

**August 17, 2022 Comment letter submitted via electronic commenting system**

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**Re: Local Truckee-Tahoe Public Agencies Comments on Draft Regulatory Language for the Advanced Clean Fleets Regulation Public Fleet Requirements**

The Truckee Donner Public Utility District, Northstar Community Services District, Tahoe City Public Utility District, North Tahoe Public Utility District, Alpine Springs County Water District, Olympic Valley Public Services District, Truckee Sanitary District, South Tahoe Public Utility District, Sierra Lakes County Water District, Town of Truckee, and Placer County Water Agency (Truckee-Tahoe Public Agencies) appreciate the opportunity to provide public comments to the California Air Resources Board (CARB) in response to the recent Draft Regulatory Language on Public Fleet Requirements (Draft Rule). The Truckee-Tahoe Public Agencies provide critical water, waste-water, electric, and public services while supporting community safety and emergency response. We are deeply concerned about the current Draft Rule's potential negative impacts on critical infrastructure and our ability to support public safety and emergency response in the Truckee-Tahoe region.

**The Truckee-Tahoe Agencies Operate in a Unique Mountain Environment:**

The Truckee-Tahoe region lies high in the Sierra Nevada Mountains on the eastern slope and the utilities and local governments operate at elevations between 6,000-9,000 feet with winter blizzards, atmospheric rivers/floods, severe thunderstorms, and wildfires. Maintaining critical infrastructure and supporting public safety and emergency response requires specialized 'vocational' fleets with off-road, 4x4, and custom chassis. All vehicles require robust Power Take Off (PTO) capabilities to run cranes, buckets, motors, compressors, pumps, vacuums, and a variety of equipment needed in the field to operate water, waste-water, and electric utilities plus provide public services.

It is important to note that almost all of the Truckee-Tahoe Agencies are small to medium sized public agencies with 10's to 100+ employees and relatively small fleets (10-100+). Every vehicle in our fleet (MD/HD) serves multi-purposes. A truck with removable snow removal attachments (blowers and blades) is used for construction projects in the summer. In responding to a power outage or water/sewer emergencies, our fleet rarely travel more than 10 miles but may remain in the field for many days until the job is done.



*Electric Utility Repair During Historic December, 2021 Storms*

### **Role of Truckee-Tahoe Local Public Agencies**

For the last two years we have been working directly with CARB staff and Board to raise awareness of the key roles played by the water, waste-water, and electric utilities along with all local governments in maintaining critical infrastructure and supporting public safety and emergency response. A majority of our fleets must be available 24/7/365 and, in extended emergencies, all of our fleets play a role.

Truckee Donner Public Utility District, South Tahoe Public Utility District, and Placer County Water Agency have participated in CARB workshops and provided written and verbal comments with the goal of informing the regulation. We have directly raised concerns about:

- The unique needs of our fleets;
- The extensive role of PTO;
- The ability to work and refuel in the field for many days;
- Our critical role in public safety and emergency response;
- The unavailability of commercially viable ZEV's; and
- The severe negative impacts to rates and community costs.

To better understand the key role that the Truckee-Tahoe Agencies play in supporting public safety and emergency response, please see the attached support letter from a coalition of local Fire Departments (Attachment 1). One compelling recent example is the critical role that South Lake Tahoe Public Utility District played in maintaining fire flows during the 2021 Caldor Fire which threatened South Lake Tahoe and surrounding areas.

All Truckee-Tahoe Agencies have worked with their respective joint action groups (Association of California Water Agencies - ACWA, California Municipal Utilities Association - CMUA, Northern California Power Agency - NCPA, and California Association of Sewer Agencies – CASA) to ensure that we understand the Draft Rule, can help improve the regulation, and raise our concerns. We strongly encourage CARB staff and Board to engage with ACWA, CMUA, NCPA, and CASA. We strongly support the numerous verbal and written comments already provided.

Most important, as public utilities and local government, the Truckee-Tahoe Agencies are bound to responsibly serve the public and to operate in an open and transparent manner. We are not like the vast majority of the fleets covered under the public fleets Draft Rule and must be prepared to keep the public safe and the lights on and the water/waste-water flowing during historic snowstorms. We must also comply with public meeting laws/regulations, follow public procurement rules and bid processes, and ensure that our communities are protected.

#### **Key Opportunities to Improve the Draft Rule:**

- **The specific role and needs of water, waste-water, electric, and local governments must be considered in the next Draft Rule.** This is especially true of the challenging environment in which the Truckee-Tahoe Agencies operate. It is important to note that Public Fleets overall (i.e. MD/HD fleets) represent a very small percentage of the overall transportation GHG emissions that CARB is targeting and water, waste-water, and electric utilities along with local governments represent a small fraction of overall MD/HD fleets. While public utilities and local governments have provided details and specific feedback on the previous Draft Rules, these deficiencies have yet to be addressed.

The Truckee-Tahoe Agencies, along with all public utilities and local governments, recognize that addressing our unique needs may not be possible in the context of the overall Public Fleets objectives. We welcome any suggestions from CARB staff and Board on how to address this incompatibility.

- **January 1, 2024 date with CARB adoption anticipated in spring, 2023 is neither technically nor economically viable.** All public utilities and governments are required to conduct open and transparent processes when setting rates, adopting budgets, and procuring equipment. The public bid process for the Truckee-Tahoe Agencies specialty fleets are already very complex and can take many months or longer to complete. Given limited commercial availability of ZEV technology today and in the near future, public utilities and local governments can't adequately plan and budget for the significant reductions in performance and increases in costs that we are facing under the current Draft Rule.

All public agencies/governments must adhere to strict and complex budgeting processes with extensive public processes that take significant time to develop, even when costs and lead-times are known. This is also true of public bidding process with strict public notice and evaluation before being presented to public Boards or Councils for approval. Adoption in spring, 2023 with no published specification and costs for our fleets will not allow for an effective rollout in 2024.

Furthermore, the lack of supply compounded by the extreme demand caused by anticipation of the current January 1, 2024 date has already escalated costs with fleet delivery being routinely quotes in number of years. This has been compounded by COVID and other supply chain issues which do not appear to be diminishing. While the Draft Rule has a one-time, one year extension, this will be woefully inadequate. A 2027 or later date would appear to be more realistic and would allow for a more effective implementation of the regulation.

- **Low-Emission Counties Should Not be ‘Solely’.** All of the Truckee-Tahoe Agencies have all or significant portions of their service territories in low-emission areas on the east-slope of the Sierra Nevada. However, many of the public agencies are in counties (such as Placer and El Dorado) which are not classified as low-emission due to the populated/urban areas on the western portion of counties.

In Truckee Donner Public Utility’s case, well over 95% of our service territory and operations are in Nevada County – which is a low-emission county – but we do have a small portion in Placer County which is not low-emissions. To be clear, this is two small neighborhoods one of which is the south shore of Donner Lake (which looks exactly like the north shore of Donner Lake in Nevada County). The qualifier of ‘Solely’ should be removed and replaced with a more accurate characterization of low-emission areas. All of the Truckee-Tahoe Agencies should qualify as operating in a low-emission area with compliance delayed until 2027.

- **The Exemption for Snow Removal Equipment Needs to be Modified to Address Actual Equipment Used.** We appreciate that CARB has identified snow removal as a critical function to keep our communities accessible and safe. During the recent historic December, 2021 storms, all of the Truckee-Tahoe Agencies spent extended time moving snow to access key facilities, repair damage, and support emergency response. This was critical to maintaining critical services and responding to emergencies but also supported overall public safety as our equipment supported Town, County, and State snow removal efforts.

However, the current Draft Rule still requires ‘dedicated’ snow removal equipment to qualify for the exemption. This makes no sense for the Truckee-Tahoe Agencies as not a not a single public fleet vehicle in our region that is regulated by the ACF has a permanently attached blade (we tend to use blowers more than blades) and all of our fleets serve multi-purposes (doing snow removal in the winter and construction projects for the rest of the year, for example). This is especially true

for small/medium sized utility/agency fleets (<100 vehicles) but applies to any size organization since no place in California does significant snow removal for more than 4-5 months per year. We again respectfully request that the Draft Rule incorporate an accurate understanding of snow removal fleets and reflect the reality that almost every vehicle in a fleet serves multi-purposes.

- **The Process of Using an Unavailability List Should be Changed to an Availability List Given the Lack of Commercial Availability Today and into the Near Future.** The Truckee-Tahoe Agencies appreciate CARB's acknowledgement that ZEV availability will be an ongoing challenge; especially for the heavy duty, off-road, and heavy PTO applications required by public utilities and governments in our region. However, the preliminary lists shared by CARB staff during the July 26, 2022 already had some vehicle classes listed as available which the water, waste-water, and electric utilities plus local governments know do not exist commercially when factoring in performance, costs, availability, and lead time.

Many members from the public utility and local government community attended the recent Expo in Southern California. While there were some prototypes and early production displays, none of the manufacturers had plans within the next 3-5 year to begin production of the vehicles the Truckee-Tahoe Agencies need. For example, all of our fleets have a significant amount of service trucks (F150, 250, 350, 450, and 550 or equivalent) with custom bodies and extensive PTO. As presented by CARB staff at the July 26, 2022 workshop these trucks are listed as available now. However, the only vehicle being delivered in limited quantity today is the F150 Lightning and, based on recent orders and lead-times from sister agencies, it appears that production is already tied up for many years. The unavailability gets worse as the vehicle size increases.

To exemplify the challenges to converting the specialized Internal Combustion Engine (ICE) Truckee-Tahoe Agencies fleet to ZEV, we have done some preliminary calculations to convert the performance specifications of a few key vehicle types into an equivalent Electric Vehicle (EV) specification. EV's appear to be the closest to commercialization for the ZEV's that we need. Given the fact that limited manufacturer specifications exist for EV versions of our fleet, we used the Heat Rate and EV conversion data provided by CARB to complete our analysis.

To model the extensive time spent in the field along with PTO requirements, the analysis converts a single tank of fuel for our ICE examples into an equivalent EV. While this analysis does not fully capture the practice of refueling in the field during extended outages and emergencies, it provides a baseline to make realistic assessments of the availability of ZEV's starting in 2024, 2027, and beyond.

For most local fleet vehicles, total range is not a significant concern when it comes to ZEV vehicles. Rather, our main concern is "hours of operation" for the PTO which empowers booms, cranes, augers, vacuum pumps, etc. once on-site. Our vehicles are also required to carry tools and equipment into the field. This includes

heavy hydraulic equipment built into the chassis. Thus, payload capacity is a critical performance specification for public utility and local government fleet vehicles. Any fleet vehicle we purchase, whether ICEV, NZEV, or ZEV, must meet the current fleet vehicle performance in the areas of energy storage and payload capacity in order to be a true “one-to-one” replacement.

Given the above, we started with current payload and energy storage capabilities of our ICEV fleet vehicles and leveraged assumptions provided by CARB in the Standardized Regulatory Impact Assessment (dated May 18, 2022) to estimate a ZEV equivalent. For the sake of brevity we include a summary of our results below and have opted to include a detailed derivation of our methodology, including actual bid specifications for each example vehicle, as a separate attachment to this letter (Attachments 2 and 3). Pictures of each of the example vehicles are provided on the following page.

**Current ICE Fleet vs. EV Equivalent Comparison:**

Vehicle Description	Electric Utility Line Truck	Vactor vacuum pump truck	Service Body	Service Body
Vehicle Class	8	8	5	4
Make/Model	International 7500 SFA 4x4	Freightliner 114SD 6x4	Ford F550 4x4	Chevy 3500 4x4
GVWR [Lbs]	39,000	66,000	19,500	14,000
<b>Current Specifications (ICEV)</b>				
Weight [Lbs]	31,920	40,780	14,330	11,600
Payload [Lbs]	2,500	17,283	2,000	1,200
Energy Storage [kWh]	1,883 (471 useful)	2,636 (659 Useful)	1,506 (377 useful)	1,130 (282 Useful)
<b>ZEV (Battery Electric) Specifications</b>				
Weight [Lbs]	41,065	67,743	22,064	12,800
Payload [Lbs]	-2,065	-1,743	-2,564	-3,093
Energy Storage [kWh]	607	849	486	363
Battery Weight [Lbs]	8,431	11,792	6,750	5,042
Battery Cost [\$]	\$121,400	\$169,800	\$97,200	\$72,600

One concern we identified in this analysis was that the cost of the battery unit was exceedingly expensive. We understand that this cost is implicit to the purchase price of the ZEV and CARB expects this to be offset by reduced maintenance and fuel costs. However; Li-Ion battery packs have a limited lifetime measured in number of charge cycles. We expect that end-of-life battery replacement will not be uncommon in a ZEV fleet for small agencies such as ours since each of our vehicles see heavy utilization (e.g. more charge cycles per day). The chassis and drive trains are expected to outlast the battery lifetime requiring replacement. This significant cost was not accounted for in the Regulatory Impact Assessment.



Figure 1 Class 8 Electric Utility Bucket Truck



Figure 2 Class 5 Water Utility Crane Service Body



Figure 3 Class 4 Service Body



Figure 4 Class 8 Vacuum Truck

It is also important to note that in all cases the additional weight from the battery exceeded the GVWR rating for the axels if we maintain existing payload specifications. To accommodate the additional battery weight we must either:

- 1) Retain energy capacity (e.g. length of operating time) and eliminate payload of existing tools & equipment requiring an additional vehicle; or
- 2) Retain payload of existing tools & equipment and significantly reduce energy storage – resulting in a 25% to 65% reduction of operating time.

This demonstrates that, for the Truckee-Tahoe Agencies, current and near future ZEVs are not available as a “one-to-one” replacement of the existing ICE vehicle for such configurations. Rather, the ZEV must compromise payload and/or time in the field to accommodate the additional size and weight of a battery pack. It is important to note that this analysis does not consider the additional logistics (and equipment purchases) associated with in-field refueling of the ZEV. Nor does it account for cold weather degradation of battery performance. Thus the deficiencies identified by this analysis are likely understated.

Any ZEV unavailability must consider, in addition to the performance specifications and ability to provide a one-to-one vehicle replacement, the manufacturing capacity against demand, the lead-time, and costs. Is a vehicle available if the lead time is measured in years and the cost is two to three times more than the current ICE version? With regards to manufacturing capacity and multi-year lead-times, CARB staff has stated that this is not a concern for compliance since it is based on vehicle purchase and not delivery. This statement ignores the fact that the Local Truckee Agencies – and all public utilities and local governments – will not be able to maintain critical infrastructure and support public safety/emergency response while we wait years for our ZEVs to arrive.

The Truckee-Tahoe Utilities, given the fact that most of our fleets will not be commercially available as a ZEV before 2027 and well beyond, ask that CARB consider switching from an Unavailability List to an Availability List based on the above criteria. This would avoid the 100’s or 1000’s of unavailability requests that CARB staff is surly to receive and allow CARB to identify and optimize the benefits of what ZEV’s are available.

