Gevo, Inc.
Form 10-K
March 29, 2011
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

Form 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2010

or

¨ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
Commission file number: 001-35073

Gevo, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or Other Jurisdiction of Incorporation or Organization)	**87-0747704** (I.R.S. Employer Identification No.)
345 Inverness Drive South, Building C, Suite 310,	
Englewood, CO (Address of Principal Executive Offices)	**80112** (Zip Code)

(303) 858-8358

(Registrant s telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, par value $0.01 per share	NASDAQ Global Market

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ¨ No x

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (Section 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ¨ No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	¨	Accelerated filer	¨
Non-accelerated filer	x (Do not check if a smaller reporting company)	Smaller reporting company	¨

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No x

The aggregate market value of the voting stock held by non-affiliates of the registrant, based on the closing sale price of the common stock on March 25, 2011 was approximately $138 million. The registrant has provided this information as of March 25, 2011 because its common stock was not publicly traded as of the last business day of its most recently completed second fiscal quarter. Shares of common stock held by each officer, director and holder of 5% or more of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of outstanding shares of the registrant s common stock, par value $0.01 per share, as of March 25, 2011 was 25,851,284.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of Part II of this Annual Report on Form 10-K and Items 10, 11, 12, 13 and 14 of Part III of this Annual Report on Form 10-K incorporate information by reference from the registrant s definitive proxy statement to be filed pursuant to Regulation 14A in connection with the registrant s 2011 Annual Meeting of Stockholders or an amendment to this Annual Report on Form 10-K to be filed with the Securities and Exchange Commission within 120 days after the close of the fiscal year covered by this Annual Report on Form 10-K.

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GEVO, INC.

FORM 10-K ANNUAL REPORT

For the Fiscal Year Ended December 31, 2010

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Forward-Looking Statements

When used anywhere in this Annual Report on Form 10-K (this Report), the words expect , believe , anticipate , estimate , intend , plan an expressions are intended to identify forward-looking statements. These statements relate to future events or our future financial or operational performance and involve known and unknown risks, uncertainties and other factors that could cause our actual results, levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Such statements are subject to certain risks and uncertainties including those related to the achievement of advances in our technology platform, the success of our retrofit production model, our ability to gain market acceptance for our products, additional competition, changes in economic conditions and those described in documents we have filed with the Securities and Exchange Commission (the SEC), including this Report in Management s Discussion and Analysis of Financial Condition and Results of Operations, Risk Factors and subsequent reports on Form 10-Q. All forward-looking statements in this document are qualified entirely by the cautionary statements included in this document and such other filings. These risks and uncertainties could cause actual results to differ materially from results expressed or implied by forward-looking statements contained in this document. These forward-looking statements speak only as of the date of this document. We disclaim any undertaking to publicly update or revise any forward-looking statements contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based. Unless the context requires otherwise, in this report the terms we, us and our refer to Gevo, Inc. and its wholly owned or indirect subsidiaries, and their predecessors.

This Report contains estimates and other information concerning our target markets that are based on industry publications, surveys and forecasts, including those generated by SRI Consulting, a division of Access Intelligence, LLC (SRI), Chemical Market Associates, Inc. (CMAI), the US Energy Information Association (the EIA), the International Energy Agency (the IEA), the Renewable Fuels Association (RFA), and Nexant, Inc. (Nexant). Certain target market sizes presented in this report have been calculated by us (as further described below) based on such information. This information involves a number of assumptions and limitations. Although we believe the information in these industry publications, surveys and forecasts is reliable, we have not independently verified the accuracy or completeness of the information. The industry in which we operate is subject to a high degree of uncertainty and risk due to a variety of factors, including those described in Risk Factors. These and other factors could cause actual results to differ materially from those expressed in these publications, surveys and forecasts.

Conventions that Apply to this Report

With respect to calculation of product market volumes:

- product market volumes are provided solely to show the magnitude of the potential markets for isobutanol and the products derived from it. They are not intended to be projections of our actual isobutanol production or sales;
- product market volume calculations are based on data available for the year 2007 (the most current data available from SRI); and
- volume data with respect to target market sizes is derived from data included in various industry publications, surveys and forecasts generated by SRI, CMAI, the EIA, the IEA and Nexant.

We have converted these sizes into volumes of isobutanol as follows:

- we calculated the size of the market for isobutanol as a gasoline blendstock and oxygenate by multiplying the world gasoline market volume by an estimated 12.5% by volume isobutanol blend ratio;
- we calculated the size of the specialty chemicals markets by substituting volumes of isobutanol equivalent to the volume of products currently used to serve these markets;

- we calculated the size of the petrochemicals and hydrocarbon fuels markets by calculating the amount of isobutanol that, if converted into the target products at theoretical yield, would be needed to fully serve these markets (in substitution for the volume of products currently used to serve these markets); and

- for consistency in measurement, where necessary we converted all market sizes into gallons.

Conversion into gallons for the fuels markets is based upon fuel densities identified by Air BP Ltd. and the American Petroleum Institute.

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PART I

Item 1. Business
Company Overview

We are a renewable chemicals and advanced biofuels company. Our strategy is to commercialize biobased alternatives to petroleum-based products using a combination of synthetic biology and chemical technology. In order to implement this strategy, we are taking a building block approach. We intend to produce and sell isobutanol, a four carbon alcohol. Isobutanol can be sold directly for use as a specialty chemical or a value-added fuel blendstock. It can also be converted into butenes using simple dehydration chemistry deployed in the refining and petrochemicals industries today. Butenes are primary hydrocarbon feedstocks that can be employed to create substitutes for the fossil fuels used in the production of plastics, fibers, rubber, other polymers and hydrocarbon fuels. Customer interest in our isobutanol is primarily driven by our low cost manufacturing route and isobutanol s potential to serve as a building block to produce alternative sources of raw materials for their products at competitive prices. We believe products made from biobased isobutanol will be subject to less cost volatility than the petroleum-derived products in use today. We believe that the products derived from isobutanol have potential applications in approximately 40% of the global petrochemicals market, representing a potential market for isobutanol of approximately 67 billion gallons per year (BGPY), based upon volume data from SRI, CMAI and Nexant, and substantially all of the global hydrocarbon fuels market, representing a potential market for isobutanol of approximately 900 BGPY, based upon volume data from the IEA. When combined with a potential specialty chemical market for isobutanol of approximately 1.1 BGPY, based upon volume data from SRI, and a potential fuel blendstock market for isobutanol of approximately 40 BGPY, based upon data from the IEA, the potential global market for isobutanol is approximately 1,008 BGPY.

