Fulcrum Centerpoint Q&A
December 21, 2021

Fulcrum welcomes this opportunity to answer questions regarding the Centerpoint Biofuels Plant. We are committed to transparent, open communications as the project advances. We will continue to provide opportunities to meet with residents, raise awareness of Centerpoint and its benefits, and answer any questions from the community.

1) **What is the composition of the trash "feedstock" you propose to use to produce jet fuel? Given the endless list of chemicals contained in trash, what will be the specific percentages of plastic, cardboard, construction waste, and other materials that will result from the density separation process you propose to use? Gasification is a process that has used single source types of materials such as wood scraps to produce a product. Where is the proof that your process will be effective and safe using a vast mixture of materials?**

   A: At our two feedstock processing facilities outside of Gary, we sort, separate and process MSW to remove recyclable products and other unsuitable materials. Our feedstock is non-hazardous and consists of paper, cardboard, timber, textiles, soft plastic and organic material. The sorting process is designed to sort and separate municipal solid waste into a highly consistent feedstock for gasification. Fulcrum has operated and tested the Sierra Biofuels ("Sierra") Feedstock Processing Facility ("FPF") in Nevada since 2016 to ensure that the process could reliably produce feedstock that meets Fulcrum's tight specification for gasification.

   The gasification process used for Sierra and Centerpoint is licensed from an experienced supplier who has tested the Fulcrum-specific feedstock and provided a performance guarantee for their design.

   Fulcrum has also taken several MSW samples from the region and processed it into feedstock at the Sierra FPF in Nevada. This was done to confirm that the feedstock is of a similar composition and meets Fulcrum's specification. The results are summarized in the table below.

Feedstock Composition	**Feedstock Characterization Average (weight %)**
Mixed Paper	46
Film and Other Plastic	30
Wood	8
Textiles	8
Food/Yard Waste	2
Ferrous	0.1
Non-Ferrous	0.8
Inerts	2
Fines (<2")	4

2) **What specific types of plastics will be included in the feedstock? How can you confirm that dioxins and other hazardous air pollutants from the mix of plastics will not be released into the environment?**

A: Roughly 30% of the feedstock is plastic in nature, with the majority being plastic film. Centerpoint will not incinerate feedstock and Fulcrum does not expect Centerpoint to have dioxin emissions. The conditions in Fulcrum's gasifier are not conducive to dioxin formation and this has been confirmed by Fulcrum's gasification equipment supplier. The oxygen-deficient atmosphere (which also prevents combustion of feedstock) and higher temperature in a gasifier does not provide the conditions needed for dioxins to form.

Gasification and the downstream processes are fully contained, and the syngas is ultimately converted into a liquid fuel. Prior to conversion, the syngas goes through a multistep clean-up process to remove contaminants such as sulfur, chlorides and metals, which are all contained, handled and carefully disposed of. The majority of air emissions are from natural gas combustion (e.g. steam production). A full list of the projected emissions is included in the air permit application that has been submitted to IDEM and can be accessed here: https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83150492&dDocName=83151097&Rendition=web&allowInterrupt=1&noSaveAs=1&fileName=83151097.pdf

3) **It is our understanding that your Fulcrum Sierra facility located in the Nevada desert is not yet operational. When will the Sierra facility be on line? How long before you have actual data to show that the process is safe and environmentally sound?**

A: Sierra is in the process of commencing operations and is expected to start producing shortly. Over the next 12 months, the startup process and the steady ramp up of operations will demonstrate the safety and reliability of the plant. Fulcrum does not expect to finalize design or start construction on Centerpoint until Sierra is fully operational.

4) **What is the carbon footprint of the entire feedstock processing and gasification process and does it consider all the transportation components? What greenhouse gases are produced in this process?**

A: The carbon footprint of the entire production process from feedstock processing through to the use of the fuel (including all transportation components) is more than 80% lower than the life-cycle production process associated with fossil fuels. This is calculated using a life-cycle assessment and the result (a carbon intensity score or

"CI" score) has been independently certified by the California Air Resources Board (CARB).