- **The Final Regulation Must Consider Grid Reliability and Availability with 1+ Week Outages Factored In.** The Truckee-Tahoe Agencies cannot emphasize enough our essential role in maintaining critical infrastructure and supporting public safety/emergency response. No community can function for long without water, waste-water, electricity, and local government services. Operating above 6,000 feet elevation, we are not like the vast majority of the other fleets covered in the Draft Rule.

A reliable grid with adequate electric generation resources is necessary for the success of an EV fleet. Unfortunately, it has been widely documented by the California Independent System Operator (CALISO) that California does not have

adequate electric resources now (1000's of MW's short this summer). This problem will only get worse through the end of the decade based on CAISO statements and projections. Given this reality, how can public utilities and local governments dependably charge EVs to serve communities who rely on us every day?

Electric resource adequacy going forward is only one concern about grid reliability and availability. Extreme weather events are creating natural disasters which are challenging our ability to effectively respond to outages/emergencies and maintain critical community services. During the historic December, 2021 winter storms, the region experienced wide-spread power outages that lasted days and weeks. Truckee Donner Public Utility District responded to numerous outages over a two week period with the average outage lasting almost one-day. We had a few thousand customers out for 2-3 days and some smaller areas out over one week. It should be noted that on the Western slope of the Sierra Nevada, PG&E had over 10,000 customers out at one week and thousands still out at three weeks.

While grid reliability due to unplanned outages and grid availability due to insufficient electric resources are key issues, the recent addition of wildfire safety power outages (i.e. Public Safety Power Shut-Off or PSPS) may be even more problematic. The Truckee-Tahoe Agencies are all transmission dependent on NV Energy or PG&E. In Truckee-Tahoe, NV Energy has a wildfire safety power outage program similar to PSPS called Public Safety Outage Management or PSOM. Like PSPS, and due to length of an extreme weather event plus the fact that electric utilities must visually inspect 100% of their overhead electric distribution system after a PSPS/PSOM, communities must be prepared for wildfire safety power outages that will last a minimum of one day and often multi-days. Given the chance of back-to-back weather systems, PSPS/PSOM events could easily go for one week or longer.

The Truckee-Tahoe Agencies would like CARB to consider electric resource adequacy, grid reliability, and wildfire safety power outages when determining the availability of an EV or ZEV. A large majority of our fleets, in order to maintain critical infrastructure and support public safety/emergency response, must be able to fully function without the grid for at least one week.

CARB staff, in response to the repeated comments made regarding grid reliability/availability, have recently addressed the concern stating that EV charging powered by fossil fuel generators, either stationary or in the field, is the solution. This seems to be neither technically viable nor would it allow for the fleets to continue to function while being charged in the field. We request that CARB identify how this solution will meet the needs of public utilities and local governments.

**Invitation of Collaborate to Meet Goals of ACF:**

The Truckee-Tahoe Agencies appreciate the challenges that CARB faces in implementing the ACF; especially for the water, waste-water, and electric utilities plus local governments that fall on the Public Fleets Draft Rule. We continue to support the

goals of this effort and have provided extensive comments over the last two years. However, the current Draft Rule has done little to address very serious concerns and deficiencies which are incompatible with our public service obligations. We welcome the opportunity to continue to dialog with CARB staff and to lend our expertise in crafting a final rule that will both meet CARB's obligations while protecting our ability to maintain critical infrastructure and support public safety/emergency response. We would be happy to host CARB staff/Board in Truckee-Tahoe, come to Sacramento to meet, or set up a Zoom at your convenience.

Please contact Truckee Donner Public Utility District's Public Information and Strategic Affairs Director Steven Poncelet ([stevenponcelet@tdpud.org](mailto:stevenponcelet@tdpud.org), 530-582-3951) if we can be of further assistance or to schedule a meeting. Thank you for your consideration and support of the Truckee-Tahoe Agencies and the communities that we serve.

Regards,



Brian C. Wright  
General Manager  
Truckee Donner Public Utility District



Mike Staudenmayer  
General Manager  
Northstar Community Services District



Sean Barclay  
General Manager  
Tahoe City Public Utility District



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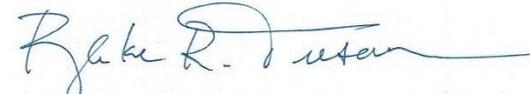
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Jen Callaway  
Town Manager  
Town of Truckee

Attachments:

1. Local Truckee-Tahoe Fire Departments Support Letter
2. ICE to EV Fleet Conversion Methodology and Calculations
3. Truckee-Tahoe Agency Recent Fleet\ Bid Specifications Used in Calculations

CC: CARB Board Chair Liane M. Randolph  
CARB Board Vice Chair Sandra Berg  
CARB Board Member Daniel Sperling, Ph.D  
CARB Board Member Gideon Kracov  
CARB Executive Officer Dr. Steven Cliff  
Nick Blair, Association of California Water Agencies (ACWA)  
Frank Harris, California Municipal Utilities Association (CMUA)  
Emily Lemei, Northern California Power Agency (NCPA)  
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*August 4, 2022 Comment letter submitted via electronic commenting system*

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**Re: Local Truckee-Tahoe Fire and EMS Comments on Draft Regulatory Language for the Advanced Clean Fleets Regulation Public Fleet Requirements**

The Northstar Fire, Truckee Fire Protection District, Olympic Valley Fire Department, and North Tahoe Fire Protection District (local Truckee-Tahoe Fire and EMS agencies) appreciate the opportunity to provide public comments to the California Air Resources Board (CARB) in response to the recent Draft Regulatory Language on Public Fleet Requirements (Draft Rule). The local Truckee-Tahoe Fire and EMS agencies provide fire response to the region along with often being the first responder for public health and safety emergencies.

Critical to the success of the local Truckee-Tahoe Fire and EMS agencies is the support that we receive from the Truckee-Tahoe Agencies. This includes support from the local utilities (Truckee Donner Public Utility District, Placer County Water Agency, Northstar Community Services District, Olympic Valley Public Services District, Tahoe City Public Utility District, and South Tahoe Public Utility District to name a few) and local governments (Town of Truckee plus Nevada and Placer Counties). There is growing concern locally, based on the current Draft Rule, that it would be increasingly hard to

achieve our critical emergency response function without the full support of the local utilities and government partners

The Truckee-Tahoe region sits in the high Sierra Nevada Mountains and is subject to harsh winter storms, atmospheric rivers, drought, and wildfires. The region is very popular as a second-home destination and with the many visitors who come every year to enjoy the regions incredible nature and vibrant communities. The region is heavily forested with steep terrain and variable conditions. The regional variability, in both climate and transient population, create challenges for fire protection and emergency response that all local agencies must work together to address.

The Local Truckee-Tahoe Fire and EMS agencies work closely with, and rely upon, other local agencies to respond to fires and emergencies. During the winter months, during blizzards and high-wind events, access to an emergency is an on-going issue with the need to clear snow along with any fallen trees blocking access. The Local Truckee-Tahoe Fire and EMS agencies rely on local utilities and governments to provide this access along with addressing any downed power lines, large water main leaks, or a sewage spill before safe access is available.

Specifically with snow removal, every local agency has very specialized multi-purpose equipment with a wide variety of attachments ranging from snow blades, snow blowers, buckets, etc. The same dump truck or front loader used to clear snow in the winter is used to address floods, fight fires, and support construction of critical infrastructure during the rest of the year. The current exemption for snow removal equipment, but only with 'permanently attached blades', does not address any of the snow removal equipment in our region and fails to understand the tools and technologies that we use to move snow.

All of the local Truckee-Tahoe agencies have very specialized equipment to be able to access locations during extreme weather events and to work in the field for as long as needed. Vehicle range is less of an issue, often needing to go only a few miles to respond to an emergency, but our trucks/equipment have significant Power Take Off (PTO) or shore power (i.e. auxiliary generator or power source) requirements. The majority of local fleets uses the engine for PTO. In many cases the hours of operation in the field are orders of magnitude more than the miles driven.

While the Local Truckee-Tahoe Fire and EMS agencies are exempt from the CARB Draft Rule, our local utility and government partners are not. Given the severity and duration of our natural events, for example our historic December 2021 storms lasted for over two weeks with extended power outages lasting over a week, it would be increasingly hard to achieve our critical emergency response function without the support of the local utilities and government partners. Achieving our mission without access to power, water, and a safe environment would not be possible.

The local Truckee-Tahoe utilities and government agencies have shared their concern that the technology, performance, and price of replacement vehicles will not be tenable during the early implementation starting in January 2024 resulting in negative impacts to

critical infrastructure and emergency response. The local Truckee-Tahoe Fire and EMS agencies encourage CARB to work closely with all utilities and governments to fully understand the critical role utilities and governments play in providing public services, maintaining critical infrastructure, and supporting emergency response.

Thank you for your consideration and support of the local Truckee-Tahoe agencies.

Regards,



Jason Gibeaut, Division Chief  
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Steve Leighton

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CC: Steven Poncelet, Truckee Donner Public Utility District  
Truckee-Tahoe Agencies



## Extrapolating Critical Performance Metrics of ICE Vehicles in Currently Unavailable ZEV Counterparts.

To exemplify the challenges to converting the specialized Internal Combustion Engine (ICE) Truckee-Tahoe Agencies fleet to ZEV, we done some preliminary calculations to convert the performance specifications of a few key vehicle types into an equivalent Electric Vehicle (EV) specification which appears to be the closest to commercialization for the ZEV's that we need. Given the fact that no manufacturer specifications exist for an EV version of our fleet vehicles, we use basic first principals to derive component weights and energy storage capacity needs of an equivalent ZEV from known existing values in ICE vehicles. Battery cost assumptions are referenced directly from the CARB Standard Impact Assessment. The remaining assumptions reference thermodynamic properties tables (for Diesel fuel) and manufacturer published specifications (engine weights, power, power density, etc.).

To model the extensive time spent in the field along with PTO requirements, the analysis converts a single tank of fuel for our ICE examples into an equivalent EV. While this analysis does not fully capture practice of refueling in the field during extended outages and emergencies, it provides a baseline from which to make realistic assessments of the availability of ZEV's starting in 2024, 2027, and beyond. Note that this analysis does not account for the cold weather performance degradation that is well established for Li-Ion batteries. Thus, the resultant battery capacities/weights are likely understated.

### Deriving Basic Performance Metrics for Comparison

For most local fleet vehicles, total range is not a significant concern when it comes to ZEV vehicles. Rather, our main concern is "hours of operation" for the PTO which empowers booms, cranes, augers, vacuum pumps, etc. once on-site. Our vehicles are also required to carry tools and equipment into the field. This includes heavy hydraulic equipment built into the chassis. Thus, payload capacity is a critical performance specification for a fleet vehicle. Any fleet vehicle we purchase, whether ICEV, NZEV, or ZEV, must meet the current fleet vehicle performance in the areas of energy storage and payload capacity in order for our agencies to maintain public health and safety. To develop specifications for an EV equivalent of our heavy duty trucks we have therefore focused on two main aspects:

1. Battery Capacity (and corresponding weight/size)
2. How an EV drivetrain impacts vehicle payload capacity

### Battery Capacity

The battery capacity was estimated using a "top-down" approach, starting with the ICE vehicle fuel tank size and extrapolating its useful energy content to an equivalent battery + electric motor drivetrain. The fundamental assumption here is that the energy storage of existing ICE vehicles is sufficient for its duty cycle. It does not currently account for field re-fueling considerations (including feasibility of refueling in the field under 'real-world' working conditions).

The approach takes the following steps:

- 1) Calculate the useful energy content of the ICE fuel capacity

$$ENERGY_{ICE\ Useful} = \frac{Cap_{fuel\ tank} * 128,488 * Eff_{ICE\ Drivetrain}}{3,412}$$



Where:

		<u>Units</u>
Cap <sub>fuel tank</sub>	Is the capacity of the fuel tank in Gallons	Gallons
128,488	Is the raw energy content of diesel	BTU/Gal
Eff <sub>ICE Drivetrain</sub>	Is the combined efficiency of the engine and transmission (assumed to be 25%)	Percent
3,412	Unity conversion from BTU to kWh	kWh/BTU

2) Extrapolate the useful energy content to an equivalent battery capacity

$$ENRGY_{Battery} = \frac{ENRGY_{ICE\ Useful}}{Eff_{EV\ Drivetrain}} * 1.25$$

Where:

		<u>Units</u>
ENRGY <sub>ICE Useful</sub>	Is the useful energy content of an ICE fuel tank calculated in step 1	kWh
Eff <sub>EV Drivetrain</sub>	Is the combined efficiency of the EV engine transmission and battery pack	%
1.25	Is an oversize factor to account for Li-Ion batteries only being able to utilize ~80% of the actual charge capacity for safety and longevity.	NA

3) Calculate the cost and weight of the extrapolated battery size

$$Cost_{Battery} = ENRGY_{Battery} * Unit\ Cost$$

$$W_{Battery} = \frac{Energy_{Battery} * 1,000}{Specific\ Weight}$$

Where:

		<u>Units</u>
ENRGY <sub>Battery</sub>	Is the extrapolated battery pack energy capacity from the previous step.	kWh
Unit Cost	Is the cost per unit of energy capacity for the battery derived from CARB Standardized Regulatory Impact Assessment Report (05/18/2022) for the ACF. CARB predicts \$200 per kWh in 2024.	\$/kWh
Specific Weight	Is the weight per unit of energy capacity for the battery. Current Tesla packs represent current limit. For heavy duty vehicles it is uncertain that NCM or NCA chemistries would be used do to safety concerns. More likely to be FePO4 chemistry which has lower specific energy	Wh/Lb
	NCM/NCA: 105 Wh/lb LiFePO4: 72 Wh/lb	

## Payload Impacts

Payload impacts are estimated by comparing fully laden weight of current ICE vehicles against a projected laden weight for the ZEV vehicle. Fully laden weights are then measured against the GVWR for



the vehicle as this represents the maximum safe weight for the vehicle regardless of drive train technology (limited by axels).

The approach takes the following steps:

- 1) The total weight of an ICE vehicle is well established as they are directly weighed prior to registration and after leaving the factory.