We also believe that the raw materials produced from our isobutanol will be drop-in products, which means that customers will be able to replace petroleum-derived raw materials with isobutanol-derived raw materials without modification to their equipment or production processes. In addition, the final products produced from our isobutanol-based raw materials will be chemically identical to those produced from petroleum-based raw materials, except that they will contain carbon from renewable sources. We believe that at every step of the value chain, renewable products that are chemically identical to the incumbent petrochemical products will have lower market adoption hurdles, because the infrastructure and applications for such products already exist.

In order to produce and sell isobutanol made from renewable sources, we have developed the Gevo Integrated Fermentation Technology®, or GIFT®, an integrated technology platform for the efficient production and separation of isobutanol. GIFT® consists of two components, proprietary biocatalysts which convert sugars derived from multiple renewable feedstocks into isobutanol through fermentation, and a proprietary separation unit which is designed to continuously separate isobutanol from water during the fermentation process. We developed our technology platform to be compatible with the existing approximately 20 BGPY of global operating ethanol production capacity, as estimated by the RFA. GIFT® is designed to allow relatively low capital expenditure retrofits of existing ethanol facilities, enabling a rapid and cost-efficient route to isobutanol production from the fermentation of renewable feedstocks. While we are a development stage company that has generated limited revenue from ethanol sales and government research grants, neither of which is our intended primary business, and have experienced net losses since inception, we believe that our cost-efficient production route will enable rapid deployment of our technology platform and allow our isobutanol and the products produced from it to be economically competitive with many of the petroleum-derived products used in the chemicals and fuels markets today.

We expect that the combination of our efficient proprietary technology, our marketing focus on providing substitutes for the raw materials of well-known and widely used products and our relatively low capital investment retrofit approach will mitigate many of the historical issues associated with the commercialization of renewable chemicals and fuels.

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Our Markets

Relative to petroleum-based products, we expect that chemicals and fuels made from our isobutanol will provide our potential customers with the advantages of lower cost volatility and increased supply options for their raw materials. While we intend to focus on producing and marketing isobutanol, the demand for our product is driven in large part by the fact that our isobutanol can be converted into a number of valuable hydrocarbons, providing us with multiple sources of potential demand. We anticipate that additional uses of our isobutanol will develop rapidly because the technology to convert isobutanol into hydrocarbon products is known and practiced in the chemicals industry today.

Isobutanol for direct use.

Without any modification, isobutanol has applications as a specialty chemical. Chemical-grade isobutanol can be used as a solvent and chemical intermediate.

Isobutanol also has direct applications as a specialty fuel blendstock. Fuel-grade isobutanol may be used as a high energy content, low Reid Vapor Pressure (RVP), gasoline blendstock and oxygenate, which we believe, based on its low water solubility, will be compatible with existing refinery infrastructure, allowing for blending at the refinery rather than blending at the terminal. RVP measures a fuel s volatility, and in warm weather, high RVP fuel contributes to smog formation. Additionally, fuel-grade isobutanol can be blended in conjunction with, or as a substitute for, ethanol and other widely used fuel oxygenates.

Since our potential customers in these markets would not be required to develop any additional infrastructure to use our isobutanol, we believe that selling into these markets will result in a lower risk profile and produce attractive margins.

Isobutanol for the production of plastics, fibers, rubber and other polymers. Isobutanol can be dehydrated to produce butenes which have many industrial uses in the production of plastics, fibers, rubber and other polymers. The straightforward conversion of isobutanol into butenes is a fundamentally important process that enables isobutanol to be used as a building block chemical in multiple markets.

Isobutanol can be converted into hydrocarbons which form the basis for the production of rubber, lubricants and additives for use predominantly in the automotive markets. Based on conversations between our officers and these producers and an SRI study, we believe producers in these markets are looking for new sources of drop-in hydrocarbons.

Isobutanol can also be converted into methyl methacrylate (MMA) which is used to produce plastics and industrial coatings for use in consumer electronics and automotive markets. Based on conversations between our officers and these producers and multiple market studies, we believe producers of MMA are looking for new sources of raw materials.

Propylenes used in packaging, fibers and automotive markets may also be made from isobutanol. Based on conversations between our officers and these producers, an article in ICIS Chemical Business and multiple market studies, we believe producers of propylenes are looking to find new sources of raw materials and biobased alternatives that will allow them to market their products as environmentally friendly.

Isobutanol can also be used to produce para-xylene and its derivatives, including polyesters, which are used in the beverage and food packaging and fibers markets. Based on conversations between our officers and these producers, multiple news articles and producer press releases, we believe producers of these products are looking to find biobased alternatives that will allow them to market their products as environmentally friendly.

Styrene and polystyrene can also be made from isobutanol for use in food packaging. Based on conversations between our officers and these producers, producer press releases and a CMAI presentation, we believe producers of these products are looking to find biobased alternatives that will allow them to market their products as environmentally friendly.

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Isobutanol for the production of hydrocarbon fuels and specialty blendstocks. Beyond direct use as a fuel additive, isobutanol can be converted into many hydrocarbon fuels and specialty blendstocks, offering substantial potential for additional demand.

Isobutanol may be converted into isooctane, which is valuable, particularly in low vapor pressure markets like California, for reducing gasoline s RVP and increasing its octane rating. Compared to alkylate, which is currently used to reduce vapor pressure, isooctane has a lower vapor pressure and higher octane rating. Renewable isooctane produced from our isobutanol would give refiners an additional option to meet their renewable volume obligations set by the US Environmental Protection Agency (EPA) in a cost effective way. Isooctane produced from biobased isobutanol may also be blended with isobutanol and low value gasoline components to create gasoline with a high percentage renewable content.

