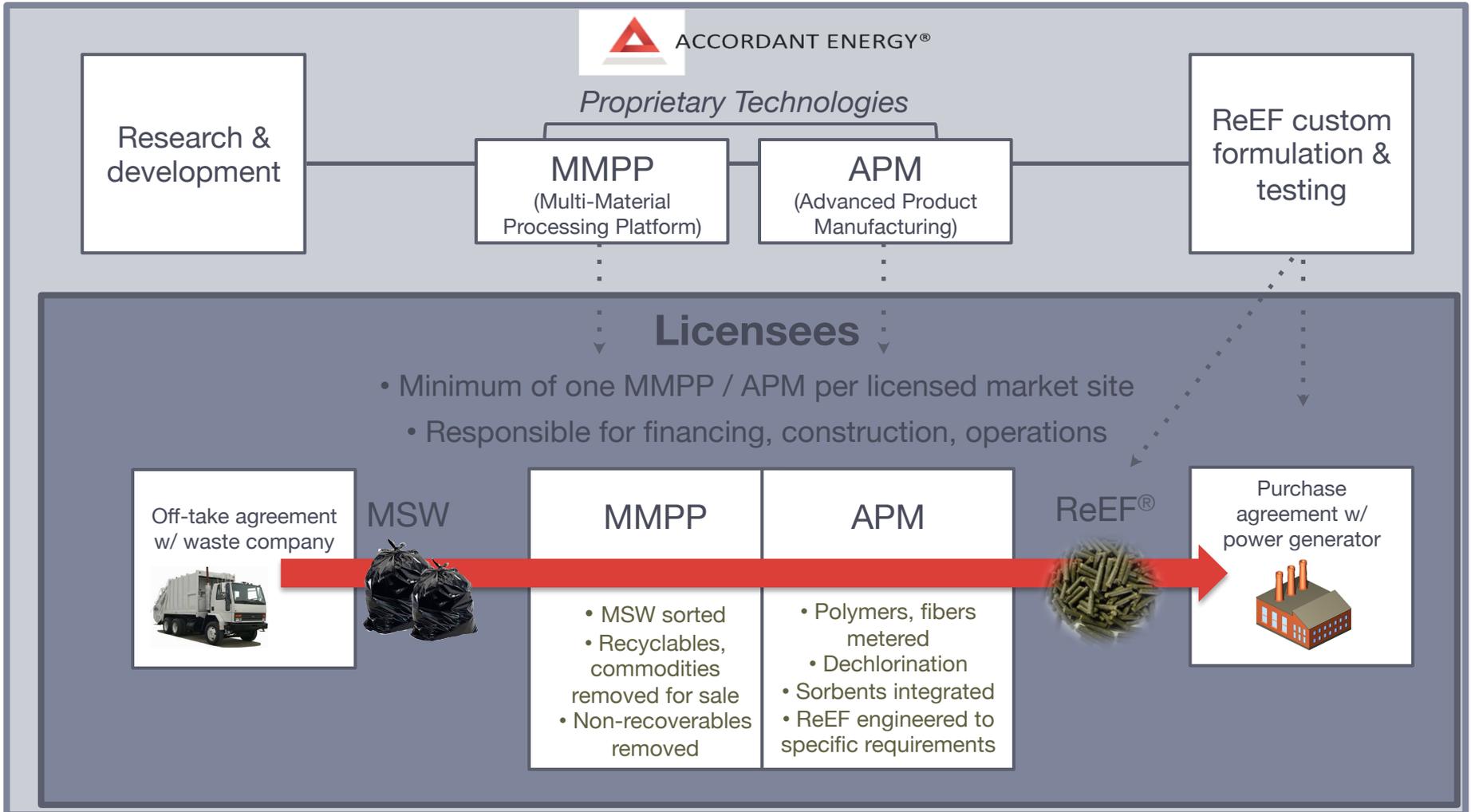
Creates jobs in local communities

The benefits of using waste as ReEF's base fuel



Our structure

Accordant Energy provides enabling IP to licensees; licensees develop customers in their markets, with Accordant Energy customizing ReEF for each



Our story

History

- Technology under development since 2008
- Developed by senior leaders of ReCommunity Recycling, who bring deep experience in the waste, recycling, and energy industries
- Spin-out completed in Q3 2013

IP position

- 23 U.S. patents granted, 28 pending applications

Investment



Partners

CONVERSE and COMPANY, INC.