		<u>Units</u>
$W_{ICE\ Unladen}$	Is the measured dry weight of the ICE vehicle leaving the manufacturing facility	Lbs
$W_{ICE\ Engine}$	Is the weight of the ICE engine installed in the chassis	Lbs
GVWR	Is the Maximum Gross Vehicle Weight Rating	Lbs

- 2) Payload weights are estimated based on the type of payload the vehicle is expected to carry. This includes the expected compliment of tools and supplies for use on a job site. In the case of a vacuum truck this includes the water storage (both fresh water and the final slurry).

$$W_{Payload} = \sum W_{Equipment} + W_{Supplies} + W_{Media}$$

$$W_{Media} = Vol_{Media} * \rho_{Media}$$

Where:		<u>Units</u>
$W_{Payload}$	The weight of all tools & equipment to be stored on the vehicle during transit. Does not include weight of the chassis or permanently affixed body components which are accounted for in $W_{Unladen}$ .	Lbs
$W_{Supplies}$	Weight of all job supplies requiring transport. Can include pipe, pipe fittings, rigging equipment, poles, wire, etc.	Lbs
$W_{Media}$	The weight of liquid media (water, slurry, etc.)	Lbs
$Vol_{Media}$	The volume of the media to be transported	Gal
$\rho_{Media}$	Density of the media being transported	Lbs/Gal

- 3) The equivalent weights for a ZEV are then extrapolated using the following algorithms

$$W_{ZEV\ Unladen} = W_{ICE\ Unladen} - W_{ICE\ Components} + W_{ZEV\ Components}$$

$$W_{ICE\ Components} = W_{ICE\ Engine} + (Vol_{ICE\ Fuel} * 7)$$

$$W_{ZEV\ Components} = (Pwr_{ICE\ Engine} * 0.19) + W_{Battery}$$

Where:		<u>Units</u>
$W_{ICE\ Components}$	The collective weight of ICE specific components. For this analysis this includes the ICE engine and the fuel to run it.	Lbs



$W_{ZEV \text{ Components}}$	The collective weight of all ZEV components. For this analysis this includes the ZEV engine and battery pack.	Lbs
$W_{ICE \text{ Engine}}$	Manufactures weight of ICE engine	Lbs
$Vol_{ICE \text{ Fuel}}$	The volume of the fuel tank for the ICE vehicle	Gal
7	The density of diesel fuel used in ICE vehicle	Lbs/Gal
$Pwr_{ICE \text{ Engine}}$	Peak rated engine horsepower of the ICE engine	HP
0.19	The specific weight of an electric motor. Since specific weights for electric motors vary considerably across manufacturers, this analysis used the specific weight of a Tesla Model S power plant as it is the most power dense drivetrain currently on the market.	Lbs/HP

## Reviewing the Results

The results of this analysis are compiled in the following table for four prototypical vehicles chosen across several local Truckee-Tahoe Agencies. The vehicles range from Class 4 to Class 8 and represent a diversity of job requirements.

Vehicle Description	Electric Utility Line Truck	Vactor Vacuum Pump Truck	Service Body	Service Body
Vehicle Class	8	8	5	4
Make/Model	International 7500 SFA 4x4	Freightliner 114SD 6x4	Ford F550 4x4	Chevy 3500 4x4
GVWR [Lbs]	39,000	66,000	19,500	14,000
<b>Current Specifications (ICEV)</b>				
Weight [Lbs]	31,920	40,780	14,330	11,600
Payload [Lbs]	2,500	17,283	2,000	1,200
Energy Storage [kWh]	1,883 (471 useful)	2,636 (659 Useful)	1,506 (377 useful)	1,130 (282 Useful)
<b>ZEV (Battery Electric) Specifications</b>				
Weight [Lbs]	41,065	67,743	22,064	12,800
Payload [Lbs]	-2,065	-1,743	-2,564	-3,093
Energy Storage [kWh]	607	849	486	363
Battery Weight [Lbs]	8,431	11,792	6,750	5,042
Battery Cost [\$]	\$121,400	\$169,800	\$97,200	\$72,600
Payload Description	Tools and Equipment	Tools & Equipment + 1,300 Gallons of water + Mud/Rock Slurry	Tools and Equipment. Hydraulic Crane & accessories. Lift Gate	Tools and Equipment

One concern we identified in this analysis was that the cost of the battery unit was exceedingly expensive. We understand that this cost is implicit to the purchase price of the ZEV and CARB expects this to be offset by the reduced maintenance and fuel costs of the vehicle over its lifetime. However; Li-Ion battery backs have a limited lifetime measured in number of charge cycles. We expect that end-of-life battery replacement will not be uncommon in a ZEV fleet for small agencies such as ours since each of our vehicles see heavy utilization (e.g. more charge cycles per day). The chassis and drive trains are expected to outlast the battery lifetime. This is a significant cost which was not accounted for in the Regulatory Impact Assessment.



It was noted that in all cases the additional weight from the battery exceeded the GVWR rating for the axels if we maintain existing payload specifications. To accommodate the additional battery weight we must either:

- 1) Retain energy capacity (e.g. length of operating time) and eliminate payload of existing tools & equipment.
- 2) Retain payload of existing tools & equipment and significantly reduce energy storage – resulting in a 25% to 65% reduction of operating time.

This demonstrates that a ZEV equivalent is not currently a “one-to-one” replacement of the existing ICE vehicle for such configurations. Rather, the ZEV must compromise payload and/or time in the field to accommodate the additional size and weight of a battery pack. Pictures of each of the example vehicles are provided on the following page.

*Table 1 Summary of Key Assumptions Leveraged in Exploratory analysis*

<b>Eff<sub>ICE Drivetrain</sub></b>	25%	ICE drivetrain motor plus drivetrain efficiency
<b>Eff<sub>EV Drivetrain</sub></b>	97%	EV motor plus drivetrain efficiency
<b>Unit Cost</b>	\$200 per kWh	2024 battery cost from CARB Standard Impact Assessment
<b>Specific Weight</b>	72 Wh/lb	Specific weight of LiFEPO4 batteries.
<b>F<sub>Oversize</sub></b>	1.25	Oversize factor to account for battery capacity limits (can only really use ~80% of capacity without degrading battery anode/cathode)
<b>EM<sub>Power Density</sub></b>	0.19 lb/HP	Specific power for Tesla EV motors (used to estimate motor weight for equivalent EV truck motors)

# Truckee Donner Public Utility District



Figure 1 Class 8 Electric Utility Bucket Truck



Figure 2 Class 5 Water Utility Crane Service Body



Figure 3 Class 4 Service Body



Figure 4 Class 8 Vacuum Truck



## Contact Information

Questions or comments regarding the approach presented in this document can be submitted to Steven Keates at Truckee Donner Public Utility District:

**Steven Keates, P.E.**

Conservation and Customer Service Senior Analyst

Conservation

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Reference ID: N/A

**Presented By:**

Southland International Trucks, Inc.  
Philip Noles  
200 Ormoor Blvd.  
Homewood AL 35209 -  
(205)942-6226

Thank you for the opportunity to provide you with the following quotation on a new International truck. I am sure the following detailed specification will meet your operational requirements, and I look forward to serving your business needs.

**Model Profile**  
**2018 7500 SFA 4X4 (SR537)**

**APPLICATION:**

Utility/Service (Other)

**MISSION:**

Requested GVWR: 37000. Calc. GVWR: 39000  
Calc. Start / Grade Ability: 34.17% / 3.31% @ 55 MPH

**DIMENSION:**

Wheelbase: 195.00, CA: 120.00, Usable CA: 114.00, Axle to Frame: 114.00

**ENGINE, DIESEL:**

{Navistar N10} EPA 2010, SCR, 330 HP @ 2000 RPM, 1150 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed, 330 Peak HP (Max)

**TRANSMISSION, AUTOMATIC:**

{Allison 3000\_RDS\_P} 5th Generation Controls; Close Ratio, 6-Speed, With Double Overdrive; On/Off Hwy; Includes Oil Level Sensor, With PTO Provision, Less Retarder, With 80,000-lb GVW & GCW Max.

**CLUTCH:**

Omit Item (Clutch & Control)

**AXLE, FRONT DRIVING:**

{Fabco FSD-16A} Single Reduction, 16,000 lb Capacity

**AXLE, REAR, SINGLE:**

{Meritor RS-23-160} Single Reduction, 23,000-lb Capacity, With 200 Wheel Ends Gear Ratio: 6.14

**CAB:**

Conventional

**TIRE, FRONT:**

(2) 425/65R22.5 Load Range L HTC1 (CONTINENTAL), 465 rev/mile, 68 MPH, All-Position

**TIRE, REAR:**

(4) 11R22.5 Load Range H HDC1 (CONTINENTAL), 488 rev/mile, 75 MPH, Drive

**SUSPENSION, RR, SPRING, SINGLE:**

Vari-Rate; 23,500-lb Capacity, with 4500 lb Auxiliary Rubber Spring

**PAINT:**

Cab schematic 100GM  
Location 1: 4421, School Bus Yellow (Std)  
Chassis schematic N/A

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
SR53700	Base Chassis, Model 7500 SFA 4X4 with 195.00 Wheelbase, 120.00 CA, 114.00 Usable CA, and 114.00 Axle to Frame.	8654/4869	13523
1570	TOW HOOK, FRONT (2) Frame Mounted	8/0	8
1CAJ	FRAME RAILS Heat Treated Alloy Steel (120,000 PSI Yield); 10.866" x 3.622" x 0.433" (276.0mm x 92.0mm x 11.1mm); 456.0" (11582mm) Maximum OAL	64/800	864
1LLA	BUMPER, FRONT Steel, Swept Back  <u>Includes</u> : BUMPER, FRONT Powder Coated Gray (Argent) Color	0/0	0
1SAL	CROSSMEMBER, REAR, AF (1)	-3/43	40
1WGG	WHEELBASE RANGE 181" (460cm) Through and Including 205" (520cm)	0/0	0
2EZW	AXLE, FRONT DRIVING {Fabco FSD-16A} Single Reduction, 16,000 lb Capacity  <u>Notes</u> : Axle Lead Time is 60 Days	0/0	0
3ADE	SUSPENSION, FRONT, SPRING Parabolic, Taper Leaf; 16,000-lb Capacity; with Shock Absorbers  <u>Includes</u> : SPRING PINS Rubber Bushings, Maintenance-Free  <u>Notes</u> : The following features should be considered when calculating Front GAWR: Front Axles; Front Suspension; Brake System; Brakes, Front Air Cam; Wheels; Tires.	96/0	96
4091	BRAKE SYSTEM, AIR Dual System for Straight Truck Applications  <u>Includes</u> : BRAKE LINES Color and Size Coded Nylon : DRAIN VALVE Twist-Type : DUST SHIELDS, FRONT BRAKE : DUST SHIELDS, REAR BRAKE : GAUGE, AIR PRESSURE (2) Air 1 and Air 2 Gauges; Located in Instrument Cluster : PARKING BRAKE CONTROL Yellow Knob, Located on Instrument Panel : PARKING BRAKE VALVE For Truck : QUICK RELEASE VALVE On Rear Axle for Spring Brake Release: 1 for 4x2, 2 for 6x4 : SLACK ADJUSTERS, FRONT Automatic : SLACK ADJUSTERS, REAR Automatic : SPRING BRAKE MODULATOR VALVE R-7 for 4x2, SR-7 with relay valve for 6x4/8x6  <u>Notes</u> : Rear Axle is Limited to 23,000-lb GAWR with Code 04091 BRAKE SYSTEM, AIR and Standard Rear Air Cam Brakes Regardless of Axle/Suspension Ordered	0/0	0
4193	BRAKES, FRONT, AIR CAM 16.5" x 6", Includes 24 SqIn Long Stroke Brake Chambers  <u>Notes</u> : The following features should be considered when calculating Front GAWR: Front Axles; Front Suspension; Brake System; Brakes, Front Air Cam; Wheels; Tires.	0/0	0
4619	TRAILER CONNECTIONS Four-Wheel, with Hand Control Valve and Tractor Protection Valve, for Straight Truck	2/0	2

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
4677	TRAILER HOSES Glad Hands for Four-Wheel Connections, Temporarily Mounted with Bulkhead Connectors on End of Frame, Includes Additional Hosing and Dummy Glad Hands	0/16	16
4732	DRAIN VALVE {Berg} with Pull Chain, for Air Tank  <u>Includes</u> : DRAIN VALVE Mounted in Wet Tank	0/0	0
4AZA	AIR BRAKE ABS {Bendix AntiLock Brake System} Full Vehicle Wheel Control System (4-Channel)	0/0	0
4EBD	AIR DRYER {Meritor Wabco System Saver 1200} with Heater  <u>Includes</u> : AIR DRYER LOCATION Outside Left Rail, Back of Cab	12/6	18
4ETG	BRAKE CHAMBERS, FRONT AXLE {MGM} 24 Sqn	0/0	0
4EXU	BRAKE CHAMBERS, REAR AXLE {Bendix EverSure} 30/30 Spring Brake	0/0	0
4NDB	BRAKES, REAR, AIR CAM S-Cam; 16.5" x 7.0"; Includes 30/30 Sq.In. Long Stroke Brake Chamber and Spring Actuated Parking Brake  <u>Notes</u> : The following features should be considered when calculating Rear GAWR: Rear Axles; Rear Suspension; Brake System; Brakes, Rear Air Cam; Brake Shoes, Rear; Special Rating, GAWR; Wheels; Tires.	0/0	0
4SBC	AIR COMPRESSOR {Bendix Tu-Flo 550} 13.2 CFM Capacity	0/0	0
4VGG	AIR DRYER LOCATION Mounted Inside Left Rail, Behind Transfer Case Mounting	0/0	0
4WEV	BRAKE PACKAGE, REAR {Bendix Spicer ES-165-7} Air, Cam Type, Extended Service; Size 16.5" x 7", Includes Gunite Slack Adjusters	0/0	0
4WGS	BRAKE PACKAGE, FRONT {Bendix Spicer ES-165-6} Air, Cam Type, Extended Service; Size 16.5" x 6", Includes Gunite Slack Adjusters	0/0	0
4WZJ	AIR TANK LOCATION (2) : One Mounted Under Each Frame Rail, Front of Rear Suspension, Parallel to Rail	0/0	0
5708	STEERING COLUMN Tilting	10/0	10
5CAL	STEERING WHEEL 2-Spoke, 18" Dia., Black	0/0	0
5PSL	STEERING GEAR {Sheppard M110} Power	30/0	30
7BKD	EXHAUST SYSTEM Switchback Horizontal Aftertreatment Device, Frame Mounted Right Side Under Cab Outside of Frame Rail; Includes Single Vertical Tail Pipe, Frame Mounted Right Side Back of Cab, for All-Wheel Drive or Applications Requiring Exhaust Mounted Outside of Frame Rail	33/39	72
7SDL	ENGINE COMPRESSION BRAKE for Navistar N9/10 I6 Engines; Electronically Activated	44/3	47
7WAZ	TAIL PIPE (1) Turnback Type, Non-Bright, for Single Exhaust	0/0	0
7WCM	EXHAUST HEIGHT 8' 10"	2/0	2
7WZY	SWITCH, FOR EXHAUST 2 Position, Lighted & Latching, On/Off Type, Mounted in IP, Inhibits Diesel Particulate Filter Regeneration as Long as Switch is in On Position	2/0	2
8000	ELECTRICAL SYSTEM 12-Volt, Standard Equipment	0/0	0