We have demonstrated the conversion of our isobutanol into a renewable jet fuel blendstock which meets current ASTM International (ASTM) and US military synthetic jet fuel blendstock performance and purity requirements, and we are working to obtain an ASTM standard specification for the use of such jet fuel blendstock in commercial aviation. Commercial airlines are currently looking to form strategic alliances with biofuels companies to meet their supply demands.

Diesel fuel may also be produced from our isobutanol.

Our Retrofit Strategy

We plan to commercialize our isobutanol for direct use as a solvent and gasoline blendstock and for use in the production of plastics, fibers, rubber, other polymers and hydrocarbon fuels derived from renewable feedstocks instead of petroleum. Our strategy of retrofitting existing ethanol production facilities to produce isobutanol allows us to project substantially lower capital outlays and a faster commercial deployment schedule than the construction of new plants. We developed our technology platform to be compatible with the existing approximately 20 BGPY of global operating ethanol production capacity and we believe that this retrofit approach will allow us to rapidly expand our isobutanol production capacity in response to customer demand. We believe our isobutanol not only offers a compelling value proposition to customers in the chemicals and fuels markets, but should also provide current ethanol plant owners with an opportunity to increase their operating margins through the retrofit of their existing facilities in joint venture settings. Additionally, the ability of GIFT® to convert sugars from multiple renewable feedstocks into isobutanol will enable us to leverage the abundant domestic sources of low cost grain feedstocks (e.g., corn) currently used for ethanol production and will potentially enable the expansion of our production capacity into international markets that use sugar cane or other feedstocks that are prevalent outside of the US.

Through our exclusive alliance with ICM, Inc. (ICM), a leading engineering firm that has designed approximately 60% of current US operating ethanol production capacity, which the RFA estimates to be over 12 BGPY, we are developing our retrofit equipment package and have successfully demonstrated the production of isobutanol via the retrofit of a 1 million gallon per year (MGPY) ethanol demonstration facility in St. Joseph, Missouri using our first- and second- generation biocatalysts. We plan to secure access to existing ethanol production facilities through joint ventures and direct acquisitions. We will then work with ICM to deploy GIFT® through retrofit of these production facilities. In partnership with ICM, we have developed retrofit equipment packages for the retrofit of standard 50 MGPY and 100 MGPY ICM-designed corn ethanol plants.

In September 2010, we acquired a 22 MGPY ethanol production facility in Luverne, Minnesota. We have begun the project engineering and permitting portion of the Agri-Energy facility retrofit process. The Agri-Energy facility is a traditional dry-mill facility, which means that it uses dry-milled corn as a feedstock. Based on an initial evaluation of the Agri-Energy facility by ICM, we project capital costs of approximately $17 million to retrofit this plant to produce 18 MGPY of isobutanol. We expect to incur additional costs of approximately $5 million related to, among other things, the construction of equipment and storage tanks designed to allow switching between isobutanol and ethanol production and conservative engineering estimates made in

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acknowledgment that the Agri-Energy facility will be our first commercial retrofit, bringing the total projected cost to approximately $22 million. We expect to begin commercial production of isobutanol at the Agri-Energy facility in the first half of 2012.

Additionally, in November 2010, we executed a non-binding letter of intent with a large ethanol producer in the Midwest. This letter of intent contemplates a joint venture between this ethanol producer and us pursuant to which the ethanol producer would provide its existing 50 MGPY gallon ethanol production facility and we would be responsible for retrofitting such facility to produce isobutanol. Upon completion of the retrofit, both parties to the joint venture would receive a portion of the profits from the sale of isobutanol, consistent with our business model. However, there can be no assurance that we will be able to enter into a definitive joint venture agreement with this ethanol producer.

We are currently in discussions with several other ethanol plant owners that have expressed an interest in either entering into joint ventures or selling their facilities to us for retrofit to produce isobutanol. Collectively, these ethanol plant owners represent over 2.4 BGPY of ethanol capacity. However, there can be no assurance that we will be able to acquire access to ethanol plants from these owners.

Production and Distribution

We plan to commence commercial production of isobutanol in the first half of 2012 at our acquired facility in Luverne, Minnesota. We expect our production to be targeted to ready markets, for use as a specialty chemical, and to regional fuel blendstock markets in the US that value isobutanol s low RVP and higher energy content as compared to ethanol.

During the retrofit of the Agri-Energy facility, we intend to continue to produce and sell ethanol and related distiller s grains. Following retrofit of the facility to isobutanol production, we intend to produce and sell isobutanol to customers and to sell protein fermentation meal as animal feed for local markets in the same manner as distiller s grains are sold today.

As our customers place processing assets into service, we plan to transition to selling increased isobutanol volumes under direct customer relationships, many of which we have already established. We are developing a pipeline of future customers for our isobutanol and its derivative chemical products across multiple target chemicals and fuels markets both in the US and internationally. As of December 31, 2010, we have entered into the following arrangements:

LANXESS. In May 2010, we entered into a non-binding heads of agreement outlining the terms of a future supply agreement with LANXESS Inc. (LANXESS), an affiliate of LANXESS Corporation, a stockholder in our company. LANXESS is a specialty chemical company with global operations that currently produces butyl rubber from petrochemical-based isobutylene. Isobutylene is a type of butene that can be produced from isobutanol through straightforward, well-known chemical processes. Pursuant to the heads of agreement, LANXESS has proposed to purchase at least 20 million gallons of our isobutanol per year for an initial term of 10 years, with an option to extend the term for an additional five years. The pricing under our heads of agreement with LANXESS includes a mechanism that adjusts for future changes in the cost of our feedstock. This pricing mechanism is appealing to LANXESS due to the lower historical price volatility of the resulting butanol, as compared to their traditional petroleum-based feedstocks. This pricing mechanism also allows us to enter into long-term supply agreements for our isobutanol. In January 2011, we also entered into an exclusive supply agreement with LANXESS pursuant to which LANXESS has granted us an exclusive first right to supply LANXESS and its affiliates with certain of their requirements of biobased isobutanol during the initial ten year term. Our exclusive first right to supply biobased isobutanol to LANXESS and its affiliates will be subject to the terms of the future supply agreement that we intend to enter into with LANXESS, as described above.