Traction

- Licensee agreement in place with RePower South for 14 U.S. markets
- Testing and validation with a range of early-stage partners; commercial combustion testing at 125 MW pulverized coal boiler
- Non-waste fuel designation secured from EPA (clear path for end-users)
- Material characterization lab and test fuel production facility completed

Our team

Accordant Energy Executives

Lawrence M. Clark, Jr., Chief Executive Officer

- BalanTrove Partners, JW Resources, Inc., Harbinger Capital Partners LLC
- Senior chief executive with twenty years investment experience coupled with financial and operational restructurings, and strategic transactions across established and emerging energy, mining, metals, industrial, and retail sectors.

Paula Calabrese, Chief Strategy Officer & Co-Founder

- ReCommunity Recycling / Casella, Tokyo Electron
- First inventor of engineered fuel feedstock green fuel and air pollution control technology patents. Senior executive with twenty years blended expertise in unlocking the economic value of ideas resulting in revenue growth and higher enterprise valuations across multiple industries.

Accordant Energy Board of Directors

Pegasus Capital Advisors

- Joel Haney
- Anuj Kamdar

Accordant Energy

- Lawrence M. Clark, Jr.

HarborVest Partners

- Mark Nydam
- Ian Lane

Private Investor

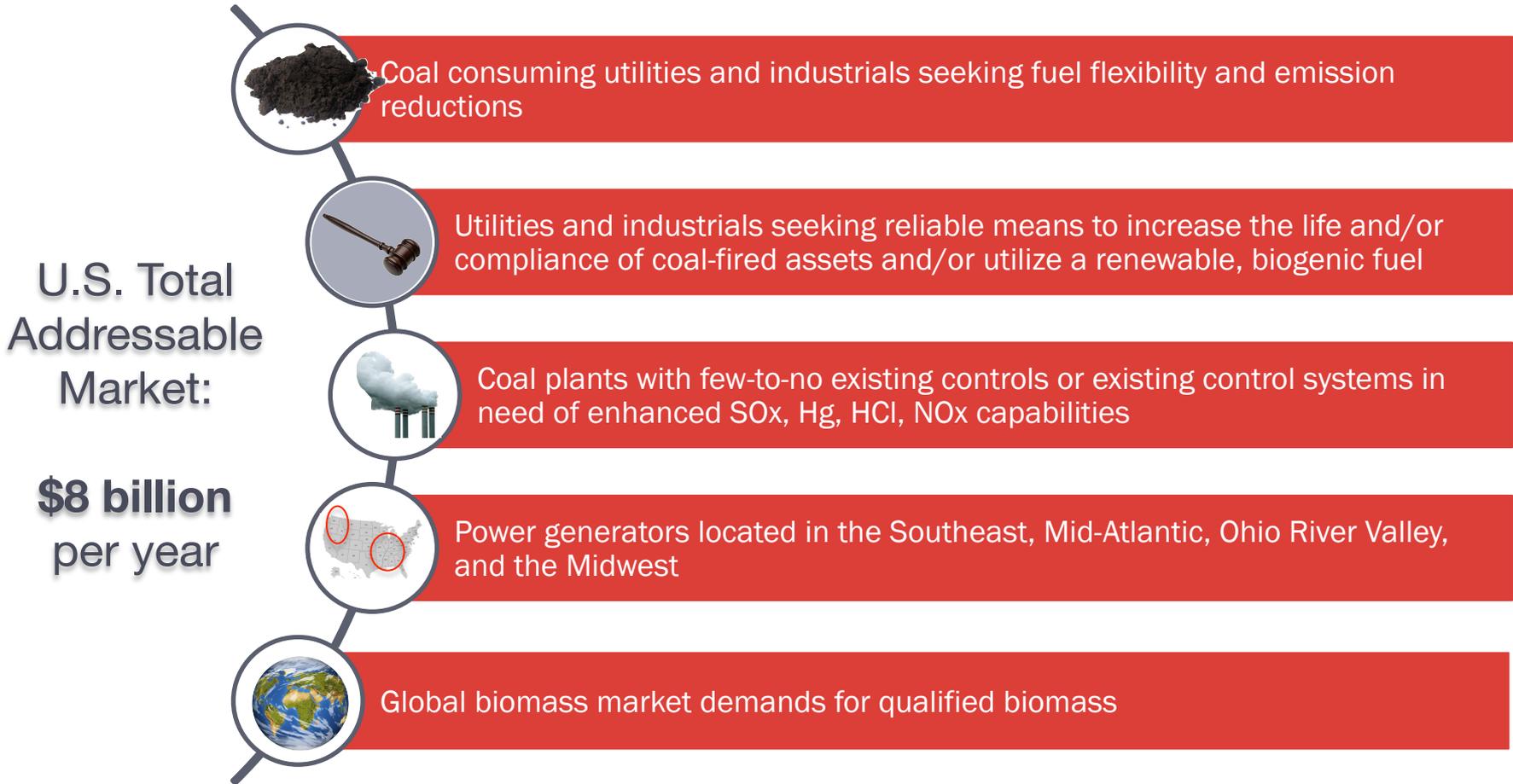