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
	<u>Includes</u> : DATA LINK CONNECTOR For Vehicle Programming and Diagnostics In Cab : FUSES, ELECTRICAL SAE Blade-Type : HAZARD SWITCH Push On/Push Off, Located on Top of Steering Column Cover : HEADLIGHT DIMMER SWITCH Integral with Turn Signal Lever : HEADLIGHTS (2) Sealed Beam, Round, with Chrome Plated Bezels : JUMP START STUD Located on Positive Terminal of Outermost Battery : PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light : STARTER SWITCH Electric, Key Operated : STOP, TURN, TAIL & B/U LIGHTS Dual, Rear, Combination with Reflector : TURN SIGNAL SWITCH Self-Cancelling for Trucks, Manual Cancelling for Tractors, with Lane Change Feature : WINDSHIELD WIPER SWITCH 2-Speed with Wash and Intermittent Feature (5 Pre-Set Delays), Integral with Turn Signal Lever : WINDSHIELD WIPERS Single Motor, Electric, Cowl Mounted : WIRING, CHASSIS Color Coded and Continuously Numbered		
8518	CIGAR LIGHTER Includes Ash Cup	1/0	1
8718	POWER SOURCE Cigar Type Receptacle without Plug and Cord	1/0	1
8GXD	ALTERNATOR {Leece-Neville AVI160P2013} Brush Type; 12 Volt 160 Amp. Capacity, Pad Mount, with Remote Sense	1/0	1
8HAB	BODY BUILDER WIRING Back of Standard Cab at Left Frame or Under Extended or Crew Cab at Left Frame; Includes Sealed Connectors for Tail/Amber Turn/Marker/ Backup/Accessory Power/Ground and Sealed Connector for Stop/Turn	2/0	2
8HAH	ELECTRIC TRAILER BRAKE/LIGHTS Accommodation Package to Rear of Frame; for Combined Trailer Stop, Tail, Turn, Marker Light Circuits; Includes Electric Trailer Brake Accommodation Package with Cab Connections for Mounting Customer Installed Electric Brake Unit, Less Trailer Socket	0/2	2
8MEZ	BATTERY SYSTEM {International} Maintenance-Free, (2) 12-Volt 1850CCA Total	0/0	0
8RGA	2-WAY RADIO Wiring Effects; Wiring with 20 Amp Fuse Protection, Includes Ignition Wire with 5 Amp Fuse, Wire Ends Heat Shrink and Routed to Center of Header Console in Cab	1/0	1
8RMB	RADIO AM/FM/CD/WB/Clock/Bluetooth/USB Input/3MM Auxiliary Input, MP3, Apple Device Play & Control, Bluetooth for Phone & Music, with Multiple Speakers	1/0	1
8TKK	TRAILER AUXILIARY FEED CIRCUIT for Electric Trailer Brake Accommodation/ Air Trailer ABS; with 30 Amp Fuse and Relay, Controlled by Ignition Switch	1/0	1
8VAY	HORN, ELECTRIC Disc Style	0/0	0
8WCL	HORN, AIR Black, Single Trumpet, Air Solenoid Operated	0/0	0
8WPH	CLEARANCE/MARKER LIGHTS (5) {Truck Lite} Amber LED Lights, Flush Mounted on Cab or Sunshade	0/0	0
8WTK	STARTING MOTOR {Delco Remy 38MT Type 300} 12 Volt; less Thermal Over-Crank Protection	0/0	0
8WWJ	INDICATOR, LOW COOLANT LEVEL with Audible Alarm	1/0	1
8XAH	CIRCUIT BREAKERS Manual-Reset (Main Panel) SAE Type III with Trip Indicators, Replaces All Fuses Except For 5-Amp Fuses	0/0	0
8XDU	BATTERY BOX Steel, With Aluminum Cover, 14" Wide, 3 Battery Capacity, Mounted Left Side Under Cab	12/-7	5

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
8XGT	TURN SIGNALS, FRONT Includes LED Side Turn Lights Mounted on Fender	0/0	0
8XJH	FOG LIGHTS (2) Clear Lens, LED, Rectangular, with White Light Source	0/0	0
9585	FENDER EXTENSIONS Rubber	0/0	0
9HAN	INSULATION, UNDER HOOD for Sound Abatement	10/0	10
9HBM	GRILLE Stationary, Chrome	0/0	0
9HBN	INSULATION, SPLASH PANELS for Sound Abatement	2/0	2
9WBC	FRONT END Tilting, Fiberglass, With Three Piece Construction; for WorkStar	0/0	0
10060	PAINT SCHEMATIC, PT-1 Single Color, Design 100	0/0	0
	<u>Includes</u> : PAINT SCHEMATIC ID LETTERS "GM"		
10761	PAINT TYPE Base Coat/Clear Coat, 1-2 Tone	0/0	0
10UAC	VEHICLE REGISTRATION IDENTITY ID for the State of California	0/0	0
11001	CLUTCH Omit Item (Clutch & Control)	-104/-18	-122
12703	ANTI-FREEZE Red, Extended Life Coolant; To -40 Degrees F/ -40 Degrees C, Freeze Protection	0/0	0
12959	BLOCK HEATER, ENGINE {Phillips} 120V/1250W	2/0	2
	<u>Includes</u> : BLOCK HEATER SOCKET Receptacle Type; Mounted below Drivers Door		
12NWH	ENGINE, DIESEL {Navistar N10} EPA 2010, SCR, 330 HP @ 2000 RPM, 1150 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed, 330 Peak HP (Max)	0/0	0
	<u>Includes</u> : AIR COMPRESSOR AIR SUPPLY LINE Naturally-Aspirated (Air Brake Chassis Only) : COLD STARTING EQUIPMENT Intake Manifold Electric Grid Heater with Engine ECM Control : CRUISE CONTROL Electronic; Controls Integral to Steering Wheel : ENGINE OIL DRAIN PLUG Magnetic : ENGINE SHUTDOWN Electric, Key Operated : FUEL FILTER Included with Fuel/Water Separator : FUEL/WATER SEPARATOR Fuel/Water Separator and Fuel Filter in a Single Assembly; With Water-in-Fuel Sensor; Engine Mounted : GOVERNOR Electronic : OIL FILTER, ENGINE Spin-On Type : WET TYPE CYLINDER SLEEVES		
12THZ	FAN DRIVE {Horton Drivemaster Polar Extreme} Direct Drive Type, Two Speed, With Residual Torque Device for Disengaged Fan Speed	0/0	0
	<u>Includes</u> : FAN Nylon		
12UCW	RADIATOR Aluminum, Cross Flow, Series System; 1228 SqIn Core and 648 SqIn Charge Air Cooler and With Transmission Oil Cooler	-11/11	0
12VBC	AIR CLEANER Single Element	0/0	0
	<u>Includes</u> : GAUGE, AIR CLEANER RESTRICTION Air Cleaner Mounted		

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
12VGE	FEDERAL EMISSIONS {Navistar N9 & N10} EPA, OBD and GHG Certified for Calendar Year 2017	0/0	0
12VXT	THROTTLE, HAND CONTROL Engine Speed Control; Electronic, Stationary, Variable Speed; Mounted on Steering Wheel	0/0	0
12VZA	ENGINE CONTROL, REMOTE MOUNTED Provision for; Includes Wiring for Body Builder Installation of PTO Controls; With Ignition Switch Control for MaxxFlex and Navistar post 2007 Emissions Electronic Engines	0/0	0
12WZB	EMISSION COMPLIANCE Low NOx Idle Engine, Complies with California Clean Air Regulations; Includes "Certified Clean Idle" Decal on Hood	0/0	0
13AVR	TRANSMISSION, AUTOMATIC {Allison 3000_RDS_P} 5th Generation Controls; Close Ratio, 6-Speed, With Double Overdrive; On/Off Hwy; Includes Oil Level Sensor, With PTO Provision, Less Retarder, With 80,000-lb GVW & GCW Max.	0/0	0
13TKH	TRANSFER CASE {Fabco TC-38} Two-Speed, 8,500 lb-ft Capacity with Air Control, With PTO Provision, With Reworked Air Ports  <u>Includes</u> : LIGHT, INDIC, ALL-WHEEL DRIVE Illuminates With All Wheel Drive Engaged, Located on Instrument Panel	-102/-113	-215
13WBL	TRANSMISSION SHIFT CONTROL {Allison} Push-Button Type; for Allison 3000 & 4000 Series Transmission	0/0	0
13WDB	TRANSFER CASE LUBE {EmGard 50W} Synthetic; 1 thru 14.99 Pints	0/0	0
13WGH	TRANSMISSION DIPSTICK Relocated to Right Side of Transmission	0/0	0
13WLP	TRANSMISSION OIL Synthetic; 29 thru 42 Pints	0/0	0
13WUC	ALLISON SPARE INPUT/OUTPUT for Rugged Duty Series (RDS); General Purpose Trucks, Construction	0/0	0
13WYU	SHIFT CONTROL PARAMETERS Allison 3000 or 4000 Series Transmissions, 5th Generation Controls, Performance Programming	0/0	0
13XAL	PTO LOCATION Left Side of Transmission	0/0	0
14051	AXLE, REAR, SINGLE {Meritor RS-23-160} Single Reduction, 23,000-lb Capacity, With 200 Wheel Ends . Gear Ratio: 6.14  <u>Includes</u> : REAR AXLE DRAIN PLUG (1) Magnetic, For Single Rear Axle  <u>Notes</u> : The following features should be considered when calculating Rear GAWR: Rear Axles; Rear Suspension; Brake System; Brakes, Rear Air Cam; Brake Shoes, Rear; Special Rating, GAWR; Wheels; Tires. : When Specifying Axle Ratio, Check Performance Guidelines and TCAPE for Startability and Performance	0/0	0
14VAH	SUSPENSION, RR, SPRING, SINGLE Vari-Rate; 23,500-lb Capacity, with 4500 lb Auxiliary Rubber Spring  <u>Notes</u> : The following features should be considered when calculating Rear GAWR: Rear Axles; Rear Suspension; Brake System; Brakes, Rear Air Cam; Brake Shoes, Rear; Special Rating, GAWR; Wheels; Tires.	0/27	27
15SXJ	FUEL TANK Top Draw; Non-Polished Aluminum, 24" Diam., 50 U.S. Gal., 189 L Capacity, Mounted Left Side Under Cab	17/3	20

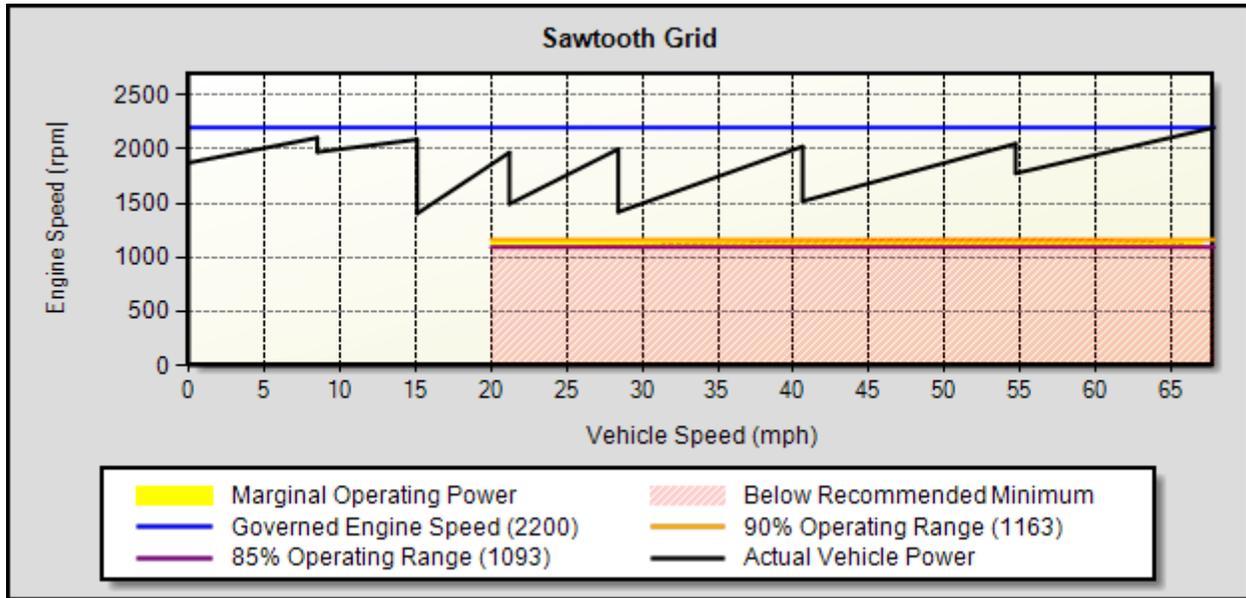
<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
15WCN	DEF TANK 5 U.S. Gal. 18.9L Capacity, Frame Mounted Outside Left Rail, Under Cab	-5/18	13
16030	CAB Conventional  <u>Includes</u> : ARM REST (2) Molded Plastic; One Each Door : COAT HOOK, CAB Located on Rear Wall, Centered Above Rear Window : CUP HOLDERS Two Cup Holders, Located in Lower Center of Instrument Panel : DOME LIGHT, CAB Rectangular, Door Activated and Push On-Off at Light Lens, Timed Theater Dimming, Integral to Console, Center Mounted : GLASS, ALL WINDOWS Tinted : GRAB HANDLE, CAB INTERIOR (1) "A" Pillar Mounted, Passenger Side : GRAB HANDLE, CAB INTERIOR (2) Front of "B" Pillar Mounted, One Each Side : INTERIOR SHEET METAL Upper Door (Above Window Ledge) Painted Exterior Color : STEP (4) Two Steps Per Door	0/0	0
16HBA	GAUGE CLUSTER English with English Electronic Speedometer  <u>Includes</u> : GAUGE CLUSTER (6) Engine Oil Pressure (Electronic), Water Temperature (Electronic), Fuel (Electronic), Tachometer (Electronic), Voltmeter, Washer Fluid Level : ODOMETER DISPLAY, Miles, Trip Miles, Engine Hours, Trip Hours, Fault Code Readout : WARNING SYSTEM Low Fuel, Low Oil Pressure, High Engine Coolant Temp, and Low Battery Voltage (Visual and Audible)	0/0	0
16HGH	GAUGE, OIL TEMP, AUTO TRANS , for Allison Transmission	1/0	1
16HKT	IP CLUSTER DISPLAY On Board Diagnostics Display of Fault Codes in Gauge Cluster	0/0	0
16HLJ	GAUGE, DEF FLUID LEVEL	0/0	0
16JNT	SEAT, DRIVER {National 2000} Air Suspension, High Back with Integral Headrest, Vinyl, Isolator, 1 Chamber Lumbar, with 2 Position Front Cushion Adjust, -3 to +14 Degree Angle Back Adjust  <u>Includes</u> : SEAT BELT 3-Point, Lap and Shoulder Belt Type	0/0	0
16RPV	SEAT, PASSENGER {National 2000} Air Suspension, High Back with Integral Headrest, Vinyl, Isolated, 1 Chamber Lumbar, 2 Position Front Cushion Adjustment, -3 to +14 Degree Back Adjust  <u>Includes</u> : SEAT BELT 3-Point, Lap and Shoulder Belt Type	58/22	80
16SNB	MIRRORS (2) {Lang Mekra} Rectangular, Thermostatically Controlled Heated Heads, Black Heads, Brackets and Arms, Breakaway Type, 7.55" x 14.1" Integral Convex Both Sides, 102" Inside Spacing	-3/0	-3
16VSL	WINDSHIELD Heated, Single Piece	1/0	1
16WCT	AIR CONDITIONER {Blend-Air} with Integral Heater & Defroster  <u>Includes</u> : HEATER HOSES Premium : HOSE CLAMPS, HEATER HOSE Mubea Constant Tension Clamps : REFRIGERANT Hydrofluorocarbon HFC-134A	46/8	54