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TOTAL PETROCHEMICALS. In February 2010, we entered into a non-binding letter of intent with TOTAL PETROCHEMICALS USA, Inc. (TOTAL PETROCHEMICALS), an affiliate of TOTAL S.A., a major oil and gas integrated company. Under the terms of the letter of intent, we have agreed to negotiate a definitive supply agreement, for a term of up to five years, for the sale of a specified amount of isobutanol to TOTAL PETROCHEMICALS for use as a second-generation biofuel. TOTAL PETROCHEMICALS anticipates that it will require a volume of isobutanol ranging from 5 to 10 million gallons during the first year of the agreement. After the first year, the parties will mutually agree upon a ramp-up schedule to increase the annual volume of isobutanol to be supplied by us over the remaining term of the agreement. TOTAL PETROCHEMICALS is affiliated with one of our stockholders, Total Energy Ventures International.

Toray Industries. In April 2010, we received a non-binding letter of interest from Toray Industries, Inc. (Toray Industries), a leader in the development of fibers, plastics and chemicals. Under the terms of the letter of interest, the parties have agreed to negotiate a supply agreement, pursuant to which, beginning on or after 2012, Toray Industries would purchase 1,000 metric tons per year of biobased p-xylene made from our isobutanol, potentially building to 5,000 metric tons within five years. Production of 5,000 metric tons of p-xylene is expected to require approximately 2.3 million gallons of isobutanol. We believe that the p-xylene can be produced by third-party manufacturers using isobutanol. We intend to solicit commitments from these manufacturers to purchase our isobutanol in order to supply Toray Industries.

United Airlines. In July 2010, we entered into a non-binding letter of intent with United Air Lines, Inc. (United Airlines), one of the largest international airlines in the world. This letter of intent sets forth the initial terms for a supply agreement for renewable jet fuel, produced from our isobutanol, to serve United Airline s major hub airport in Chicago. We anticipate that the quantity of renewable jet fuel provided to the hub airport in Chicago will initially be 10,000 barrels per day, beginning in the fourth quarter of 2012. The production of this quantity of renewable jet fuel will require approximately 205 MGPY of isobutanol. The letter of intent also contemplates a ramp-up in the supply of renewable jet fuel to 30,000 barrels per day by 2015 and 60,000 barrels per day by 2020. Importantly, the pricing of the renewable jet fuel will be indexed to the cost of corn, the feedstock that we will use to produce our isobutanol, and natural gas.

Sasol Chemical Industries. In November 2010, we entered into a non-binding letter of intent with Sasol Chemical Industries Ltd. (Sasol), acting through its Solvents Division. This letter of intent sets forth the proposed initial terms of a possible sales and distribution agreement for our isobutanol for use as a solvent or as a chemical feedstock to downstream processes. Under the terms of the letter of intent, the parties intend to negotiate a definitive sales and distribution agreement that will have an initial term of three years, with the initial shipment of isobutanol expected to occur in the first half of 2012. The letter of intent proposes that, subject to entering into a definitive sales and distribution agreement, Sasol would purchase and distribute 40,000 tons of our isobutanol in 2012, and would purchase and distribute 60,000 to 80,000 tons each year thereafter, with an option to purchase and distribute additional volume should we develop additional isobutanol production capacity.

To facilitate our entry into the jet fuels market, we are currently engaged in discussions facilitated by the Air Transport Association of America (ATA), with several major passenger and cargo airlines in order to secure commitments from the ATA member airlines to purchase significant quantities of renewable jet fuel made from our isobutanol once the proper standard specifications have been developed and obtained. To serve this market, we are also in discussions with major refiners to produce renewable jet fuel using our isobutanol at their refineries. For example, in May 2010 we received an expression of interest from a major US oil refiner and marketer that is interested in evaluating the suitability and economics of using our isobutanol to produce biobased kerosene as a renewable jet fuel blendstock. This expression of interest, which is subject to ongoing discussions with potential airline customers, among other things, contemplates an initial term of at least five years and an initial volume of renewable jet fuel of up to 300 MGPY, up to 50% of which would be kerosene produced from our isobutanol. We intend to develop relationships with companies that are engineering and piloting the processes necessary to convert isobutanol to biobased jet fuel.

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To further facilitate our entry into the markets for butenes and hydrocarbon products such as jet fuel, we are currently engaged in discussions with numerous petrochemical manufacturers that have the ability to produce these products from our isobutanol. If we are successful in entering into arrangements with petrochemical manufacturers, we would either sell isobutanol to them directly or work with them on a contract or toll processing basis to produce the butenes and other hydrocarbon products needed to satisfy the demands of our future customers. In November 2010, we entered into a non-binding letter of intent with South Hampton Resources, Inc. (SHR), an independent specialty petrochemical manufacturer with over 50 years of experience in toll processing and product development, pursuant to which SHR will develop processes to dehydrate our isobutanol into isobutylene to serve the market for isobutylenes, and will further process at least a portion of that isobutylene to produce kerosene for use as a renewable jet fuel blendstock. This letter of intent contemplates an initial production capacity of 2,000 barrels per day of kerosene produced from our isobutanol for a two to three year timeframe, beginning in 2012. We believe that our relationships with SHR and other petrochemical manufacturers will enable us to access the infrastructure necessary to produce hydrocarbon products from our isobutanol to meet the demands of our future customers. However, there can be no assurance that we will be able to enter into a definitive agreement with SHR, or any other petrochemical manufacturer.

We have also secured a non-binding development and marketing commitment from Catalytic Distillation Technologies (CDTECH), a leading hydrocarbon technology provider for the petrochemical and refining industry. We believe that our relationship with CDTECH will accelerate the growth of a broader market for downstream applications of our isobutanol. In addition, we are actively pursuing commercial relationships with petrochemical companies and large brand owners for the production of biobased plastics.

We anticipate that isobutanol will have a higher price than ethanol because of the higher value markets that isobutanol can serve. We have also been successful in including pricing mechanisms which are linked to the cost of feedstocks in our letters of intent. These pricing mechanisms result in lower price volatility for our customers, as compared to supply agreements for petroleum-based raw materials, and allow us to reduce the risk of entering into long-term supply agreements for our isobutanol. We believe that our ability to enter into long-term agreements for the supply of isobutanol, with customer pricing linked to the cost of feedstocks, provides us with an advantage over current ethanol marketing agreements.

