



**PROTERRA**



# TECHNICAL SERVICE BULLETIN

<b>7ISSUE DATE:</b>	9/14/2020
<b>SERVICE BULLETIN SUBJECT:</b>	Vehicle Controller Software Update
<b>VINs or MODELS AFFECTED:</b>	Service Specified Buses
<b>COMPLETE BY:</b>	Next Service Opportunity
<b>SERVICE BULLETIN #:</b>	SB-20-133

**NOTICE! It is expected that this process may require up to 1 hour per bus. Please schedule appropriately to minimize vehicle downtime.**

## VEHICLE CONTROLLER SOFTWARE UPDATE

### Description

The reason for this software update is to the vehicle controller to the latest software version.

## Summary of Software Changes

This change will update the vehicle controller.

- Vehicle Controller
  - Added a wait to start Boolean signal to tell the dash when there is a voltage disparity on the high voltage bus. Removed DM01 fault for high voltage bus disparity. Graham White cutout pressure set to 130 psi.
  - The DC-DC has a protection diode on the HV bus. The voltage doesn't need to be monitored at startup and shutdown. Added a calibration parameter to indicate in the software if the DC-DC has a protection diode.

## Tools/Programs Required

### Tools Required:

- Laptop Computer
- Nexiq USB-Link 2
- USB-Serial Adapter

### Programs Required:

- Proterra Diagnostics Tool

## Software Files Required / Preparation



**IMPORTANT!** NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location. Secure the bus with the Vehicle Master Disconnect in the rear ON.

Component	Part Number	Version
Vehicle Controller	055467	4.3.1

It is recommended that you copy the entire “service bulletin files” folder to your local machine in order to more effectively keep track of the software versions you are deploying:

<\\bus.local\files\Engineering\Service Bulletins\Service Bulletin Files for SC-20-133>

## Service Bulletin Execution

1. Update the Vehicle Controller Software using the process in [Appendix A](#)

## Preparing the Vehicle to be Programmed

When programming a vehicle, it is critical that the low voltage batteries remain connected throughout the process. Ensure that the LV batteries are fully charged before starting the process. If they are low you can use the vehicle to recharge them by turning on high voltage, or you can place the bus on a low voltage charger for the duration of the process.

## Connecting to the Vehicle

This process will guide the user to connect to the vehicle with the Proterra Diagnostics Tool.

1. Power up and login to the Proterra-Supplied laptop or a comparable PC that has the Proterra Diagnostics Tool software installed with a valid license.
2. Turn **ON** the 12/24V rear Vehicle Master Disconnect located at the curbside rear charge port access panel.



Vehicle Master Disconnect

3. Connect the Nexiq USB Link2 device to the laptop and to the OBDII Diagnostic Port located in the Street-Side wheel well box.



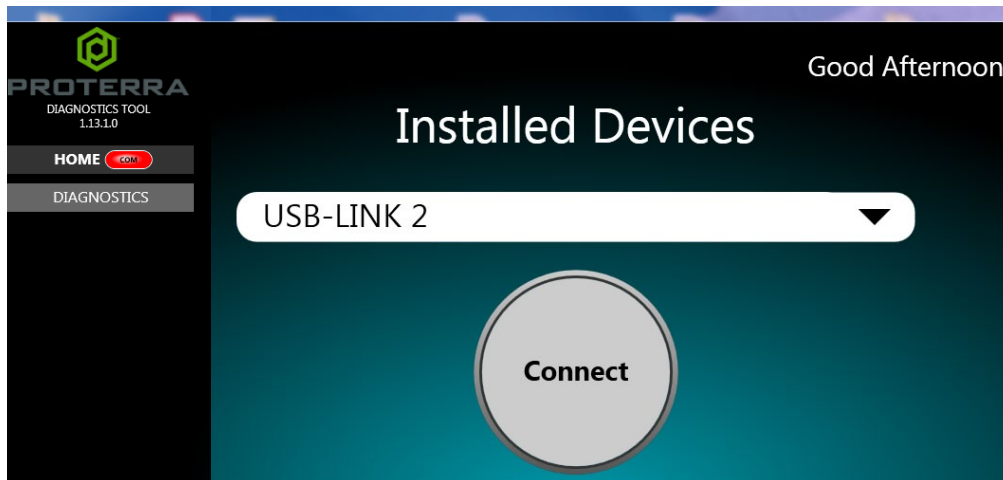
- Turn the Driver's Master Switch to the **ACC** position.



- On the laptop, double-click on the Proterra Diagnostics Tool software icon to start the software.