<u>Code</u>	<u>Description</u>	<u>F/R Wt</u> (lbs)	<u>Tot Wt</u> (lbs)
16WJS	INSTRUMENT PANEL Center Section, Flat Panel	0/0	0
16WJU	WINDOW, POWER (2) and Power Door Locks, Left and Right Doors, Includes Express Down Feature	5/0	5
16WKY	HVAC FRESH AIR FILTER	0/0	0
16WLE	STORAGE POCKET, DOOR Molded Plastic, Full Width; Mounted on Passenger Door	0/0	0
16WRX	CAB INTERIOR TRIM Deluxe	0/0	0
	<u>Includes</u>		
	: "A" PILLAR COVER Molded Plastic		
	: CAB INTERIOR TRIM PANELS Cloth Covered Molded Plastic, Full Height; All Exposed Interior Sheet Metal is Covered Except for the Following: with a Two-Man Passenger Seat or with a Full Bench Seat the Back Panel is Completely Void of Covering		
	: CONSOLE, OVERHEAD Molded Plastic; With Dual Storage Pockets with Retainer Nets and CB Radio Pocket		
	: DOOR TRIM PANELS Molded Plastic; Driver and Passenger Doors		
	: FLOOR COVERING Rubber, Black		
	: HEADLINER Soft Padded Cloth		
	: INSTRUMENT PANEL TRIM Molded Plastic with Black Center Section		
	: STORAGE POCKET, DOOR (1) Molded Plastic, Full-Length; Driver Door		
	: SUN VISOR (2) Padded Vinyl with Driver Side Toll Ticket Strap, Integral to Console		
16WSK	CAB REAR SUSPENSION Air Bag Type	0/0	0
16XWJ	WINDSHIELD WIPER BLADES Snow Type	2/0	2
16XXC	COWL TRAY LID	8/2	10
27DUM	WHEELS, FRONT {Accuride 29806} DISC; 22.5x12.25 Rims, Powder Coat Steel, 5-Hand Hole, 10-Stud, 285.75mm BC, Hub-Piloted, Flanged Nut, with Steel Hubs, Offset 4.63"	0/0	0
28DUG	WHEELS, REAR {Accuride 50408} DUAL DISC; 22.5x8.25 Rims, Powder Coat Steel, 2-Hand Hole, 10-Stud, 285.75mm BC, Hub-Piloted, Flanged Nut, with Steel Hubs	0/0	0
7382135420	(4) TIRE, REAR 11R22.5 Load Range H HDC1 (CONTINENTAL), 488 rev/mile, 75 MPH, Drive	0/36	36
7752665412	(2) TIRE, FRONT 425/65R22.5 Load Range L HTC1 (CONTINENTAL), 465 rev/mile, 68 MPH, All-Position	124/0	124
	<b>Services Section:</b>		
40118	WARRANTY Standard for Paystar 5000, and Workstar 7500/7600, Effective with Vehicles Built January 2, 2015 or Later, CTS-2003Z	0/0	0
	<b>Total Component Weight:</b>	<b>9026/5767</b>	<b>14793</b>
	.	0/0	0
	Diagnostic Software and cable for transmission, engine, and chassis	0/0	0
	<b>Total Goods Purchased:</b>	<b>0/0</b>	<b>0</b>

The weight calculations included in this proposal are an estimate of future vehicle weight. The actual weight as manufactured may be different from the estimated weight. Navistar, Inc. shall not be liable for any consequences resulting from any differences between the estimated weight of a vehicle and the actual weight.

There is no weight study for this proposal.

**ENGINE/TRANSMISSION MATCHING**



**Sawtooth Details**

Gear	Trans Ratio	Multi Speed	Upshift Power Avail		Govern Power Avail		Peak Power Comparison			Warn Msg
			Veh Spd (MPH)	Eng Spd (RPM)	Veh Spd (MPH)	Eng Spd (RPM)	Gear Step (%)	85% Range (%)	90% Range (%)	
1C-2	3.49	1.00	0.0	1875	8.5	2106	N/A	101	89	
2C-2	1.86	1.00	8.5	1974	15.1	2090	N/A	101	89	
2L-2	1.86	1.00	15.1	1404	21.2	1970	N/A	101	89	
3L-2	1.41	1.00	21.2	1493	28.4	2001	N/A	101	89	
4L-2	1.00	1.00	28.4	1419	40.6	2025	N/A	101	89	
5L-2	0.75	1.00	40.6	1519	54.7	2051	N/A	101	89	
6L-2	0.65	1.00	54.7	1777	67.8	2200	N/A	101	89	

@ - WHEELSLIP CAN OCCUR AT THE GRADE SHOWN. THE VEHICLE IS CAPABLE OF INCREASED GRADEABILITY IF MORE WEIGHT IS PLACED ON THE DRIVE AXLES.

## STEADY STATE PERFORMANCE

Performance Results	Gear	Veh Spd (mph)	Eng Spd (rpm)	Fuel Econ (mpg)	Grade (%)	Notes
LEVEL ROAD MAXIMUM SPEED	6L-2	69.1	2244	5.48	0.00	
HI GEAR SPEED @ RATED RPM	6L-2	67.8	2200	5.50	0.85	
55.0 MPH STEADY-STATE	6L-2	55.0	1785	7.58	3.31	- Calculated Grade Ability/Fuel Economy

VEHICLE ORDER CODING ERRORS MAY RESULT IF THE "LEVEL ROAD MAX SPEED" VALUE EXCEEDS THE "HI GEAR SPEED @ RATED RPM" AND IS USED AS THE ENGINE PROGRAMMABLE VEHICLE SPEED LIMIT.

IF THE RESULTS CONTAIN "-----", VEHICLE CANNOT ATTAIN THAT SPEED.

IF THE RESULTS CONTAIN "\*\*\*\*\*", THE ENGINE USED DOES NOT HAVE A FUEL MAP. FUEL ECONOMY CANNOT BE PREDICTED.

## Recommendations / General Information

IDLE FUEL RATE : 1.13 GALS/HR @ 800.0 RPM  
TORQUE CONVERTER : TC-419 STALL RATIO: 2.02

## Fuel Economy Route: Normal Route - City, Suburban, and Highway

Key Fuel Economy Information	City	Suburban	Highway	Notes
MILES PER GALLON	5.91	7.96	7.12	
AVERAGE MPH	19.1	40.0	54.6	
MISSION MINUTES	29.63	51.80	173.30	

IF THE RESULTS CONTAIN "\*\*\*\*\*", THE ENGINE USED DOES NOT HAVE A FUEL MAP. FUEL ECONOMY CANNOT BE PREDICTED.

## GRADEABILITY PERFORMANCE

## Enroute - Full Throttle Upshift Performance

Gear	Trans Ratio	Multi Speed	Veh Spd (mph)	Eng Spd (rpm)	Whl Pwr (hp)	Grade (%)	Warn Notes
1C-2	3.49	1.00	0.0	1875	0.00	43.51	@ STALL
			5.2	1996	199.96	41.29	70% EFF
			6.8	2042	221.05	34.17	80% EFF
			8.5	2106	223.42	27.06	
2C-2	1.86	1.00	8.5	1974	184.38	21.95	
			15.1	2090	224.50	14.48	
2L-2	1.86	1.00	15.1	1404	275.51	18.04	
			21.2	1970	283.97	12.89	
3L-2	1.41	1.00	21.2	1493	291.02	13.24	
			28.4	2001	280.19	9.14	
4L-2	1.00	1.00	28.4	1419	275.16	8.96	
			40.6	2025	269.40	5.59	
5L-2	0.75	1.00	40.6	1519	281.50	5.90	
			54.7	2051	249.96	3.07	
6L-2	0.65	1.00	54.7	1777	264.75	3.34	
			67.2	2181	200.04	1.00	
			67.8	2200	193.73	0.85	RATED RPM
			68.4	2219	172.63	0.50	
			69.1	2245	142.99	0.00	LEVEL ROAD

## STARTING / TOP GEAR PERFORMANCE

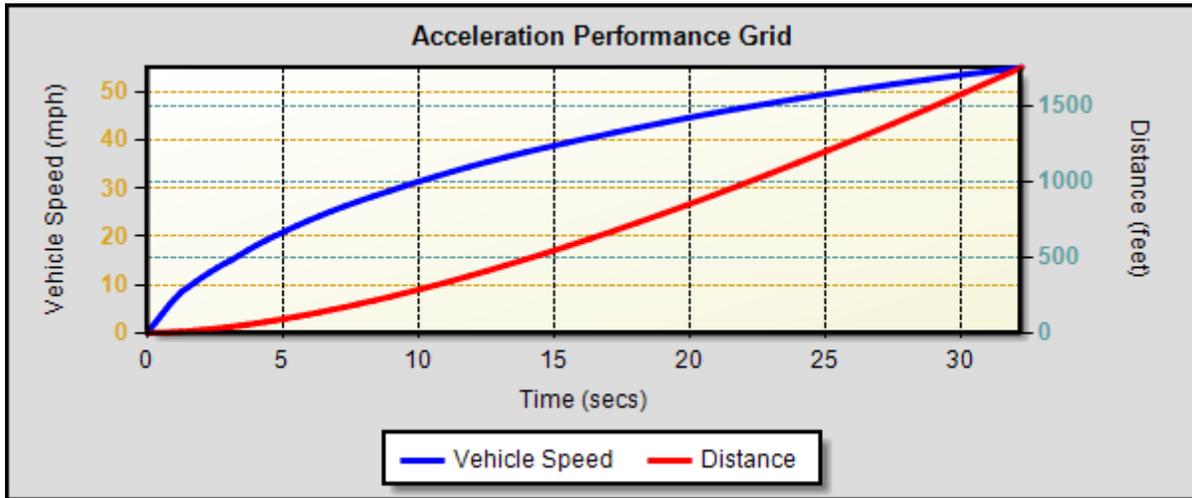
Gear	Trans Ratio	Multi Speed	Veh Spd (mph)	Eng Spd (rpm)	Whl Pwr (hp)	Grade (%)	Warn Notes
1C-1	3.49	2.22	0.0		0.00	43.51	@ STALL
			3.1		122.36	43.51	@ 80% EFF
1C-2	3.49	1.00	0.0		0.00	43.51	@ STALL
			6.8		221.05	34.17	80% EFF - Calculated Start Ability - Calculated Start Ability
6L-1	0.65	2.22	32.7		31.16	0.00	LEVEL ROAD
			30.5		208.89	6.01	RATED RPM
6L-2	0.65	1.00	69.1		142.99	0.00	LEVEL ROAD
			67.8		193.73	0.85	RATED RPM

@ - WHEELSLIP CAN OCCUR AT THE GRADE SHOWN. THE VEHICLE IS CAPABLE OF INCREASED GRADEABILITY IF MORE WEIGHT IS PLACED ON THE DRIVE AXLES.

THE TRANSMISSION WAS SIMULATED IN PERFORMANCE OPERATING MODE.

**ACCELERATION PERFORMANCE RESULTS**

**Acceleration Performance Grid**



Acceleration Performance: TIME TO ACCELERATE ON A GRADE TO 55.0 (MPH) IS 32.26 (SECS)

**Acceleration Performance Details**

Gear	Time (secs)	Distance (feet)	Speed (mph)	Notes
1C	0.14	0.1	1.0	
	0.29	0.4	2.0	
	0.43	0.9	3.0	
	0.57	1.6	4.0	
	0.71	2.6	5.0	
	0.85	3.7	6.0	
	1.01	5.2	7.0	
	1.19	7.2	8.0	
2C	1.27	8.2	8.5	
	1.52	11.4	9.5	
	1.77	15.1	10.5	
	2.03	19.2	11.5	
	2.30	24.0	12.5	
	2.59	29.5	13.5	
	2.90	35.8	14.5	
2L	3.12	40.6	15.1	
	3.41	47.2	16.1	
	3.71	54.5	17.1	
	4.02	62.7	18.1	
	4.36	72.0	19.1	
	4.72	82.4	20.1	
	5.11	94.0	21.1	
3L	5.14	95.1	21.2	
	5.53	107.3	22.2	
	5.93	120.8	23.2	
	6.36	135.5	24.2	
	6.80	151.8	25.2	
	7.28	169.5	26.2	
	7.77	189.0	27.2	
4L	8.29	210.2	28.2	
	8.41	214.9	28.4	
	8.95	237.7	29.4	

Gear	Time (secs)	Distance (feet)	Speed (mph)	Notes
	9.49	261.7	30.4	
	10.05	287.1	31.4	
	10.64	314.4	32.4	
	11.25	343.8	33.4	
	11.88	375.4	34.4	
	12.54	409.4	35.4	
	13.23	445.8	36.4	
	13.95	484.8	37.4	
	14.71	526.6	38.4	
	15.49	571.3	39.4	
	16.31	619.6	40.4	
5L	16.43	626.4	40.5	
	17.25	675.9	41.5	
	18.10	728.4	42.5	
	18.99	784.2	43.5	
	19.91	843.7	44.5	
	20.87	907.0	45.5	
	21.86	974.3	46.5	
	22.90	1045.9	47.5	
	23.98	1122.1	48.5	
	25.11	1203.3	49.5	
	26.29	1289.6	50.5	
	27.52	1381.7	51.5	
	28.80	1479.7	52.5	
	30.15	1584.7	53.5	
	31.60	1699.5	54.5	
6L	31.90	1723.7	54.7	
	32.26	1752.7	55.0	