Although we have agreed to preliminary terms with each of the potential customers discussed above, none of these agreements, except for the exclusive supply agreement with LANXESS, are binding and there can be no assurance that we will be able to enter into definitive supply agreements with any of these potential customers, or attract customers based on our arrangements with the petrochemical companies and large brand owners discussed above.

Competitive Strengths

Our competitive strengths include:

- ***Renewable platform molecule to serve multiple large drop-in markets.*** We believe that the butenes produced from our isobutanol will serve as renewable alternatives for the production of plastics, fibers, rubber and other polymers which comprise approximately 40% of the global petrochemicals market, and will have potential applications in substantially all of the global hydrocarbon fuels market, enabling our customers to reduce raw material cost volatility, diversify suppliers and improve feedstock security. We believe that we will face reduced market adoption barriers because products derived from our isobutanol are chemically identical to petroleum-derived products, except that they will contain carbon from renewable sources.

- ***Proprietary, low cost technology with global applications.*** We believe that GIFT® is currently the only known biological process to produce isobutanol cost-effectively from renewable carbohydrate sources, which will enable the economic production of hydrocarbon derivatives of isobutanol. Our proprietary separation unit is designed to achieve superior energy efficiency in comparison to other known separation processes for isobutanol and, as a result, reduces energy consumption costs the second

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largest operating cost component of isobutanol production. Both our first- and second- generation biocatalysts are able to achieve a product yield on sugar of approximately 94% of theoretical maximum by weight, which is near to, if not the maximum practical yield attainable from fermentable sugars. Collectively, we believe that these attributes, coupled with our ability to leverage the existing ethanol production infrastructure, will create a low capital cost route to isobutanol. Furthermore, we believe that our low cost production route will allow our isobutanol to be economically competitive with many of the petroleum-derived products used in the chemicals and fuels markets today. Additionally, GIFT® is designed to enable the economic production of isobutanol and other alcohols from multiple renewable feedstocks, which will allow our technology to be deployed worldwide.

Capital-light commercial deployment strategy optimized for existing infrastructure. We have designed GIFT® to enable capital-light retrofits of existing ethanol facilities, which allows us to leverage the existing approximately 20 BGPY of global operating ethanol production capacity. Our retrofit strategy supports a rapid and low capital cost route to isobutanol production. Based on a study completed by ICM in May 2010, we expect that the retrofit of an ICM-designed corn ethanol plant can be completed in approximately 14 months at a cost of approximately $22 to $24 million, within a forecast confidence interval, for a standard 50 MGPY plant and approximately $40 to 45 million for a standard 100 MGPY plant. These projected retrofit capital expenditures are substantially less than estimates for new plant construction for the production of advanced biofuels, including cellulosic ethanol. Based on an initial evaluation of the Agri-Energy facility by ICM, we project capital costs of approximately $17 million to retrofit this plant to produce 18 MGPY of isobutanol. We expect to incur additional costs of approximately $5 million related to, among other things, the construction of equipment and storage tanks designed to allow switching between isobutanol and ethanol production and conservative engineering estimates made in acknowledgment that the Agri-Energy facility will be our first commercial retrofit, bringing the total projected cost to approximately $22 million. Notably, our calculations based on expected costs of retrofit, operating costs, volume of isobutanol production and price of isobutanol suggest that GIFT® retrofits will result in an approximate two-year payback period on the capital invested in the retrofit. We have also designed our production technology to minimize the disruption of ethanol production during the retrofit process, mitigating the costs associated with downtime as the plant is modified. Following an ICM-estimated two-week period to transition to isobutanol production, we expect the original plant to operate in essentially the same manner as it did prior to the retrofit, producing a primary product (isobutanol) and a co-product (protein fermentation meal as an animal feed). We intend to seek the necessary regulatory approvals to permit us to market our co-product as an animal feed, which will allow us to recover a significant portion of our feedstock costs. Where we retrofit wet-milled plants, we will instead extract high-value feedstock co-products such as corn gluten meal, corn oil and corn gluten animal feed before fermentation, which can likewise be marketed to defray feedstock costs.

GIFT® demonstrated at commercially relevant scale. We have completed the retrofit of a 1 MGPY ethanol facility in St. Joseph, Missouri with our proprietary engineering package designed in partnership with ICM. During September 2009, we successfully produced isobutanol at this facility using our first-generation biocatalyst, achieving our commercial targets for concentration, yield and productivity, which are consistent with the current yeast performance observed in a grain ethanol plant. During the fourth quarter of 2010, we used this facility to successfully produce isobutanol using our second-generation biocatalyst. These operations also demonstrated the effectiveness of our proprietary technology, confirming the fermentation performance of our biocatalyst technology and our ability to effectively separate isobutanol from water as it is produced. Also, we believe that our acquisition of the 22 MGPY Agri-Energy ethanol production facility demonstrates the readiness of our technology for commercial deployment and supports our plan to commence initial commercial-scale isobutanol production in the first half of 2012.

Strategic relationships with chemicals, fuels and engineering industry leaders. We have entered into strategic relationships with global industry leaders to accelerate the execution of our commercial deployment strategy both in the US and internationally. To facilitate the adoption of our technology at

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existing ethanol plants, we have entered into an exclusive alliance with ICM. We expect our relationships with customers such as TOTAL PETROCHEMICALS, LANXESS, Toray Industries and United Airlines to contribute to the development of new chemical and fuel market applications of our isobutanol. Meanwhile, we expect to take advantage of the current markets for isobutanol by forming relationships and negotiating supply and distribution agreements with potential customers and distributors such as Sasol. To enable the integration of cellulosic feedstocks into our isobutanol production process, we have obtained an exclusive license from Cargill, Incorporated (Cargill), to integrate its proprietary biocatalysts into the GIFT® system. To accelerate the adoption of isobutanol as a platform molecule, we have secured a non-binding development and marketing commitment from CDTECH. Finally, in order to support the development of biobased fuels, we intend to develop relationships with companies that are engineering and piloting the processes necessary to convert isobutanol to biobased jet fuel. A number of our strategic partners are also stockholders of our company.