Fulcrum's certified CI score is 14.78 gCO_2/MJ, which is an 84% reduction relative to approximately 90 gCO_2/MJ for fossil fuel. CARB publish CI scores for all production pathways on their website, and the fuel pathway table can be downloaded from the following link and Fulcrum's CI score can be found with a word search for "Fulcrum".

https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

5) When will you release a copy of a facility hazard analysis to the public?

A: The Solid Waste Permit application will include an Operating Plan and Emergency Response Plan and the application will be publicly available once it is filed with IDEM. Both plans detail hazards associated with the operation of Centerpoint, preventative mitigations and emergency response procedures in the event of an accident (including spill and fire prevention and response). Both plans will be revised, updated and expanded as Centerpoint staffs up and prepares for operations.

Fulcrum is preparing an environmental impact summary of the project, which will be made available on the Centerpoint website, and this will also include analysis of environmental hazards associated with the facility.

A detailed Hazard and Operability Study ("HAZOP") has been conducted for the Sierra Plant. The purpose of the HAZOP is to investigate how the system or plant could deviate from the design and create risk for personnel and equipment and operability problems. HAZOP studies have been used with great success for a long time within chemical and the petroleum industry to obtain safer, more efficient and more reliable plants. A HAZOP will be conducted for Centerpoint during the detailed engineering phase prior to construction. The HAZOP report contains confidential proprietary information, which prevents Fulcrum from making it available to the public.

6) Where will the trash processing plant for the Fulcrum Centerpoint facility will located?

A: While exact locations for the two feedstock processing facilities are being still being determined, one facility will be in Illinois along the I-90 corridor and a second facility will be in Indiana, outside of Gary, close to I-65.

7) **Why did you choose to locate the proposed Centerpoint facility in an environmentally sensitive area on the shores of Lake Michigan surrounded by disproportionately environmentally impacted environmental justice communities?**

A: Fulcrum selected the site in Gary for its existing heavy industrial zoning, industrial road and rail connections and infrastructure available in close proximity to the site. The project also aligns well with the City of Gary's comprehensive plan, which contemplates a facility of this nature in the Buffington Harbor area utilizing vacant industrial land near the airport.

While the facility is close to Lake Michigan, there are other industrial properties and a major railroad that separate the project site from the lakeshore. We understand that residents are concerned about the impact of potential spills. If a spill were to occur at the facility, on site containment (e.g. containment walls around product storage and wastewater pre-treatment) will ensure spills are kept to the site and do no migrate to surrounding properties.

8) **When will you conduct an environmental justice impact study for the proposed Centerpoint facility?**

A: Fulcrum is in the process of conducting an environmental impact summary that will include an assessment of Environmental Justice factors. This will be available in early 2022.

9) **How can you confirm that your proposed Centerpoint facility can meet the emissions limits of the FESOP Air Permit application you submitted to the Indiana Department of Environmental Management when you have no proven track record of facility operations?**

A: The emissions information has been produced as part of a detailed modeling process that is based on USEPA guidance, equipment guarantees, and data gained from the extensive process trials. Further, most of the air emissions will be from natural gas combustion in equipment such as the auxiliary boiler (for steam production). This is very well understood equipment used in a variety of industrial processes with significant operating hours. This enables vendors to guarantee the emissions from such units. The same applies to emissions control equipment that will be used by Centerpoint. Fulcrum has a high degree of confidence in the projected emissions outlined in the air permit application.

If, during the startup and commissioning phase of Centerpoint, Fulcrum is not able to meet the permitted limits, IDEM will not issue an Operating Permit and Fulcrum will

be required to take corrective action and then demonstrate that they have met the permit requirements.

10) **Will your proposed product be used directly as jet fuel or must it be further refined and/or blended at an off-site refinery to meet jet fuel specifications?**

A: Centerpoint will produce sustainable aviation fuel. Current sustainable aviation fuel specifications require that it be blended with traditional jet fuel (up to 50%) prior to delivery to customers. A blending location for Centerpoint's jet fuel has not been determined, however this is typically done at refineries or fuel storage terminals.

The organization responsible for approving sustainable aviation fuel production pathways – ASTM (formerly known as the American Society for Testing and Materials) – is examining the use of 100% sustainable aviation fuel in aircraft engines. If approved, Fulcrum's fuel would not require blending. United Airlines also recently conducted a flight using 100% sustainable aviation fuel in one engine as a demonstration.