## REQUIRED TCAPE INFORMATION

TCAPE Factors For Vehicle

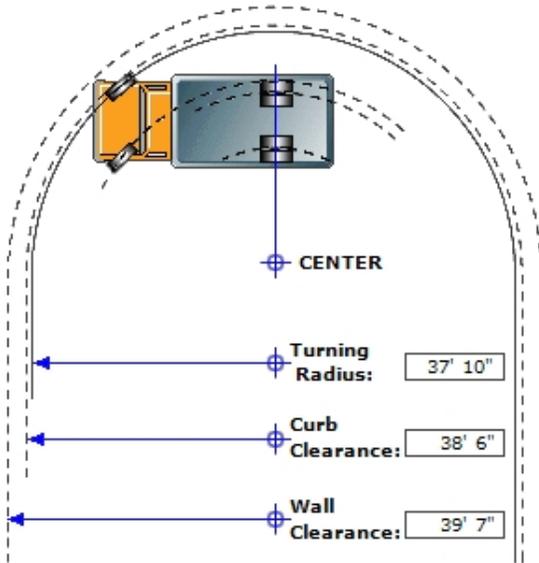
Selected Rear Axle Gear Ratio(s):	6.14
Engine Fan Type:	TWO SPEED TYPE
Parked PTO:	NO
Enroute PTO:	NO
ID Wheel Slip Conditions:	Yes
Road Governor/Cruise Ctrl:	No
Road Surface Type:	TYPICAL
Drive Axle Engaged:	NO
Fuel Economy Route:	Normal Route - City, Suburban, and Highway
Vehicle Vocation:	GENERAL ON HIGHWAY
Acceleration Grade (%):	0.0
Frontal Area (FT <sup>2</sup> ):	76
Speed Limit on Route (MPH):	61.0
Relative Drag Coefficient:	85
Transfer Case - Gear Ratio (Grade Ability):	1.000
Alternator (A):	40
Transfer Case - Gear Ratio (Accel Perf):	1.000
Steering Gear (HP):	2.60
Air Conditioner (HP):	3.20
Transfer Case - Gear Ratio(Start Ability):	1.000
Vehicle Width (IN):	96
Vehicle Height (IN):	114
Weight on Drive Axle (LBF):	23000
Acceleration Vehicle Spd (MPH):	55.0
Air Compressor (HP):	2.20
Transfer Case - Gear Ratio (Fuel Economy):	1.000
TIRE, FRONT	2 - RADIAL WIDEBASE
TIRE, REAR	4 - RADIAL NORMAL

Components

0002EZW	AXLE, FRONT DRIVING {Fabco FSD-16A} Single Reduction, 16,000 lb Capacity
0004SBC	AIR COMPRESSOR {Bendix Tu-Flo 550} 13.2 CFM Capacity
0005PSL	STEERING GEAR {Sheppard M110} Power
0008GXD	ALTERNATOR {Leece-Neville AVI160P2013} Brush Type; 12 Volt 160 Amp. Capacity, Pad Mount, with Remote Sense
0012NWH	ENGINE, DIESEL {Navistar N10} EPA 2010, SCR, 330 HP @ 2000 RPM, 1150 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed, 330 Peak HP (Max)
0012THZ	FAN DRIVE {Horton Drivemaster Polar Extreme} Direct Drive Type, Two Speed, With Residual Torque Device for Disengaged Fan Speed
0013AVR	TRANSMISSION, AUTOMATIC {Allison 3000_RDS_P} 5th Generation Controls; Close Ratio, 6-Speed, With Double Overdrive; On/Off Hwy; Includes Oil Level Sensor, With PTO Provision, Less Retarder, With 80,000-lb GVW & GCW Max.
0013TKH	TRANSFER CASE {Fabco TC-38} Two-Speed, 8,500 lb-ft Capacity with Air Control, With PTO Provision, With Reworked Air Ports
0014051	AXLE, REAR, SINGLE {Meritor RS-23-160} Single Reduction, 23,000-lb Capacity, With 200 Wheel Ends
0016030	CAB Conventional
0016WCT	AIR CONDITIONER {Blend-Air} with Integral Heater & Defroster
07382135420	TIRE, REAR 11R22.5 Load Range H HDC1 (CONTINENTAL), 488 rev/mile, 75 MPH, Drive 11R22.5 Load Range H HDC1 (CONTINENTAL), 488 rev/mile, 75 MPH, Drive
07752665412	TIRE, FRONT 425/65R22.5 Load Range L HTC1 (CONTINENTAL), 465 rev/mile, 68 MPH, All-Position 425/65R22.5 Load Range L HTC1 (CONTINENTAL), 465 rev/mile, 68 MPH, All-Position

**TCAPE HAS BEEN DESIGNED TO GIVE ECONOMY AND PERFORMANCE PREDICTIONS WHICH HAVE BEEN SHOWN TO BE TYPICAL FOR MOST OPERATIONS. HOWEVER, DUE TO OPERATING CONDITIONS, DRIVER INFLUENCES, AND OTHER FACTORS, YOUR RESULTS MAY VARY FROM THOSE PREDICTED. ALSO, BECAUSE OF FUEL MAPPING PROCEDURES USED BY VARIOUS ENGINE MANUFACTURERS, COMPARISONS OF FUEL ECONOMY RESULTS FOR DIFFERENT BRANDS OF ENGINES MAY VARY FROM THOSE SHOWN.**

NAVISTAR, INC. SHALL NOT BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF USE, INTERRUPTION OF BUSINESS OR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND THAT ARE INCURRED BY DEALER OR BY DEALER'S CUSTOMERS AS A RESULT OF RELIANCE ON TCAPE, WHETHER THE CLAIM IS IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE.



Series: 7000  
 Model: SR537  
 Description: 7500 SFA 4X4  
 Model Year: 2018

**Calculation Factors**

Wheelbase: 195  
 Front Axle: 0002EZW  
 Description: AXLE, FRONT DRIVING, {Fabco FSD-16A} Single Reduction, 16,000 lb Capacity  
 Front Wheel: 0027DUM  
 Description: WHEELS, FRONT, {Accuride 29806} DISC; 22.5x12.25 Rims, Powder Coat Steel, 5-Hand Hole, 10-Stud, 285.75mm BC, Hub-Piloted, Flanged Nut, with Steel Hubs, Offset 4.63"  
 Front Tire: 07752665412  
 Description: TIRES, 425/65R22.5 Load Range L HTC1 (CONTINENTAL), 465 rev/mile, 68 MPH, All-Position  
 Steering Gear: 0005PSL  
 Description: STEERING GEAR, {Sheppard M110} Power

**Turning Radius Statistics**

General Information

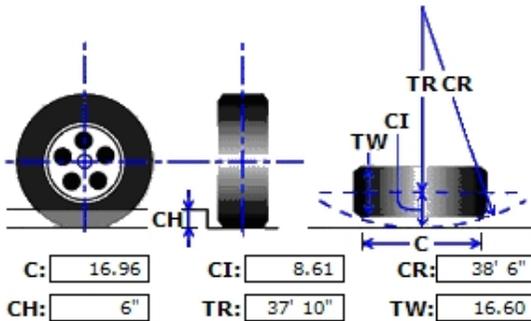
Inside Turn Angle: 30 Degrees  
 Radial Overhang: 21

Axle Information

KingPin Inclination: 5.4 Degrees  
 KingPin Center: 65.8

**Turning Radius - Curb View**

C - Curb Contact Length: 16.96  
 CI - Curb Clearance Increment: 8.61  
 CR - Curb Clearance Radius: 38'6"  
 CH - Curb Height: 6"  
 TR - Turning Radius: 37'10"  
 TW - Tire Width: 16.60



\* All Measurements are in inches, unless otherwise specified.

This information is based on engineering information available at this time. Actual figures may vary. Navistar, Inc. cannot accept liability for consequences due to this variance.



NEW U-19, FLEET ID# 00057



Presents this Proposal

of the



2100 Plus

Combination Single Engine Dual Stage Sewer Cleaner with Hydrostatic Driven Vacuum System Mounted on a Heavy Duty Truck Chassis

for the

Truckee Sanitary District

## **PRODUCT DESCRIPTION**

· 2100 PLUS with Single Engine Dual Stage Fan, 10 Yard Debris Body, 1500 Gallons of Fresh Water

## **STANDARD FEATURES**

- 24" x 26" x 69" Curb Side Aluminum Toolbox
- Aluminum Fenders
- Mud Flaps
- Electric/Hydraulic Four Way Boom
- Color Coded Sealed Electrical System
- Remote Pendant Control w/35' Cord
- Vansco-Electronic Package
- Double Acting Dump Hoist Cylinder
- Handgun Assy. w/1/2" x 35' Hose w/Quick Disconnects
- 3" Y-Strainer at Water Pump Inlet
- Ex-Ten Steel Cylindrical Debris Tank
- Flexible Hose Guide
- 30 Deg. Sand Nozzle w/Carbide Inserts
- 30 Deg. Sanitary Nozzle w/Carbide Inserts
- 15 Deg. Penetrator Nozzle w/Carbide Inserts
- Nozzle Storage Rack
- Vacuum Tube Storage: Curbside (2) Pipe, Rear Door (2) Pipe
- 1" Nozzle
- 1" X 25' PARKER Leader Hose
- Flat Rear Door w/Hydraulic Locks and Door Power-up/Down, Open/Close Feature
- Dual 10" Stainless Steel Float Shut Off System/Rear Mounted
- Debris Body Vacuum Relief System
- Debris Deflector Plate
- 60" Dump Height
- Water Sight Gauge DS/PS
- Liquid Float Level Indicator
- Boom Transport Post Storage
- 3" Y-Strainer @ Water Pump w/3" Drain Valve
- Performance Package: (Hyd Variable Flow, Dual PTO's. Dual Hyd. Pumps)
- 1" Water Relief Valve for Vactor Water Pump
- Midship Handgun Coupling
- Side Mounted Water Pump
- Hose Wind Guide (Dual Roller)
- Hose Footage Counter - Mechanical
- Hose Reel Manual Hyd. Extend/Retract
- Hose Reel Chain Cover (Full)
- Tachometer/Chassis Engine W/Hourmeter
- Circuit Breakers
- LED Lights. Clearance, Back-Up, Stop, Tail & Turn
- Tow Hooks, Front and Rear
- Electronic Back-Up Alarm
- Hydraulic Tank Shutoff Valves
- 8" Vacuum Pipe Package
- Emergency Flare Kit
- Fire Extinguisher 5 Lbs.
- Water Pump Hour Meter
- PTO Hour Meter
- Vactor 2100 Plus Body Decal - Green
- Chassis Modifications
- Vactor Manual, Partial Manual and USB Version - 1 + Dealer

## **ADDITIONAL FEATURES**

- 3" Y-Strainer w/25' Fill Hose
- 180 Degree Rotation, 10 Ft. Hydraulic Telescoping Boom, Front Loading 8" Suction Hose
- Telescopic Boom Elbow, Hard Hat Style
- Boom out of Position Light/Alarm
- 80 GPM Variable Flow Water System
- 2500 PSI Water Pressure
- 1" x 600' PARKER Sewer Hose, 2500 PSI
- Hydraulic Extending/Rotating 15" Hose Reel (1" x 800') Capacity
- Module Paint, Dupont Imron Elite - Sanded Primer Base
- Debris Body Flush Out System
- Debris Body Load Limit Alarm functionally tied to Vacuum Relief
- 6" Butterfly Valve, Rear Door, 3:00 Position
- Folding Pipe Rack, Curbside
- Folding Pipe Rack, Streetside
- Rear Door Splash Shield
- Lube Manifold
- Plastic Lube Chart
- Low Water Light w/Alarm and Water Pump Flow Indicator
- Laval Water Separator at Fill
- Air Purge
- Front Joystick Boom Control
- Wireless Controls, including hose reel controls
- Rotatable Boom Inlet Hose, Telescoping Boom
- Cold Weather Recirculator, PTO Driven, 25 GPM
- Rodder System Accumulator- Jack Hammer on/off control w/ manual valve
- Hydro Excavation Kit/Retract Reel w/1/2" X 50' Hose and Nozzle, Mounted to Front Bumper
- Automatic Hose Level Wind Guide, Indexing
- Fan Flushout System
- Digital Hose Footage Counter
- Handgun Hose Reel w/Spring Retract
- Lateral Cleaning Kit w/200' Hose and Nozzle, 25 GPM/2000 PSI, Mounted on Curbside, Electric Retract Reel
- Hydraulic Tool Package
- Rodder Pump Drain Valves
- Hydraulic Oil Temp Alarm
- Rear Mounted Directional Control, Whelen Traffic Advisor, LED, One-Piece, 5' Long
- Strobe Light, LED, Cab Guard, Federal Signal, Amber
- Revolving LED Beacon, Rear Federal Signal SLR Series, Amber
- Rear Beacon Limb Guard
- DOT 3 Lighting Package, 6 Whelen Strobe Lights
- Rear Bumper Strobes, Two 5" Fed Sig Amber LED Strobes
- LED Mid-Ship Turn Signals
- Debris Body-Up Alarm
- Worklights (2), LED, Telescoping Boom
- Worklights (2), LED, Rear Door
- Four Flashing Light Assembly, Two Piece, (4) 7" Amber Lights
- Worklight, LED, Operators Station
- Worklight, LED, Hose Reel Manhole
- Worklight, LED, Curb Side
- Worklight, LED, Street Side
- Hose Reel Wrapped for Delivery
- Ziebart Corrosion Protection
- Toolbox, Front Bumper Mounted, 16 x 12 x 18 w/(2) LED Side Markers
- Toolbox, Behind Cab
- Toolbox, Driver Side Chassis Frame, 24w x 24h x 24d
- Toolbox, Driver Side Subframe, 60w x 20h x 12d
- (4) Long Handle Tool Storage Locations Behind Cab
- Camera System, Front, Rear and Both Sides
- Digital Water Pressure Gauge

- Door Stripe Material, Reflective Tape
- 3" debris body port on rear curbside at the 1 o'clock position with male camlock and gate valve. Reference Vactor Serial Number 99-04-6807 and 12-06V-13208
- Tape on Rear Door custom color to match the Green debris body decal.
- R27012 -- Dual Accumulator settings per customer request
- Vent Tool Boxes: Behind Cab, Curbside Nozzle Storage Box, Driver Side Sub frame Box
- Vactor Supplied Chassis, Tandem Axle, 2017 Freightliner 114SD, 370 HP, Auto, 66,000 GVWR, 2016 Emissions
- C-BRAKE BY JACOBS WITH LOW/OFF/HIGH BRAKING DASH SWITCH
- Vactor Spinner Hydro Excavation Nozzle
- In Service Training for operators and mechanics

Chassis Source - Vactor Supplied  
Module Paint Match Cab - Yes  
Module Paint Color - White  
Cab Color - White  
Door Stripe Color - Custom  
Chassis Axle - Tandem  
Certified Unit Weight Required - Yes

**Vactor List Price:** \$420,307.00

**Owen Equipment Sales Price:** \$399,568.00

**Sales Tax @ 8.375%:** \$ 33,463.82

**Total Price:** \$433,031.82

**FOB Truckee Sanitary District**

Price valid until 12/15/2016

THE PROPERTY HEREIN IS GUARANTEED BY MANUFACTURER'S WARRANTY ONLY AND SELLER MAKES NO WARRANTY EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR OTHERWISE, OR OF FITNESS FOR ANY PARTICULAR PURPOSE, THAT EXTENDS BEYOND THE ABOVE DESCRIPTION OF THE EQUIPMENT.