Experienced team with a proven track record. Our management team offers an exceptional combination of scientific, operational and managerial expertise and our CEO, Dr. Patrick Gruber, has spent over 20 years developing and successfully commercializing industrial biotechnology products. Across the company, our employees have 450 combined years of biotechnology, synthetic biology and biobased product experience. Our employees have generated over 300 patent and patent application authorships over the course of their careers. Our team members have played key roles in the commercialization of several successful, large-scale industrial biotechnology projects, including a sugar substitute sweetener, four organic acid technologies, an animal feed additive, monomers for plastics and biobased plastics and the first biologically derived high purity monomer for the production of plastic at a world-scale production facility. As a result of their deep experience, members of our management team play important roles in the industrial biotechnology industry at US and international levels.

Our Production Technology Platform

We have used tools from synthetic biology, biotechnology and process engineering to develop a proprietary fermentation and separation process to cost effectively produce isobutanol from renewable feedstocks. GIFT® is designed to allow for relatively low capital expenditure retrofits of existing ethanol facilities, enabling a rapid and cost-efficient route to isobutanol production. GIFT® isobutanol production is very similar to existing ethanol production, except that we replace the ethanol producing biocatalyst with our isobutanol producing biocatalyst and we incorporate well-known equipment into the production process to separate and collect the isobutanol during the fermentation process. A commercial engineering study completed by ICM in May 2010 projected the capital costs associated with the retrofit of a standard 50 MGPY ICM-designed corn ethanol plant to be approximately $22 to $24 million, within a forecast confidence interval, and estimated the capital costs associated with the retrofit of a standard 100 MGPY ICM-designed corn ethanol plant to be approximately $40 to $45 million. The ICM study also projected that each GIFT® retrofit would take approximately 14 months to complete, including completion of the relevant regulatory approval process. Individual ethanol plant retrofits could vary from these estimates based on the design of the underlying ethanol plant and the regulatory jurisdiction the plant operates in, among other factors. We have designed our production technology to minimize the disruption of ethanol production during the retrofit process, mitigating the costs associated with downtime as the plant is modified. Following an estimated two-week period to transition to isobutanol production, we expect the corn ethanol facility will be able to produce isobutanol, as well as protein fermentation meal as an animal feed co-product, while operating in substantially the same manner as it did prior to the retrofit.

Reusing large parts of the ethanol plant without modification is beneficial because the unchanged parts will stay in place and continue to operate after the retrofit as they did when ethanol was produced. This means that the existing operating staff can continue to manage the production of isobutanol because they will already have experience with the base equipment. This continuity reduces the risks associated with the production startup following the retrofit as most of the process is unchanged and the existing operating staff is available to monitor and manage the production process.

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We intend to process the spent grain mash from our fermentors to produce protein fermentation meal, relying on established processes in the current ethanol industry. We anticipate approval of our protein fermentation meal by the US Food and Drug Administration (FDA), and we plan to market it to the dairy, beef, swine and poultry industries as a high-protein, high-energy animal feed. Protein fermentation meal can also be sold for use as a boiler fuel, fertilizer and weed inhibitor. We believe that our sales of protein fermentation meal will allow us to offset a significant portion of our grain feedstock costs, as is practiced by the corn-based ethanol industry today. Where we instead retrofit an ethanol plant that uses wet-milled corn, we will not produce protein grains post-fermentation, but will instead extract valuable proteins pre-fermentation, which we can sell as animal feed without the need for FDA approval.

Biocatalyst Overview

Our biocatalysts are microorganisms that have been designed to metabolize sugars to produce isobutanol. Our technology team develops these proprietary biocatalysts to efficiently convert fermentable sugars of all types by engineering isobutanol pathways into the biocatalysts, and then minimizing the production of unwanted by-products to improve isobutanol yield and purity, thereby reducing operating costs. With our first- and second-generation biocatalysts, we have already demonstrated that we can produce isobutanol at key commercial parameters, validating our biotechnology pathways and efficiencies. Our second-generation biocatalyst is a yeast, which is designed to produce isobutanol from any fuel ethanol feedstock currently in commercial use, including grains (e.g., corn, wheat, sorghum and barley) and sugar cane. This feedstock flexibility supports our initial deployment in the US, as we seek to retrofit available ethanol production facilities focused on corn feedstocks, and will enable our future expansion into international markets for production of isobutanol using sugar cane or other grain feedstocks.

Although development work still needs to be done, we have shown at laboratory scale that we can convert cellulosic sugars into isobutanol. In addition, through an exclusive license and a services arrangement with Cargill, we are developing a cellulosic sugar converting yeast biocatalyst specifically designed to efficiently produce isobutanol from the sugars derived from cellulosic feedstocks, including crops that are specifically cultivated to be converted into fuels (e.g., switchgrass), forest residues (e.g., waste wood, pulp and sustainable wood), agricultural residues (e.g., corn stalks, leaves, straw and grasses) and municipal green waste (e.g., grass clippings and yard waste). Our second- and future-generation biocatalysts are built upon robust industrial varieties of yeast that are widely used in large-scale fermentation processes, such as ethanol and lactic acid production. We have carefully selected our yeast biocatalyst platforms for their tolerance to isobutanol and other conditions present during an industrial fermentation process, as well as their known utility in large-scale commercial production processes. As a result, we expect our biocatalysts to equal or exceed the performance of the yeast used in prevailing grain ethanol production processes.

Biocatalyst Development

Initially, we used a pathway developed at the University of California, Los Angeles (UCLA) and exclusively licensed from The Regents of the University of California (The Regents), to create a first-generation biocatalyst capable of producing biobased isobutanol. We chose to use *E. coli* as the bacteria in our first-generation biocatalyst because of its ease of use and greater understanding relative to other biocatalysts, and because it was the microorganism used by UCLA in developing the licensed pathway. We then developed a new biocatalyst to allow for anaerobic, or oxygen free, isobutanol production as well as minimizing the production of unwanted by-products to improve isobutanol yield and purity thereby reducing operating costs. These efforts resulted in a substantial fermentation yield increase and enabled compatibility with existing ethanol infrastructure.