- When the program opens, read and click OK for the high voltage safety prompt.
- On the Home tab, select the appropriate device from the drop down and click "Connect".

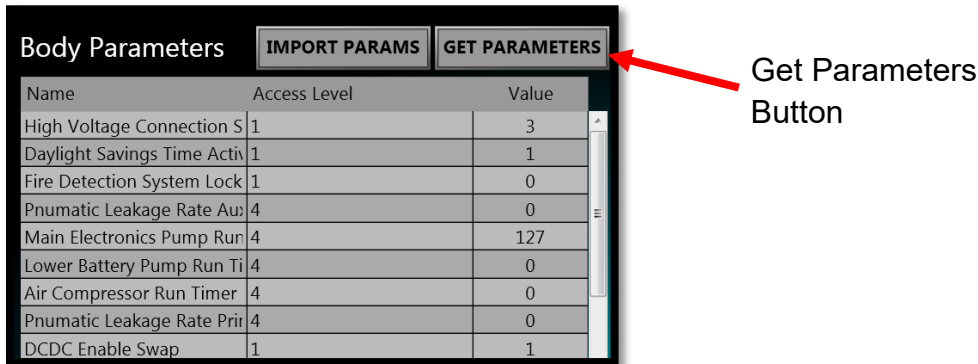


- Once the Proterra Diagnostics Tool has connected to the vehicle, you will have a VIN number and connection status displayed on the home screen, and tabs available to navigate. If you don't, double check that the low voltage batteries are connected and that the Nexiq tool is plugged in.

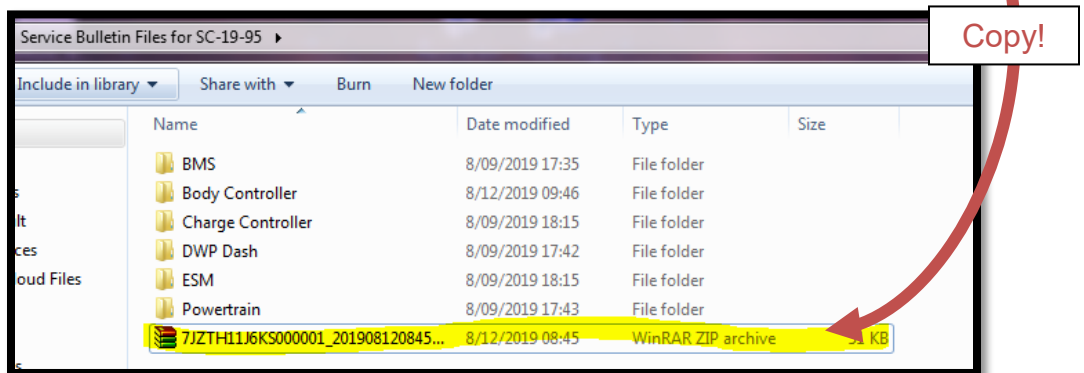
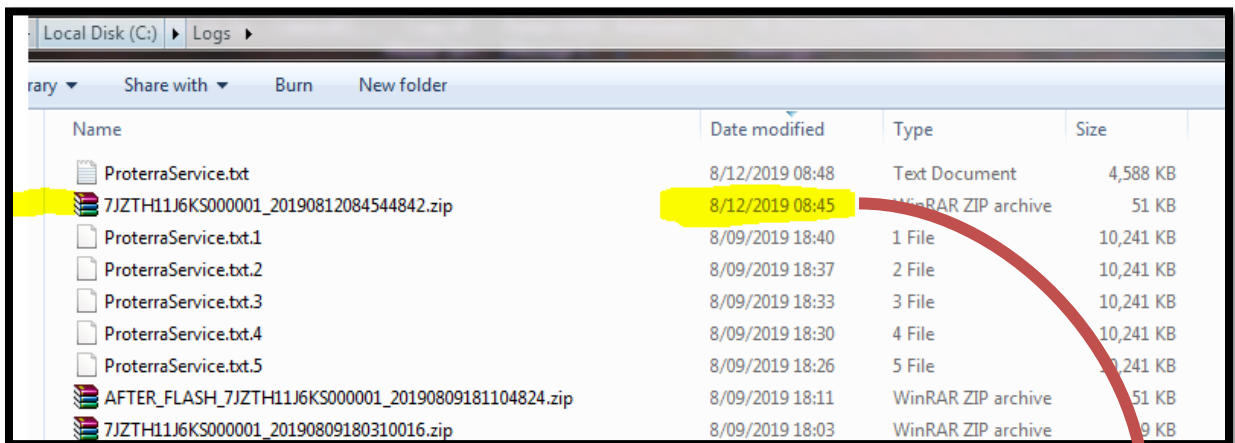
## Download and Store Existing Parameters

Sometimes you might want to download and store the customer specific parameters from the vehicle. This can be useful when comparing two vehicles that are behaving differently, or if you are replacing the ZR32A controller on a vehicle.