NOTE: Price is good for 90 Days. Cost increases due to the addition of Government mandated safety or environmental devices incurred after the date of this proposal, will be charged to you at our cost. Proof of such costs, if any, will be documented.

TAXES: SALES TAX applicable at time of delivery will be shown on our invoice. FEDERAL EXCISE TAXES, if applicable, will require payment unless a properly executed Exemption Certificate is submitted.

DELIVERY: 120-150 Days after order is submitted to Vactor

TERMS: Net 30 days

We are pleased to submit this proposal to you. We look forward to many more years of doing business with Truckee Sanitary District. Communication is the most important thing with any relationship so please feel free to call me anytime with questions, comments, or concerns. I love to hear how we are doing when it comes to servicing our customers.

Thank you for being a valued customer,

*Brian Enochian*

Brian Enochian, Owen Equipment  
1085 Horizon Dr | Fairfield, CA. 94533  
(916) 675-2105 – Cell | (707) 422-2333 – Office  
benochian@owenequipment.com

## LIMITED WARRANTY

Limited Warranty. Each machine manufactured by VACTOR/GUZZLER MANUFACTURING (or, "the Company") is warranted against defects in material and workmanship for a period of 12 months, provided the machine is used in a normal and reasonable manner and in accordance with all operating instructions. In addition, certain machines and components of certain machines have extended warranties as set forth below. If sold to an end user, the applicable warranty period commences from the date of delivery to the end user. If used for rental purposes, the applicable warranty period commences from the date the machine is first made available for rental by the Company or its representative. This limited warranty may be enforced by any subsequent transferee during the warranty period. This limited warranty is the sole and exclusive warranty given by the Company.

### STANDARD EXTENDED WARRANTIES (Total Warranty Duration)

#### 2100 Series, HXX, Series and Jetters

10 years against metal water tank leakage due to corrosion. Nonmetallic water tanks are covered for 5 yrs against any factory defect in material or workmanship.

#### 2100 Series and HXX only

5 years against leakage of debris tank, centrifugal compressor or housing due to rust-through.

#### 2100 Series and Jetters

2 years - Vactor Rodder pump on all unit serial numbers starting with 13##V#####.

Exclusive Remedy. Should any warranted product fail during the warranty period, the Company will cause to be repaired or replaced, as the Company may elect, any part or parts of such machine that the Company's examination discloses to be defective in material or factory workmanship. Repairs or replacements are to be made at the selling Vactor/Guzzler distributor's location or at other locations approved by the Company. In lieu of repair or replacement, the Company may elect, at its sole discretion, to refund the purchase price of any product deemed defective. The foregoing remedies shall be the sole and exclusive remedies of any party making a valid warranty claim.

This Limited Warranty shall not apply to (and the Company shall not be responsible for):

1. Major components or trade accessories that have a separate warranty from their original manufacturer, such as, but not limited to, trucks, engines, hydraulic pumps and motors, tires and batteries.
2. Normal adjustments and maintenance services.
3. Normal wear parts such as, but not limited to, oils, fluids, vacuum hose, light bulbs, fuses, gaskets.
4. Failures resulting from the machine being operated in a manner or for a purpose not recommended by the Company.
5. Repairs, modifications or alterations without the express written consent of the Company, which in the Company's sole judgment, have adversely affected the machine's stability, operation or reliability as originally designed and manufactured.
6. Items subject to misuse, negligence, accident or improper maintenance.

\*NOTE\* The use in the product of any part other than parts approved by the Company may invalidate this warranty. The Company reserves the right to determine, in its sole discretion, if the use of non-approved parts operates to invalidate the warranty. Nothing contained in this warranty shall make the Company liable for loss, injury, or damage of any kind to any person or entity resulting from any defect or failure in the machine.

THIS WARRANTY SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE DISCLAIMED.

This warranty is in lieu of all other obligations or liabilities, contractual and otherwise, on the part of the Company. For the avoidance of doubt, the Company shall not be liable for any indirect, special, incidental or consequential damages, including, but not limited to, loss of use or lost profits. The Company makes no representation that the machine has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the machine. No person or affiliated company representative is authorized to alter the terms of this warranty, to give any other warranties or to assume any other liability on behalf of the Company in connection with the sale, servicing or repair of any machine manufactured by the Company. Any legal action based hereon must be commenced within eighteen (18) months of the event or facts giving rise to such action.

The Company reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.



VACTOR/GUZZLER MANUFACTURING

1621 S. Illinois Street

Streator, Il 61364

**PURCHASE ORDER**

**18768**

**Tahoe City Public Utility District**

221 Fairway Drive (P.O. Box 5249)  
 Tahoe City, California 96145  
 (530) 583-3796 FAX: (530) 583-1475

Show this purchase order number  
 on all correspondence, invoices,  
 shipping papers and packing

To: National Auto Fleet Group  
 490 Auto Center Drive  
 Watsonville, CA 95076  
 (855)289-6572

<b>Date of Order:</b>	12/20/2019
<b>Ship to:</b>	
	221 Fairway Drive (P.O. Box 5249)
	Tahoe City, Ca 95641

Order Placed by: Tony Laliotis Department: Utilities

	Qty Ordered	Qty Received	Stock Number/Description	Unit Price	Total
1	1		New 2020/Unsued Ford Super Duty F-550 DRW (X5H) 4x4 Super Cab 192" WB, 84" CA with options as quoted on NAFG Quote ID 21565 R2	\$ 56,481.36	\$ 56,481.36
2					
3	1		Knapheide Service Body per Knapheide Quote JM00000417-2	\$ 82,954.00	\$ 82,954.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14			<b>Sourcewell Member # 76438</b>		
15			<b>Sourcewell Contract Number 120716-NAF</b>		

Contractor's License #: \_\_\_\_\_  
 Business License #: \_\_\_\_\_  
 Supplemental Contract Attach Yes \_\_\_\_\_

Invoice	Date	For District Use Only		
			Sub-totals	\$ 139,435.36
			Tax:	\$ 10,109.06
			Shipping	\$ -
			Tire Fee	\$ 10.50
			Totals	\$ 149,554.92

 12/20/19  
 Authorized Signature Date

For Internal Use Only: (Enter GL Distribution Below)	
GL# _____	AMOUNT: \$ _____
GL# _____	AMOUNT: \$ _____
GL# _____	AMOUNT: \$ _____



# National Auto Fleet Group

A Division of Chevrolet of Watsonville

490 Auto Center Drive, Watsonville, CA 95076  
(855) 289-6572 • (855) BUY-NJPA • (831) 480-8497 Fax  
Fleet@NationalAutoFleetGroup.com

12/02/19

Quote ID: 21565 R2

Mr. Tony Laliotis  
Tahoe City Public Utility District  
PO Box 5249  
Tahoe City, California, 96145

Dear Mr. Laliotis,

National Auto Fleet Group is pleased to quote the following vehicles(s) for your consideration.  
**One (1) New/Unused (2020 Ford Super Duty F-550 DRW (X5H) XL 4WD SuperCab 192" 84" CA with Knapheide Installed Upfit Per Quote ID JM00000417-2) delivered to your department yard, each for**

	(1) Unit One
Contract Price	\$ 56,481.36
Knapheide Service Body	\$ 82,954.00
Sales Tax (7.25%)	\$ 10,109.06
Tire Fee	\$ 10.50
<b>Total</b>	<b>\$ 149,554.92</b>

-per your attached specifications: Price includes 2 additional keys

-Total above does not include E-track option (\$550.00)

This vehicles(s) is available under the Sourcewell (Formerly known as NJPA) 120716-NAF. Please reference this Contract Number on all Purchase Orders to National Auto Fleet Group. Payment terms are Net 20 days after receipt of vehicle. Thank you in advance for your consideration. Should you have any questions, please do not hesitate to call.

Sincerely,  
Jesse Cooper  
National Fleet Manager  
Office (855) 289-6572  
Fax (831) 480-8497



**In order to Finalize your Quote, please submit this purchase packet to your governing body for Purchase Order Approval. Once you issue a Purchase Order please send by:**

**Fax: (831) 480-8497**

**Mail: National Auto Fleet Group  
490 Auto Center Drive  
Watsonville, CA 95076**

**Email: [Fleet@nationalautofleetgroup.com](mailto:Fleet@nationalautofleetgroup.com)**

**We will then send a W-9 if you need one**

**Please contact our main office with any questions:  
1-855-289-6572**



Knapheide Truck Eq Co - CA  
 405 Gandy Dancer Rd  
 Tracy CA 95377  
 Phone: 209-855-8400  
 Fax: 209-835-2128  
 www.tracy.knapheide.com

**QUOTATION**

Quote ID: JM00000417-2

Page 1 of 3

Account: 297  
 Customer: TAHOE CITY PUBLIC UTILIT DIST  
 P.O. BOX 5249  
 TAHOE CITY CA 96145

Quote Number: JM00000417-2  
 Quote Date: 11/7/2019  
 Quote valid until: 12/7/2019  
 Payment Terms: N30

Contact:  
 Phone: 530-580-6053  
 Fax:

Salesperson: HUNTER CARNEVALE  
 Quoted By: hcarnevale  
 PO#:

Make: FORD	Model: F-550	Year: 2020	Single/Dual: DRW
Cab Type: EXTENDED	VIN#: CUSTOMER SUPPLY CHASSIS	Cab-to-Axle: 84.0	Wheelbase: 193.0

QTY	DESCRIPTION	AMOUNT
1	<p>KMS16 L4831-19            Knapheide 6132D54-16:</p> <p><b>BODY:</b></p> <ul style="list-style-type: none"> <li>* 11 ft service body with torsion box understructure</li> <li>* Body shell constructed of 14 gauge two-sided A40 Galvanneal steel</li> <li>* 12 gauge treadplate floor, cargo walls, and compartment tops with return flange on each side</li> <li>* 20 gauge two-sided A40 Galvanneal steel; double paneled doors with stainless steel rivetless slam latches</li> <li>* Exclusive 12 stage E-coat protection</li> <li>* The body is completely undercoated using a water base acrylic</li> <li>* Cab protector with punched window</li> <li>* LED work lights installed. (2) Recessed in corners of cab protector, (1) on boom support, (1) mounted to middle of rack facing out, and (2) mounted to rear end panel</li> <li>* LED compartment lights installed except for bottle gas compartment.</li> <li>* Master locking system with (2) codeable padlocks.</li> <li>* Full length street side compartment flip top</li> <li>* Tailshelf on each side of tailgate</li> <li>* Class V receiver hitch with 2.5" tube and reducer sleeve, 7-way flat trailer plug, and vise socket</li> <li>* (2) Grip-Strut flex steps, (1) each side of rear tailshelf</li> <li>* (6) Cargo tie-downs installed cargo area</li> <li>* Crank down jackleg outrigger curbside of rear bumper</li> <li>* Backup Alarm: 97 dB audible alarm</li> <li>* Flush Mount LED S/T/T &amp; Backup lights w/ integrated strobes, marker, clearance, and RID lights</li> <li>* OEM backup camera installed</li> <li>* Body interior/exterior painted single stage to match cab</li> </ul> <p><b>RACK:</b></p> <ul style="list-style-type: none"> <li>* Side mounted ladder rack installed on streetside integrated in bulkhead (per customer provided photos)</li> <li>* (2) Ratchet Straps installed to rack facing out, (1) front, (1) rear</li> <li>* Amber Beacon mounted to front of rack near bulkhead</li> </ul>	



Knapheide Truck Eq Co - CA  
 405 Gandy Dancer Rd  
 Tracy CA 95377  
 Phone: 209-855-8400  
 Fax: 209-835-2128  
 www.tracy.knapheide.com

**QUOTATION**

Quote ID: JM00000417-2

Page 2 of 3

QTY	DESCRIPTION		AMOUNT
	<p><b>LIFTGATE:</b>            * Tommy gate 1,300lb capacity G2-60SB-1342 EA27 with dock bumper for liftgate and LED lights G2 T57L</p> <p><b>CARGO:</b>            * Knap Liner: Commercial grade spray-on bed liner applied to cargo floor, sides, encapsulated bulkhead, top of curbside compartments including raised compartment, and front end panels</p> <p><b>SIDE COMPARTMENTS:</b>            * 40" H x 20" D side packs with slam latch doors</p> <p><b>1ST VERTICAL SIDE COMPARTMENT:</b>            * Streetside: 7 drawer unit – 4-3" high drawers, 2-5" high drawers, and 1-7" high drawer            * Curbside: Raised 60" compartment with gas bottle retainer (2 bottles), and vented at top &amp; bottom</p> <p><b>2ND VERTICAL SIDE COMPARTMENT:</b>            * Streetside: Sortimo compartment organizer            * Curbside: 2 adjustable divider shelves with 4 dividers each</p> <p><b>1ST HORIZONTAL SIDE COMPARTMENT:</b>            * Streetside &amp; Curbside: 250# pull-out shelf</p> <p><b>3RD VERTICAL SIDE COMPARTMENT:</b>            * Streetside: Adjustable divider shelf with 4 dividers            * Curbside: Fixed shelf</p> <p><b>CRANE:</b>            Stellar 4421 Crane:            * 16,000 ft-lbs, has 4,000lbs capacity, 21' hydraulic reach, planetary winch            * 25'/min speed and double-acting cylinders w/integral holding valves. Filters, crane hook, snatch block, anti-two block device &amp; hydraulic shutdown, 5/16" cable            * Boom support            * Wireless remote control (RF) with back up pendant control            * Control panel            * PTO, hydraulic pump for crane, and hydraulic reservoir with guard</p> <p><b>TOOL CIRCUIT:</b>            * Hydraulic tool circuit 8 GPM @ 2,000 PSI and hydraulic twin hose reel 50' x 1/2" installed right rear compartment</p> <p><b>POWER SYSTEM:</b>            * Miller A30 EnPak Cold Weather power unit with 19HP Kubota diesel engine equipped with 30 CFM rotary screw compressor, and 6,500 watt generator            * Enpak installed in cargo area by bulkhead and tied into chassis fuel system with tap            * Slide in Guard to protect Enpak System            * Reelcraft 50' x 1/2" hose reel and roller fairlead through the left rear compartment            * FLR system included            * Enpak A30 Control panel and 120/240 outlets installed in R2V interior wall on bracket</p>		
		Total Due (sales tax not included):	\$82,229.00

The following options may be added:



**Knapheide Truck Eq Co - CA**  
 405 Gandy Dancer Rd  
 Tracy CA 95377  
 Phone: 209-855-8400  
 Fax: 209-835-2128  
 www.tracy.knapheide.com

**QUOTATION**

Quote ID: JM00000417-2

Page 3 of 3

QTY	DESCRIPTION	PRICE EACH	AMOUNT	ADD TO QUOTE
1	E-track installed on cargo walls each side	\$550.00	\$550.00	Yes / No
1	Knapheide to PDI unit and Deliver to Tahoe City, CA	\$725.00	\$725.00	Yes / No

**Notes:**

This Quote is subject to the following terms and conditions:

**Credit Card Policy**

We do not accept credit cards for payment of any order in excess of \$3,000.00. For other orders, we do accept MasterCard, American Express, Visa and Discover cards for payment.