By fermenting sugars to isobutanol without producing by-products, our proprietary isobutanol pathway channels the available energy content of fermentable sugars to isobutanol. Due to thermodynamic constraints that govern the conservation of energy, other processes may match our yield, but will be unable to exceed it

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significantly. We have achieved approximately 94% of the theoretical yield, which is near to, if not the maximum practical yield limit attainable from the fermentation of sugars, with yield losses being accounted for mostly by cell production and metabolic energy (organism sustaining energy). Our expected theoretical yield is equivalent to that of industrial ethanol production.

We designed our biocatalysts to equal or exceed the performance of the yeast currently used in commercial ethanol production not only in yield, or percentage of the theoretical maximum percentage of isobutanol that can be made from a given amount of feedstock, but also fermentation time, or how fast the sugar fed to the fermentation is converted to isobutanol. Matching this level of performance is important because doing so allows GIFT® fermentation to be performed in most existing grain ethanol fermentors without increasing vessel sizes. Because an isobutanol molecule contains more carbon and hydrogen than an ethanol molecule, and because liquid isobutanol has a different density than liquid ethanol, the isobutanol volume our fermentation process produces will be approximately 80% of the volume of ethanol produced by ethanol fermentation at an equivalent fermentation theoretical yield on sugar. In other words, ICM s design studies predict that a retrofitted 100 MGPY ethanol plant can produce approximately 80 MGPY of isobutanol. A volume of 80 million gallons of isobutanol has roughly the same energy content as 100 million gallons of ethanol.

Demonstrated Biocatalyst Performance

By August 2009, our first-generation biocatalyst s performance was equal to or exceeded our targeted levels of commercial performance, defined as 48 to 72 hours fermentation time and a product yield of approximately 94% of the theoretical yield of isobutanol from the sugar in the feedstock. We initially achieved these fermentation performance goals with our first-generation biocatalyst at our GIFT® mini-plant. In September 2009, we replicated this performance in a retrofit 1 MGPY ethanol demonstration facility located at ICM s St. Joseph, Missouri site.

We have completed the transfer of our proprietary isobutanol pathway to an industrially relevant yeast host and have achieved our commercial performance targets in our GIFT® mini-plant. Yeast is the preferred host for low cost industrial fermentation because it is industrially proven for biofuels production, capable of out-competing bacteria, and is not susceptible to bacteriophage, a common problem for bacterial fermentations. Our yeast has been specifically selected and developed for its performance in the GIFT® process, which will allow for lower cost isobutanol production.

As of October 2010, our second-generation biocatalyst has achieved a fermentation time of 52 hours and achieved approximately 94% of the theoretical maximum yield of isobutanol from feedstock, meeting our targeted fermentation performance criteria well in advance of our planned commercial launch of isobutanol production in the first half of 2012.

Feedstock Flexibility

We have designed our biocatalyst platform to be capable of producing isobutanol from any fuel ethanol feedstock currently in commercial use, which we believe, in conjunction with our proprietary isobutanol separation unit, will permit us to retrofit any existing fuel ethanol facility. We have demonstrated that our first- and second-generation biocatalysts are capable of converting the types of sugars in grains and sugar cane to isobutanol at our commercial targets for fermentation time and yield. We believe our second-generation biocatalyst will have the ability to convert these sugars into isobutanol at a commercial scale. The vast majority of fuel ethanol currently produced in the US is produced from corn feedstock, which is abundant, according to data from the US Department of Agriculture and the RFA. Although development work still needs to be done, we have shown at laboratory scale that we can convert cellulosic sugars into isobutanol. Through an exclusive license with Cargill, we are also developing a future-generation yeast biocatalyst that is specifically designed to efficiently produce isobutanol from mixed sugars derived from cellulosic sources including purpose grown energy crops, agricultural residues, forest residues and municipal green waste. This yeast is highly hydrolyzate-tolerant and employs Cargill s technology for mixed sugar conversion. We expect that our feedstock flexibility

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will allow our technology to be deployed worldwide and will enable us to offer our customers protection from the raw material cost volatility historically associated with petroleum-based products.

GIFT® Improves Fermentation Performance

Our experiments show that GIFT ®'s fermentation and recovery system provides enhanced fermentation performance as well as low cost, energy-efficient recovery of isobutanol and other alcohols. The GIFT® system enables inexpensive, continuous separation of isobutanol from the fermentation tanks while fermentation is in process. Isobutanol is removed from the fermentation broth using a low temperature distillation to continuously remove the isobutanol as it is formed without the biocatalyst being affected. Since biocatalysts have a low tolerance for high isobutanol concentrations in fermentation, the valuable ability of our process to continuously remove isobutanol as it is produced allows our biocatalyst to continue processing sugar into isobutanol at a high rate without being suppressed by rising levels of isobutanol in the fermentor, thereby reducing the time to complete the fermentation. Using our first- and second-generation biocatalysts, we have demonstrated that GIFT® enables isobutanol fermentation times equal to, or less than, those achieved in the current conventional production of ethanol, which allows us to fit our technology into existing ethanol fermentors thereby reducing capital expenditures. Finally, the GIFT® separation of isobutanol reduces natural gas costs per unit of energy in the fermented product (relative to conversion into ethanol), thereby reducing energy consumption and costs incurred for distillation, relative to ethanol production. We have designed a proprietary engineering package in partnership with ICM to carry out our isobutanol fermentation and recovery process, and this equipment has been successfully deployed via the retrofit of a 1 MGPY corn ethanol demonstration facility in St. Joseph, Missouri.

GIFT® requires little change to existing ethanol production infrastructure. As with ethanol production, feedstock is ground, cooked, treated with enzymes and fermented. Just like ethanol production, after fermentation, a primary product (isobutanol) and a co-product (protein fermentation meal) are recovered and stored. GIFT ®'s main modifications are replacing the ethanol biocatalyst with Gevo s proprietary isobutanol producing biocatalyst, and adding low temperature distillation for continuous removal and separation of isobutanol.