1. After the first vehicle has been completed and verified, disconnect the Proterra Diagnostics Tool and then re-connect.
2. Navigate to the Configuration tab and click the “Get Parameters” button. This will download the latest parameter set to the “C:\Logs” folder on your machine.



3. In windows file explorer, navigate to the C:\Logs folder. Copy the latest downloaded \*.zip file to a folder for the specific customer and vehicle.



4. Do not rename the file as the tool will follow the naming convention when reloading the file.

## Appendix A

# VEHICLE SOFTWARE UPDATE PROCEDURE

## Description

This document contains the necessary information to update the Proterra Vehicle Integration Controller. This controller provides the electrical integration of ancillary systems on 800V models. It owns the vehicle operational state control, startup and shutdown, steering, pneumatics, thermal management, and brake interlock controls.

## Tools/Programs Required

### Tools Required:

- Laptop Computer
- Nexiq USB-Link 2
- USB-Serial Adapter

### Programs Required:

- Proterra Diagnostics Tool

## Software Files Required / Preparation

It is recommended that you download any files local to your machine. To program the vehicle controller, you will need a \*.hex data file. This file will contain memory address and data information that will be written to the controller in order to update the user code space. This will not update the boot loader or other firmware files.



**IMPORTANT!** NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location.

## Preparing the Vehicle to be Programmed

When programming a vehicle, it is critical that the low voltage batteries remain connected throughout the process. Ensure that the LV batteries are fully charged before starting the process. If they are low, you can use the vehicle to recharge them by turning on high voltage or you can place the bus on a low voltage charger for the duration of the process.

## Connecting to the Vehicle

1. Power up and login to the Proterra-Supplied laptop or a comparable PC that has the Proterra Diagnostics Tool software installed with a valid license.
2. Turn **ON** the 12/24V rear Vehicle Master Disconnect located at the curbside rear charge port access panel.



Vehicle Master Disconnect

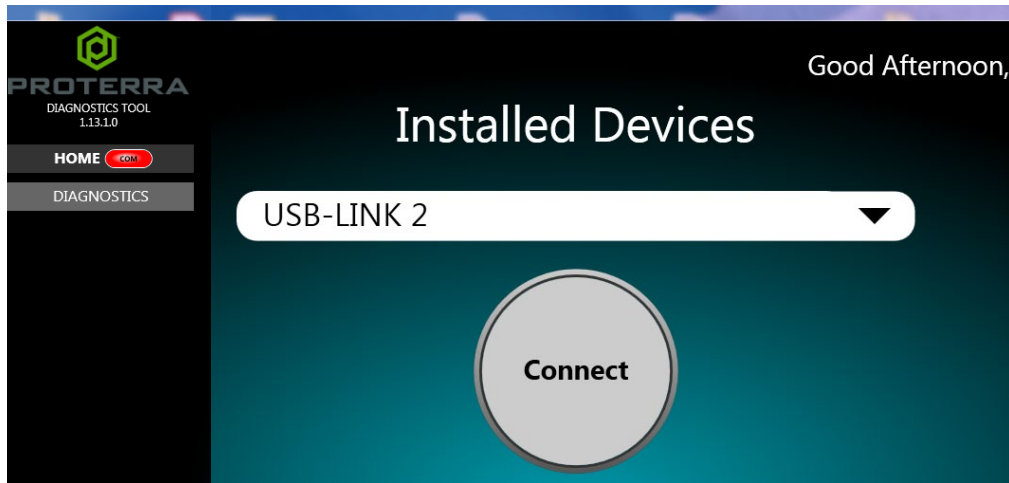
3. Connect the Nexiq USB Link2 device to the laptop and to the OBDII Diagnostic Port located in the Street-Side wheel well box.



4. Press and hold the Street-Side Wheel Well WORK LIGHT switch until the work lights turn on.
5. On the laptop, double-click on the Proterra Diagnostics Tool software icon to start the software.



- When the program opens, read and click OK for the high voltage safety prompt.
- On the Home tab, select the appropriate device from the drop down and click “Connect”.



