Reviewer Comment Responses

Section 1

1) All of the financial analysis of the plant Opex is based on 270/year total run time. BMS is in communications with [redacted] about utilizing of their waste streams as a supplement to SBT's during the remainder of the year. The totals available and the material suitability as fermentation feedstock are currently under study. Regardless, the plant does perform well financially in the 270/365 day operating timeline.

2) Whilst the size of the ethanol plant is 5-10X smaller than the corn ethanol plants, there are a number of significant differentiators to note.
    a. The reason for the large scale corn ethanol is primarily due to the issues associated with very high feedstock purchase prices (leveraged against heavy fossil fuel inputs (fertilizer, transportation) and a very high product solids (whole stillage, DDG, DDGS) that have to be dried (as otherwise the transportation costs versus the value of the product would create a significant, in fact prohibitive barrier) as this is the only way to transport such large quantities of the solid by-products. The drying of this by-product also exposes the corn ethanol producers to high level of fossil fuel natural gas price fluctuations.
    b. The BMS plant uses very low solid content sugar beet tailings, therefore the treatment of the solids (drying) is also severely diminished (in fact at a ratio of 5:1)

   The cost of the BMS feedstock plus all of the Opex are lower than just the cost of corn ethanol corn purchase price (without the plant Opex) alone. In addition, none of the inputs associated with fluctuation of price in order to grow and supply the corn are present in the BMS plant case.
   The difference in the CapEx vs Opex curve cross relatively early in the plant operation, making the BMS plant very attractive.
   The data on the composition of the by-product is available and does fully meet the requirements of ACS. Composition of the solids was conducted by ACS through a third party. This by-product will be blended with other ACS generated product and will be sold through their channels. The value used in the proforma is a lowest level that ACS has obtained as a final price for this type of by-product.

Section 2

1) As part of the FEED process, BMS is intending to do a test with [redacted] has a demo-scale test facility capable of 100,000 GPY capacity of fuel grade ethanol. This work will be performed with the help of the NDIC funds.

2) Sugar Beets are used as feedstock in Europe, primarily in Northern Europe. There are many facilities in operation currently. BMS has been in contact with some of the key experts in this area – specifically in fermentation, and sugar beet processing. BMS is making a trip to Europe during the week of June 29th to visit with these experts in person. This will help validate the cost assumptions. BMS requires all of the $500K funding in order to proceed with the project to rapid FEED completion and kick-off.

3) BMS has validated that the use of SBTs utilizes and existing pathway for RINS qualification. This has been validated by Eco Engineers, one of the leaders in this space. The total timeline for qualification is 6 weeks.

4) The goal is to start producing ethanol by Oct/Nov 2016.

Section 3

1) Please see response in Section concerning pilot testing. In addition, BMS has a lab facility that is co-located with Soilnet. The lab facility has various front-end size reduction equipment. 6 Test passes has already been conducted (test results have been reviewed by ACS). Additional test runs are planned utilizing these pieces of equipment as part of the proposed FEED. Detailed consultations relationship with [redacted] will be established following a physical visit to their facility next week. This activity in conjunction with sensitivity based (Aspen) engineering activities conducted by Unitel will enable for BMS to arrive at a defined combination of operating parameters (degree of size reduction, pasteurization and diffusion operating parameters, incoming sugar Brix into the fermentation, acceptable alcohol level and its turndown moving through the beer column). In addition to the [redacted] BMS will engage services of a fermentation optimization expert from [redacted]

2) Additional Responses Below:
    - SBT storage – BMS will be continuously processed. The SBTS will be stored temporarily in a storage area as they are unloaded from the trucks and moved into a storage tank as the first step in the processing.
    - Fate of the Wash Water – Wash water moves into the water recirculation and treatment loop
    - Benefits of Polymer Stratification - Polymer processes unload requirements and energy costs for centrifugal separation
    - How is ethanol removed from the Solids – Solids will be removed prior to fermentation. Any solids that come from the fermentation process have very low levels of ethanol remaining and can be blended with the solids at a very high dilution rate. The solids have been tested against the ACS specifications for animal feed and have passed.
    - Why are the solids pelleted – The distribution channel established by ACS has specific requirements for the feed. One of which is that it be pelletized.
    - Benefits of UV Light photoelectron catalytic – Cost and throughput

3) The details of the final design will emerge after FEED completion, for which BMS is seeking the NDIC funds. Th schedule, can be updated and resent.

Section 4

1) The funds sought from NDIC will complete the design and validate the process.

2) The aggregation of the SBTs is covered in the proforma using very conservative transportation assumptions. The key benefit for BMS is that that the SBTs are collected in a clean fashion from each of the ACS facilities so the handling in the BMS facility has minimal need for handling. The focus on the BMS pre-processing is on size reduction, elimination of any bacterial activity that might exist and sugar extraction. Each of these steps has been already tested in the BMS test facilities. The FEED process will focus on the final design of these key steps.

Section 5

1) Literature citations can be added, however the reviewer insists on empirical data, which will be generated during parallel testing processes that will be conducted in conjunction with the FEED activities for which the NDIC funding in question is being sought.

2) As noted by the reviewer, there is ethanol production from Sugar Beets done globally. An important point that needs to be highlighted is that since the introduction of Roundup Ready Sugar Beets (the kind grown by the ACS co-op), the make-up of the SBTs is the same as the sugar beet. The advantage for BMS is that these have been already aggregated and cleaned by ACS. This makes the business model very viable for BMS. If the project were using whole beets, the model would not work.

Section 6

1) The BMS team consists of 5 engineers that have ethanol experience. In addition, the distillation and dehydration is being done by Unitel that has their own staff of engineers with experience in biofuels, chemical, and petrochemical industries, which have more stringent requirements than ethanol. Detail resumes can be shared if needed.

2) The FEED contains additional testing as part of the process that will generate additional empirical data and validate the testing done to date.

Section 7

1) No Comments

Section 8

1) No Comments

Section 9

1) The proposal from BMS for the FEED process includes scaled up testing and validation of the process. These will be conducted at the BMS lab facilities and with [redacted].

Section 10

1) The facility is estimated to be ~$25MM. The FEED level sought falls right in line with industry benchmarks for this activity. The estimated cost for the facility is also in line with global benchmarks.

Section C

BMS has done a tremendous amount of work to get the project this state. There has been significant continuous due diligence conducted by ACS, process engineering firms, engineering partners such as

Unitel, and our financing partners. The project financing is established and contingent on BMS completing the FEED process for which we are seeking the $500,000. This will allow the project to proceed rapidly.