April 22, 2015

Jordan Hess
Director, Office of Transportation
Associated Students of the University of Montana
University Center, Suite 105
Missoula, MT 59812

Subject: Updated Proterra Catalyst™ Fast-Charge Bus & Charger Proposal

Dear Mr. Hess,

Proterra is pleased to provide an updated proposal to the University of Montana (UM) for two 40' fast-charge Proterra Catalyst™ battery-electric buses (Catalyst FC) and one 500kW On-Route Fast Charge Station (Charge Station). Since our last proposal, we've rolled out a new go-to-market strategy and introduced an extended-range version of our Catalyst bus. As part of the new go-to-market strategy, we've re-tooled the pricing for our products. As a result, the UM now stands to take advantage of the reduced pricing for both the Catalyst FC buses and the Charge Station.

The Proterra Catalyst™ FC

Armed with lessons learned logging revenue miles on our first generation fast-charge 35' EcoRide battery-electric buses, Proterra set out to design the best 40' transit vehicle in the world. Our "clean sheet" design allowed Proterra to build off of the company's proven electric powertrain and charging technology with newer, more robust components that passed the company's rigorous testing and validation. Proterra reviewed relevant industry standards and all vendors were vetted for their ability to meet Proterra's highest quality standards. The result is an advanced technology vehicle incorporating state-of-the-art design and extensively tested components.

The Catalyst FC has a fully composite, monocoque body, all wheel air-disc brakes, independent front suspension, all-electric components and accessories, a state-of-the-art vehicle multiplex system and an ergonomically designed driver's station. The interior has an open, spacious appearance, thanks in part to the large Euro-design passenger windows (which are all the same size, reducing inventory requirements) and the one-piece windshield and rear window. The Catalyst FC is also one of the lightest heavy-duty transit buses available, with an average curb weight of 27,500 lbs and a GVWR of 39,500 lbs. This translates to reduced impact on local infrastructure such as roads and bridges.

The Catalyst FC can be configured to have either 8 battery packs or 6 battery packs depending on the requirements of a particular customer's route and operating profile. The 8-pack Catalyst FC contains 105 kWh of on-board energy storage while the 6 pack Catalyst FC contains 79kWh of on-board energy.

Configuring buses to support specific routes can save customers money by only paying for the energy needed to meet operational demands.

The Catalyst FC will comfortably seat forty passengers while accommodating thirty-seven standees for a total capacity of seventy-seven passengers. The Catalyst FC is fully ADA and FMVSS compliant and recently finished its testing at the Pennsylvania Transportation Institute, Bus Testing and Research Center (Altoona).

UDASH Routes & the Catalyst FC

Proterra has completed route simulation analysis on UM's Green, Red, Blue and Purple Lines based on a total of 9 buses running an average of 33,000 miles a year. Given the operational profile of these routes, we believe they are best suited for the Proterra Catalyst FC bus; specifically a 6-pack Catalyst FC. Below are the preliminary simulation results based on the GPS tracking of the Missoula College Blue line. We choose this line as it is the longest one, which therefore means the bus would satisfy any of the other routes.

Missoula College Blue Line:

ROUTE INFORMATION		
PROTERRA EFFICIENCY (MPGe)	24.1	MPGe
TOTAL DAILY ENERGY NEEDED PER DAY	134	kWh
ENERY USED PER TRIP	12.4	kWh
HOURS OF IN-SERVICE	12.8	hours
HAVC POWER	2.7	kW
CURRENT BUS MPG	4.6	MPG
USABLE ENERGY (IN CONFIGURATION)	79	kWh
RECOMMENDED TYPE OF BATTERY CONFIGURATION	FC	
RECOMMENDED NUMBER OF BATTERY PACKS	6	Packs
CHARGE TIME BETWEEN LOOPS	5	min

Total Cost of Ownership (TCO)

Proterra customers benefit from lower and more predictable fuel costs and a simpler drivetrain that's easier and less expensive to maintain. Based on the inputs we've received from UM's current operations, here are the TCO calculations for each route:

Missoula College Blue Line:

INFORMATION				
ANNUAL MILAGE	Diesel	CNG	Hybrid	FC
FUEL				
FUEL COST PER MILE ($/MILE)	$0.81	$0.74	$0.63	$0.09*
ANNUAL FUEL COST PER BUS	$26,000	$23,770	$20,000	$2,880
LIFETIME FUEL SAVINGS PER BUS	$277,440	$250,760	$205,440	
ANNUAL SAVINGS PER BUS	$23,120	$20,870	$17,120	
MAINTENANCE				
TOTAL MAINTENANCE COST PER MILE ($/MILE)	$1.01	$1.12	$1.17	$0.72
ANNUAL MAINTENANCE COST PER BUS	$32,160	$35,800	$37,500	$22,950
LIFETIME MAINTENANCE SAVINGS PER BUS	$110,560	$154,600	$174,660	
ANNUAL TOTAL SAVINGS PER BUS	$9,200	$12,800	$14,550	
OPERATING SAVINGS				
LIFETIME OPERATING COST SAVINGS PER BUS	$388,009	$405,400	$380,100	

*Can vary depending on peak demand charges

TOTAL COST OF OWNERSHIP (12 year lifetime)				
TCO	Diesel	CNG	Hybrid	FC
Bus (1 Bus)	$1,138,000	$1,296,500	$1,312,100	$1,049,000
Fleet (9 Buses)	$10,242,000	$11,668,600	$11,808,900	$9,790,000
FC TCO Savings				
Per Bus (1 Bus)	$50,200	$208,700	$224,300	
Per Fleet (9 Buses)	$452,000	$1,878,600	$1,752,200	
FC Payback vs.				
Fleet wide	10.4	5.8	4.9	

University of Montana Pricing Proposal

As you'll note in this proposal, in an effort to dramatically expand the market for zero-emissions vehicles, Proterra is constantly seeking ways to reduce the pricing of our vehicles and charging equipment. The updated pricing is included below:

- The price for the purchase of a Catalyst FC is $739,000 per bus. These prices are based on a 6 battery packs configuration that would best fit your route requirements and do not account for any UOM mandated configurables or delivery charges.
- The price for a 50kW In-Depot Charger is $40,000.

- The price for the 500kW On-Route Fast Charge Station is now $349,000 (excluding installation). This price includes the 500kW charger, the docking control box, the adjustable pole / mast assembly, the charge head assembly and a canopy to install over the charge head assembly.
    - Installation of the 500kW On-Route Fast Charge Station can be handled as a turnkey solution by Proterra where we handle design and build or with University of Montana selecting its own design / build firms with Proterra providing equipment and support only. In either case, installation typically costs around $200,000.

Assumptions

This proposal is based on the following assumptions and/or conditions:

- This proposal is valid for sixty (60) calendar days from the date of this proposal.
- The production schedule for the Catalyst FC buses would be confirmed within thirty (30) days of reaching full agreement on any UM specific configurables.
- Proterra's standard contract terms and conditions shall apply to this purchase.

Summary

Proterra is the world's premier battery-electric transit vehicle provider and we're eager to help the UM move forward with the electrification of your UDASH fleet. If you would like any additional information, please do not hesitate to ask and we will be happy to provide it for you.

If you have any questions or concerns, please feel free to contact me at (864) 214-2679 (Office), (864) 906-8469 (Mobile) or at ECarbaugh@proterra.com.

Sincerely,

Ethan Carbaugh
Bid & Proposal Manager

Cc: Matt Horton, VP Sales & Marketing
Lee Wixom, Regional Sales Director - Proterra