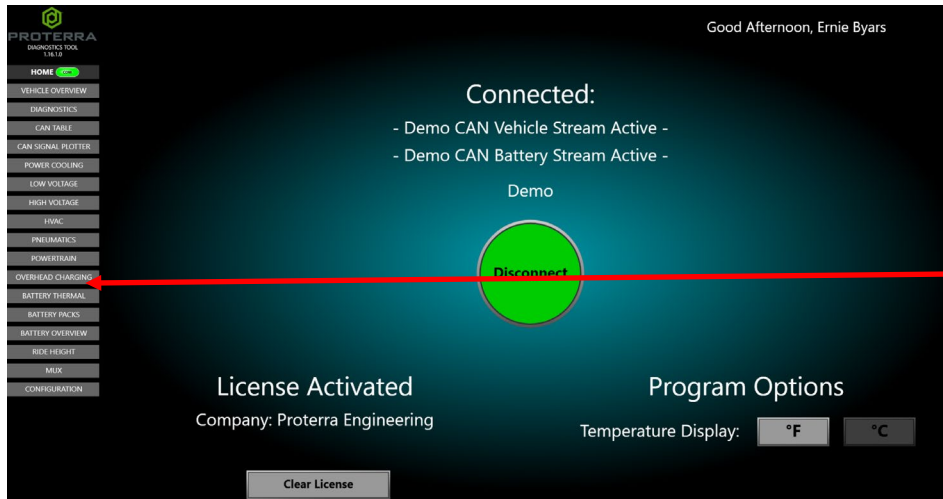
- Once the diagnostic tool has connected to the vehicle, you will have a VIN number and connection status displayed on the home screen, and tabs available to navigate. If you don't see the Home Screen, double check that the low voltage batteries are connected and that the Nexiq tool is plugged in.

**Note:** 800V Proterra vehicles are equipped with an automatic battery disconnect that will protect the low voltage batteries from a deep discharge.

## Update Using the Proterra Diagnostic Tool

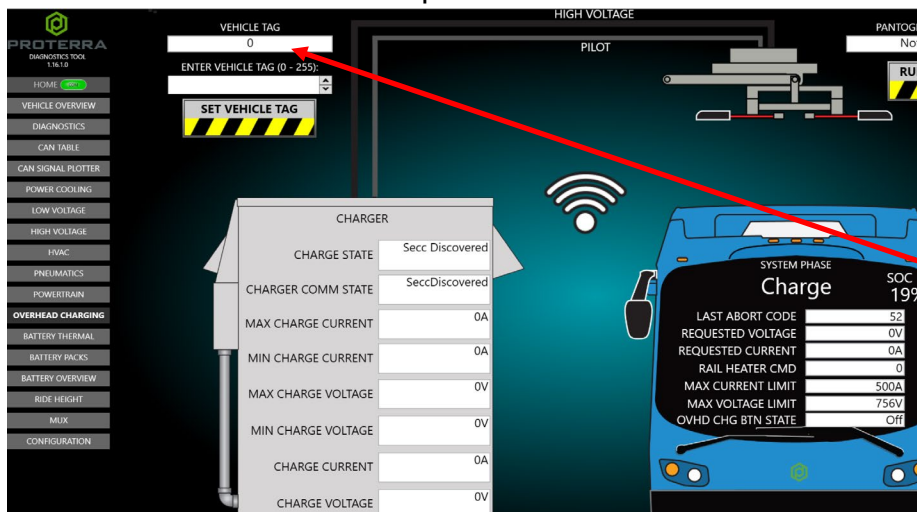
1. Click on the “Overhead Charging” button on the left side of the screen.