- Scott Montgomery

MissionPoint Capital Partners

- Mark Cirilli
- Jeff Possick

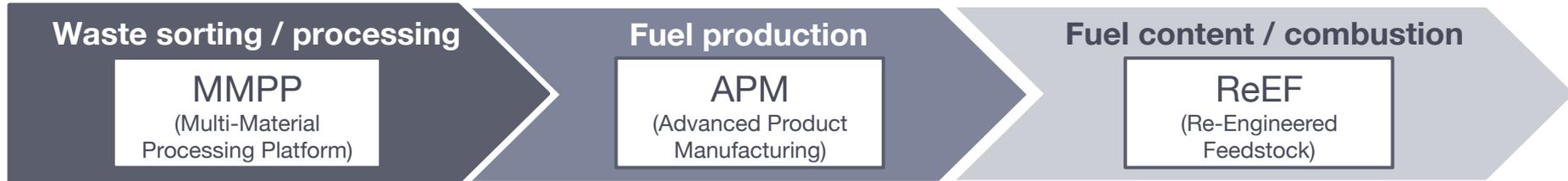
Board Members to Be Named Upon Closing of Equity Investment (2)

U.S. market for ReEF



There is a significant market for ReEF, which is poised to grow under global regulatory plans and emerging social trends

IP advantage: extensive patent portfolio



- Processing MSW to provide classified streams for the production of fuel feedstocks
- Processing municipal solid waste (MSW) based on chemical composition
- Processing MSW based on physical properties and specific needs of downstream conversion technologies
- Fuel feedstocks derived from waste streams with pollutant-binding sorbents
- Fuel feedstocks derived from MSW waste streams
- Fuel feedstocks produced with reduced chlorine content derived from waste streams
- Fuel feedstocks derived from MSW waste streams that are granulated or densified, with ranges of energy & chemical content
- Mitigating hazardous combustion emissions using sorbent-containing fuels
- Co-firing and co-gasifying fuel feedstocks with coal and other fossil fuels
- Engineered fuel feedstocks with specific chemical attributes to replicate coal, wood, and black liquor

Accordant Energy has patents granted (and pending) in the U.S., China, and Europe for both the production and specific properties of ReEF