Conversion of Isobutanol into Hydrocarbons

We have demonstrated conversion of our isobutanol into a wide variety of hydrocarbon products which are currently used to produce plastics, fibers, rubber, other polymers and hydrocarbon fuels. Hydrocarbon products consist entirely of hydrogen and carbon and are currently derived almost exclusively from petroleum. Importantly, isobutanol can be dehydrated to produce butenes, hydrocarbon products with many industrial uses. The straightforward conversion of our isobutanol into butenes is a fundamentally important process that enables isobutanol to be used as a building block chemical. Much of the technology necessary to convert isobutanol into butenes and subsequently into these hydrocarbon products is known and practiced in the chemicals industry today, as shown in an SRI research study. For example, the dehydration of ethanol to ethylene, which uses a similar process and technology to the dehydration of isobutanol, is practiced commercially today to serve the ethylene market. The dehydration of isobutanol into butenes is not commercially practiced today, because isobutanol from petroleum is not cost-competitive with other petrochemical processes for generation of butenes, but we and our potential customers believe that our efficient and low cost fermentation technology for producing isobutanol will promote commercial isobutanol dehydration and provide us with the opportunity to access the hydrocarbon markets. In order to reach these markets, we have already started to develop relationships with companies that are engineering and piloting the processes necessary to convert isobutanol to biobased jet fuel, and we intend to continue to work with such companies to promote the use of isobutanol as a hydrocarbon feedstock.

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Milestones Achieved and Commercialization Roadmap

GIFT® developed in mini-plant and pilot plant. In 2008, we utilized a 10,000 gallon per year pilot plant to prove that our biocatalysts could function in our low temperature distillation process. Additionally in 2008, we developed bench- and pilot-scale bioreactors (containers in which biological reactions occur) to demonstrate and test our GIFT® biocatalyst and process at our Englewood, Colorado facility. The bench-scale bioreactor, referred to as our mini-plant, was engineered to utilize a two liter fermentor on a bench top and allowed for fermentation and simultaneous recovery utilizing GIFT®. The mini-plant confirmed that GIFT® enhances fermentation and recovers isobutanol as expected. We met our commercial fermentation performance targets with our first-generation biocatalyst in mid-2009 on the basis of GIFT® performance in our mini-plant.

Design and operation of demonstration facility. In 2008, we began our ramp-up to commercial scale production when we formed an exclusive alliance with ICM to jointly develop a proprietary design for retrofitting an ethanol plant for the production of isobutanol using GIFT®. The proprietary retrofit design was then implemented at ICM s 1 MGPY ethanol demonstration facility in St. Joseph, Missouri. The initial retrofit design, procurement and construction were completed in August 2009. By the end of September 2009, we had operated the demonstration plant facility and successfully produced isobutanol at commercial fermentation performance levels using our first-generation biocatalyst. During the fourth quarter of 2010, we used this facility to successfully produce isobutanol using our second-generation biocatalyst.

Engineering scale-up. We formed an exclusive alliance with ICM in 2008 to develop and commercialize our technology. ICM is widely regarded as the leading engineering and design firm for grain ethanol plants, and its designs account for an estimated 60% of the current operating ethanol plant capacity in the US. ICM has agreed to work exclusively with us on the production of butanols (including isobutanol), pentanols and propanols in existing and future ICM-engineered plants utilizing any sugar fermentation technology globally.

Commercial engineering study completed. In 2010, we completed a commercial engineering study in conjunction with ICM evaluating the equipment and resources required to retrofit standard ICM-designed 50 MGPY and 100 MGPY corn ethanol facilities to produce isobutanol using GIFT®. The study was conducted to confirm capital and operating cost estimates for ethanol plant retrofits to produce isobutanol for use in commercialization planning and to facilitate the design process for identified facilities. The study estimated the capital costs associated with the retrofit of a standard 50 MGPY ICM-designed corn ethanol plant to be approximately $22 to $24 million, within a forecast confidence interval, and estimated the capital costs associated with the retrofit of a standard 100 MGPY ICM-designed corn ethanol plant to be approximately $40 to $45 million. The study also reviewed a number of engineering options for retrofitting an ethanol facility, including the potential ability to reverse the retrofit to switch between ethanol and isobutanol production, which was estimated to cost an additional approximately $2 to $3 million depending on the size of the facility, and the addition of a seed train to produce sufficient quantities of our biocatalyst without need for a yeast seed production contract, which was estimated to cost an additional approximately $2 to $4 million depending on the size of the facility. Additionally, when we acquire access to facilities that use non-ICM-based technology, we may incur further costs to upgrade such plants for our technology design and improve the efficiency of their operations. Once a retrofit has been completed, we expect our total operating costs to be comparable to, or even lower than, those of a traditional ethanol production facility.

Based on an initial evaluation of the Agri-Energy facility by ICM, we project capital costs of approximately $17 million to retrofit this plant to produce 18 MGPY of isobutanol. We expect to incur additional costs of approximately $5 million related to, among other things, the construction of equipment and storage tanks designed to allow switching between isobutanol and ethanol production and conservative engineering estimates made in acknowledgment that the Agri-Energy facility will be our first commercial retrofit, bringing the total projected cost to approximately $22 million.

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Our Strategy

Our strategy is to commercialize our isobutanol for use directly as a specialty chemical and low RVP fuel blendstock and for conversion into plastics, fibers, rubber, other polymers and hydrocarbon fuels. Key elements of our strategy include:

Deploy first commercial production facility. In September 2010, we acquired a 22 MGPY ethanol production facility in Luverne, Minnesota. We have begun the project engineering and permitting portion of the Agri-Energy facility retrofit process and expect to commence commercial production of approximately 18 MGPY of isobutanol at the Agri-Energy facility in the first half of 2012.

Enter into supply agreements with customers to support capacity growth. We intend to transition the letters of intent that we have already received into firm supply agreements, and then add to our customer pipeline by entering into isobutanol supply agreements for further capacity with additional customers in the refining, specialty chemicals and transportation sectors both in the US and internationally.

Expand our production capacity via retrofit of additional existing ethanol facilities. As we secure supply agreements with customers, we plan to acquire or gain access to additional and larger scale ethanol facilities via joint ventures and acquisitions. We believe that our exclusive alliance with ICM will enhance our ability to rapidly deploy our technology on a commercial scale at these facilities. We plan to acquire additional production capacity to enable us to produce and sell over 350 million gallons of isobutanol in 2015.

Expand adoption of our isobutanol across multiple applications and markets. We intend to drive adoption of our isobutanol in mul