**Note:** If the bus that you are working on is not capable of Overhead Charging, skip to step 3 below.



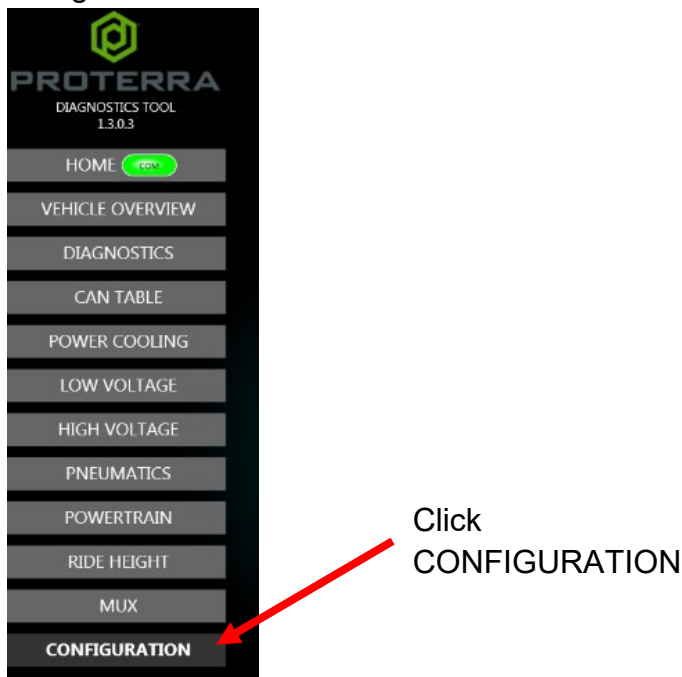
Click “Overhead Charging”

2. Record the value displayed in the “Vehicle Tag” data field. This will be re-entered into the controller after the software update.

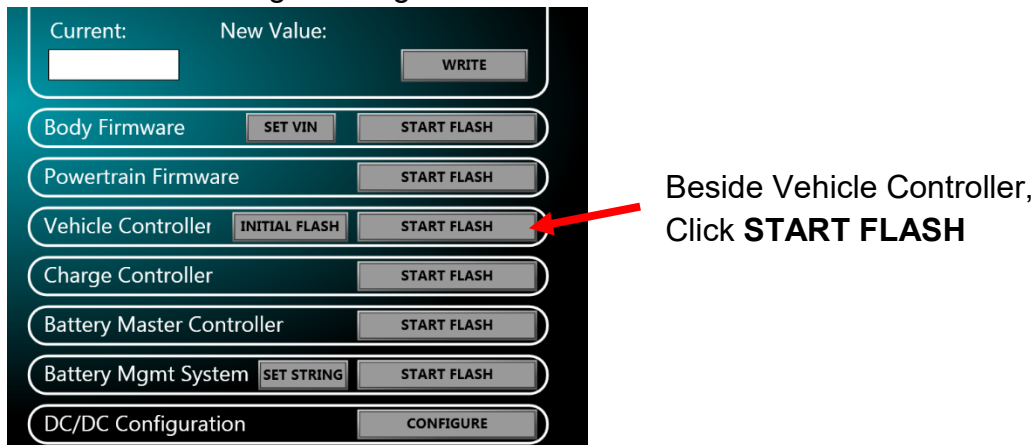


Record Vehicle Tag

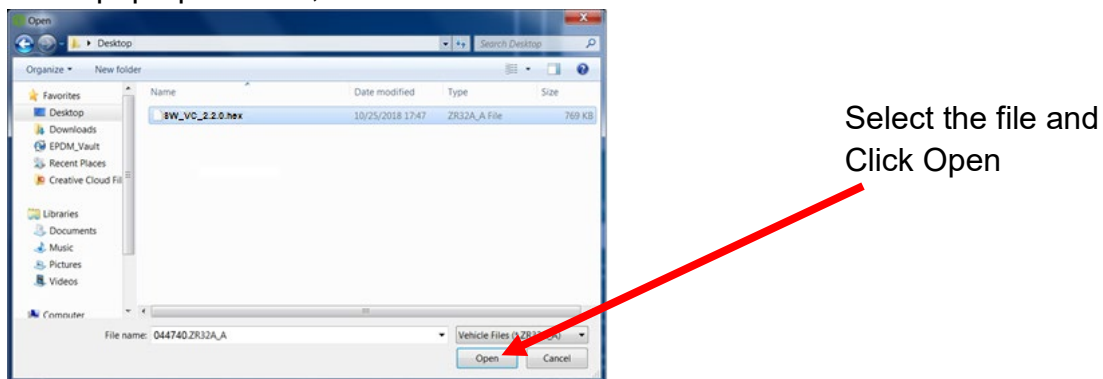
3. Navigate to the CONFIGURATION tab in the left menu.



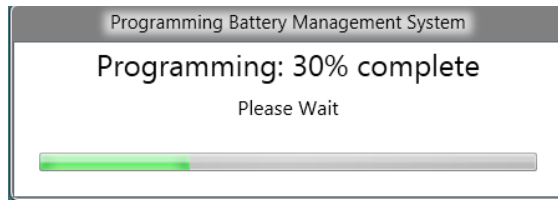
4. Select the option for Vehicle Controller “START FLASH”.  
**NOTICE:** The “INITIAL FLASH” button is only for offline programming of the Vehicle Controller with an Offline Programming Kit.



5. In the pop-up window, select the software flash file to load the controller.



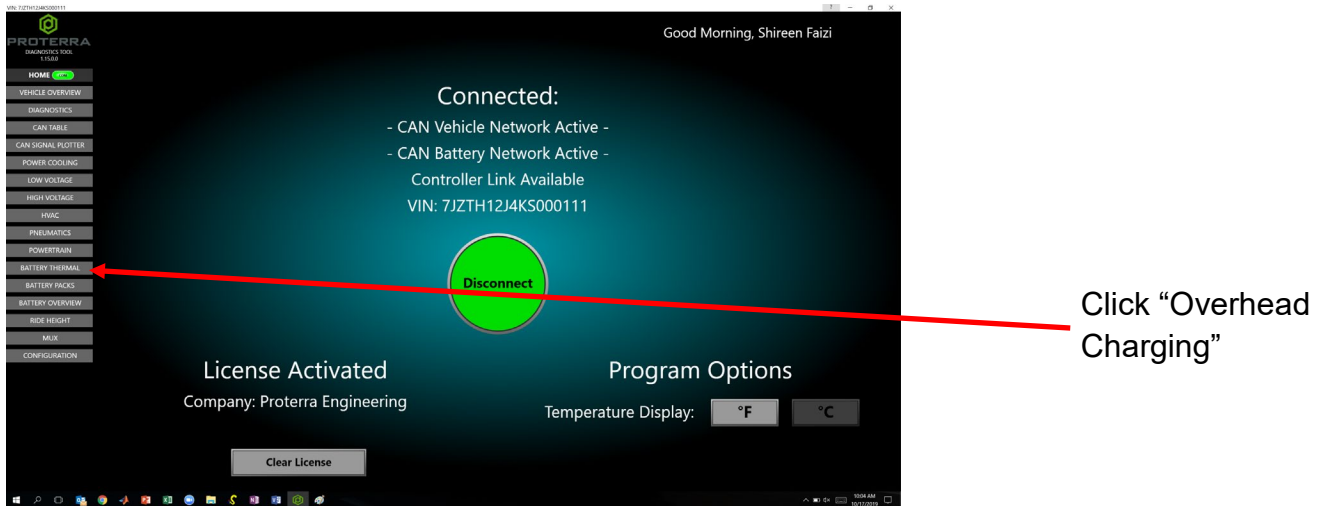
6. The Programming window will come up and may take a few minutes to complete.



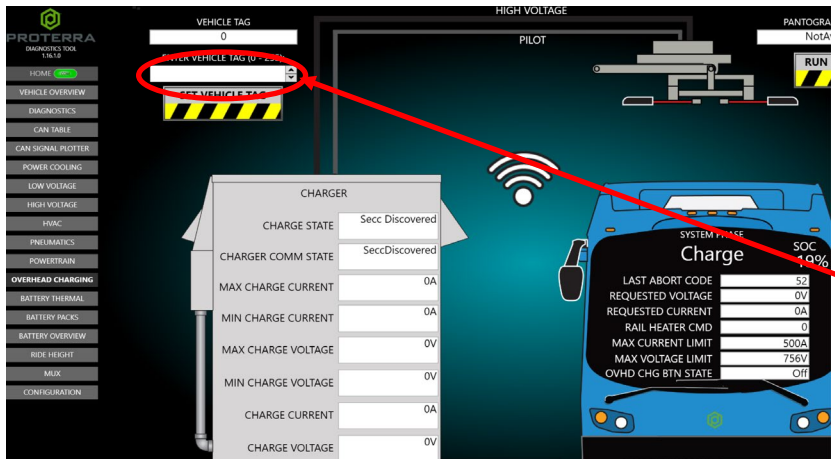
7. After completing the software update, Turn **OFF** the Work Light switch inside the street side wheel well box.



8. Click on the "Overhead Charging" button on the left side of the screen.  
**Note:** If the bus that you are working on is not capable of Overhead Charging, skip to step 10 below.



- The following screen will appear. Enter the "Vehicle Tag" that you recorded previously into the field circled in red below. Click the Button under the field. This will populate the "Vehicle Tag" into the field above and into the controller.



Click "Button"

- Turn **OFF** the 12/24V rear Vehicle Master Disconnect located behind the vehicle curbside rear charge port access panel, wait 10 seconds, and then turn back to ON.



Vehicle Master Disconnect

- Verify that the vehicle turns on with no faults and that it is capable of charging.
- Return the vehicle to service.