**Pricing Policy**

- Price Quotation is good on orders received through the expiration date
- Pricing quoted applies to chassis make/model originally provided and quantity quoted. Any change may result in price change.
- Orders are subject to all applicable state, local and federal excise taxes. Applicable taxes will be applied on final billing to customer upon completion of order.

**Payment Policy**

- Payment Terms are due upon receipt of signed quote unless prior credit agreement has been established at the time of order.
- Payment terms for customers with an established credit account will be Net 30 from date of invoice.
- Knapheide has right to assess late charges at 1.5% per month on all invoices that are 60 days or more past due.

**Return Policy**

- All sales are final. Purchased parts or products are non returnable.

**Cancellation Policy**

- Payment is due in full upon cancellation of any orders for non-stocked parts or products (provided part/product has been ordered by Knapheide) and upon cancellation of installation orders, once product installation has begun.

Customer agrees and understands this Quote is an offer to sell subject to the terms and conditions above and any additional terms or modifications are hereby objected to, unless mutually agreed upon in writing by Customer and Knapheide. The undersigned represents and warrants that he/she is duly authorized to sign below on behalf of Customer and thereby accepts offer and Knapheide will begin processing the order.

Customer must fill out the information below before the order can be processed...

Signature & Printed Accepted by:	
Date:	
P.O. number:	

# 2020 Fleet/Non-Retail Ford Super Duty F-550 DRW XL 4WD SuperCab 192" WB 84" CA

## WINDOW STICKER

2020 Ford Super Duty F-550 DRW XL 4WD SuperCab 192" WB 84" CA

CODE	MODEL	MSRP
X5H	2020 Ford Super Duty F-550 DRW XL 4WD SuperCab 192" WB 84" CA	\$46,330.00
<b>OPTIONS</b>		
99T	ENGINE: 6.7L 4V OHV POWER STROKE V8 TURBO DIESEL B20, -inc: Diesel Exhaust Fluid (DEF) tank, intelligent oil-life monitor and manual push-button engine-exhaust braking, 240 Amp Alternator, 4.10 Axle Ratio, Dual 78-AH 750 CCA Batteries	\$9,325.00
44G	TRANSMISSION: TORQSHIFT 10-SPEED AUTOMATIC, -inc: selectable drive modes: normal, tow/haul, eco and deep sand/snow (STD)	\$0.00
TGK	TIRES: 225/70RX19.5G BSW TRACTION (TGK), -inc: 4 traction tires on the rear and 2 traction tires on the front, Not recommended for over the road applications; could incur irregular front tire wear and/or NVH, Optional spare is 225/70Rx19.5G BSW traction	\$215.00
Z1	OXFORD WHITE	\$0.00
—	STANDARD PAINT	\$0.00
AS	MEDIUM EARTH GRAY, HD VINYL 40/20/40 SPLIT BENCH SEAT, -inc: center armrest, cupholder, storage and driver's side manual lumbar	\$0.00
X8L	LIMITED SLIP W/4.88 AXLE RATIO	\$360.00
90L	POWER EQUIPMENT GROUP, -inc: Deletes passenger side lock cylinder, upgraded door-trim panel, Accessory Delay, Advanced Security Pack, SecuriLock Passive Anti-Theft System (PATS) and inclination/intrusion sensors, MyKey, owner controls feature, Power Locks, Remote Keyless Entry, Trailer Tow Mirrors w/Power Heated Glass, manual telescoping, heated convex spotter mirror and integrated clearance lamps/turn signals, Power Front & Rear Side Windows, 1-touch up/down driver/passenger window	\$915.00
17F	XL DECOR GROUP, -inc: Chrome Front Bumper	\$220.00
62R	TRANSMISSION POWER TAKE-OFF PROVISION, -inc: transmission mounted live drive and stationary mode PTO	\$0.00
41H	ENGINE BLOCK HEATER	\$100.00
67B	397 AMP ALTERNATORS	INC
52B	TRAILER BRAKE CONTROLLER, -inc: smart trailer tow connector, Verified to be compatible w/electronic actuated drum brakes only	\$270.00
535	HIGH CAPACITY TRAILER TOW PACKAGE, -inc: Trailer brake controller not included, Increases GCW from 32,500 lbs, to 40,000 lbs, axle ratios and model availability, See Supplemental Reference for vehicle height consideration	\$580.00
41P	TRANSFER CASE SKID PLATES	\$100.00
68M	GVWR: 19,500 LB PAYLOAD PLUS UPGRADE PACKAGE, -inc: upgraded frame, rear-axle and low deflection/high capacity springs, Increases max RGAWR to 14, 706, Note: See Order Guide Supplemental Reference for further details on GVWR	\$1,155.00
18B	PLATFORM RUNNING BOARDS	\$445.00
595	FOG LAMPS	\$130.00
41A	RAPID-HEAT SUPPLEMENTAL CAB HEATER, -inc: 397 Amp Alternators	\$250.00
872	REAR VIEW CAMERA & PREP KIT, -inc: loose camera and wiring bundle	\$415.00

18A	UPFITTER INTERFACE MODULE	\$295.00
43C	110V/400W OUTLET, -inc: 1 in-dash mounted outlet	\$175.00
660A	ORDER CODE 660A	\$0.00

Please note selected options override standard equipment

<b>SUBTOTAL</b>	<b>\$61,280.00</b>
Advert/ Adjustments	\$0.00
Manufacturer Destination Charge	\$1,595.00
<b>TOTAL PRICE</b>	<b>\$62,875.00</b>

Est City: N/A MPG  
Est Highway: N/A MPG  
Est Highway Cruising Range: N/A mi

Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

## Vehicle Configuration Options

ENGINE	
Code	Description
99T	ENGINE: 6.7L 4V OHV POWER STROKE V8 TURBO DIESEL B20, -inc: Diesel Exhaust Fluid (DEF) tank, intelligent oil-life monitor and manual push-button engine-exhaust braking, 240 Amp Alternator, 4.10 Axle Ratio, Dual 78-AH 750 CCA Batteries
TRANSMISSION	
Code	Description
44G	TRANSMISSION: TORQSHIFT 10-SPEED AUTOMATIC, -inc: selectable drive modes: normal, tow/haul, eco and deep sand/snow (STD)
TIRES	
Code	Description
TGK	TIRES: 225/70RX19.5G BSW TRACTION (TGK), -inc: 4 traction tires on the rear and 2 traction tires on the front, Not recommended for over the road applications; could incur irregular front tire wear and/or NVH, Optional spare is 225/70Rx19.5G BSW traction
PRIMARY PAINT	
Code	Description
Z1	OXFORD WHITE
PAINT SCHEME	
Code	Description
___	STANDARD PAINT
SEAT TYPE	
Code	Description
AS	MEDIUM EARTH GRAY, HD VINYL 40/20/40 SPLIT BENCH SEAT, -inc: center armrest, cupholder, storage and driver's side manual lumbar
AXLE RATIO	
Code	Description
X8L	LIMITED SLIP W/4.88 AXLE RATIO
ADDITIONAL EQUIPMENT	
Code	Description
90L	POWER EQUIPMENT GROUP, -inc: Deletes passenger side lock cylinder, upgraded door-trim panel, Accessory Delay, Advanced Security Pack, SecuriLock Passive Anti-Theft System (PATS) and inclination/intrusion sensors, MyKey, owner controls feature, Power Locks, Remote Keyless Entry, Trailer Tow Mirrors w/Power Heated Glass, manual telescoping, heated convex spotter mirror and integrated clearance lamps/turn signals, Power Front & Rear Side Windows, 1-touch up/down driver/passenger window

17F	XL DECOR GROUP, -inc: Chrome Front Bumper
62R	TRANSMISSION POWER TAKE-OFF PROVISION, -inc: transmission mounted live drive and stationary mode PTO
41H	ENGINE BLOCK HEATER
67B	397 AMP ALTERNATORS
52B	TRAILER BRAKE CONTROLLER, -inc: smart trailer tow connector, Verified to be compatible w/electronic actuated drum brakes only
535	HIGH CAPACITY TRAILER TOW PACKAGE, -inc: Trailer brake controller not included, Increases GCW from 32,500 lbs, to 40,000 lbs, axle ratios and model availability, See Supplemental Reference for vehicle height consideration
41P	TRANSFER CASE SKID PLATES
68M	GVWR: 19,500 LB PAYLOAD PLUS UPGRADE PACKAGE, -inc: upgraded frame, rear-axle and low deflection/high capacity springs, Increases max RGAWR to 14, 706, Note: See Order Guide Supplemental Reference for further details on GVWR
18B	PLATFORM RUNNING BOARDS
595	FOG LAMPS
41A	RAPID-HEAT SUPPLEMENTAL CAB HEATER, -inc: 397 Amp Alternators
872	REAR VIEW CAMERA & PREP KIT, -inc: loose camera and wiring bundle
18A	UPFITTER INTERFACE MODULE
43C	110V/400W OUTLET, -inc: 1 in-dash mounted outlet
<b>OPTION PACKAGE</b>	
<b>Code</b>	<b>Description</b>
660A	ORDER CODE 660A



**CONTRACT DOCUMENTS AND  
SPECIFICATIONS FOR  
HEAVY DUTY SERVICE TRUCK**

**BID OPENING – Wednesday, August 24, 2022 at 3:00 pm**

**Contact person: Regina Cooley, 530-582-3913**

**Truckee Donner Public Utility District  
11570 Donner Pass Road, Truckee, CA 96161**

## **Table of Contents**

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**TRUCKEE DONNER PUBLIC UTILITY DISTRICT  
11570 DONNER PASS ROAD  
TRUCKEE, CALIFORNIA 96161**

**1. NOTICE AND INSTRUCTIONS TO BIDDERS**

Notice is hereby given that the Board of Directors of the Truckee Donner Public Utility District, Nevada County, California, herein referred to as "Owner," will receive sealed proposals at the District office, 11570 Donner Pass Road, Truckee, California 96161 until 3:00 pm, Wednesday, August 24, 2022 at which time they shall be opened and publicly read for provision of:

**Heavy Duty 1 Ton Service Truck**

Each bid must conform to the requirements of the specifications, copy attached.

No bid will be considered unless it is made on the form provided.

The Truckee Donner Public Utility District specifically reserves the right to accept or reject, any and all bids, or may accept or reject part of a bid, or waive irregularities or informalities in any or all bids, and be the sole judge of the suitability of the items offered, preference being given to the lowest responsible bidder.

**2. WARNING TO BIDDERS**

No bids will be accepted unless enclosed in a sealed envelope when bid is submitted. The successful bidder will be required to enter into the contract attached to the proposal for the items covered by the award.

**3. MANNER OF SUBMITTING BIDS**

Prior to submitting bids make sure that:

- a. Each schedule's inquiry/bid sheet is complete and totals are correct.
- b. The proposal is completed and signed.
- c. Non-Collusion Declaration, filled out, is attached to the bid package.
- d. The Bidder has acknowledged the receipt of any Addenda.

When submitting a bid, place the complete bid document in an opaque sealed envelope and either mail to or hand deliver the bid to:

Truckee Donner PUD  
Contract Administrator  
Heavy Duty 1 Ton Service Truck Bid  
11570 Donner Pass Road,  
Truckee, CA 96161

#### **4. EXAMINATION OF CONDITIONS**

Filing of a bid shall constitute affirmation by the bidder that he or she has complied with the following:

- a. Carefully examined the contract documents.
- b. Included in the proposal sum amounts sufficient to cover all items required by the contract documents.

The failure or omission of any bidder to receive or examine any form, instrument, addendum, or other documents shall in no way relieve any bidder from any obligation with respect to his proposal of the contract.

#### **5. DISTRICT'S RIGHT TO REJECT BIDS**

The District reserves the unqualified right in its sole and absolute discretion to reject any and all bids, and to accept the bid or bids which in its sole and absolute judgment, will, under all circumstances best serve the interest of the District.

Each bid shall be deemed a firm offer continuing for thirty (30) days after the date set for the opening of the bids.

#### **6. CONTRACT**

The contract includes all advertisements for bids, notice and instructions to bidders, form of proposal, agreement and specifications.

The contract, when executed, shall be deemed to include the entire agreement between the parties thereto, and the successful bidder shall not claim any modification thereof resulting from any representation or promise made at any time by any officer, agent or employee of the District or by any other person.

#### **7. PROPOSAL MODIFICATIONS**

Proposals may be modified up until the time of bid opening. Modifications must be in writing. No electronic or telephone modifications will be allowed.

#### **8. PROPOSAL WITHDRAWAL**

Proposal may be withdrawn any time prior to the time set for bid opening. Once proposals are opened, they may not be withdrawn until expiration of the proposal. All proposals shall be firm for not less than sixty (60) days.

#### **9. POSTPONEMENT OF OPENING**

The District reserves the right to postpone the time and date of bid opening as the District deems necessary. Such postponement will be conveyed to all bidders by written or electronic notice, which will state the new opening time and date.

#### **10. INTERPRETATIONS OR CORRECTION OF CONTRACT**

The bidder shall promptly notify the District of any ambiguity, inconsistency, or error which they may discover in the contract or, if applicable, the site or local conditions.

If the bidder requires clarification or interpretation of the contract, they shall make a written request to reach the District seven days prior to the scheduled bid opening.

Any interpretations, corrections, or changes to the contract prior to the bid opening shall be made by addenda issued to all bidders. Each bidder shall acknowledge receipt of each addendum by signing in the space provided and attaching each addendum to the bidder's proposal.

Interpretations, corrections, or changes of the contract prior to bid opening made in any other manner than as described above will not be binding and bidders shall not rely upon such interpretations, corrections and changes.

## **11. BID AMOUNT**

In the event that the product of a unit price and a quantity does not equal the extended amount quoted, the unit price shall govern and the correct product of the unit price and the quantity shall be deemed to be the amount bid. If the sum of two or more items in a bidding schedule does not equal the total amount quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid.

## **12. SOURCE OF FUNDS AND LIMITATION OF DAMAGES**

Bidder is hereby informed that funds for these materials are limited and are public funds derived through revenues appropriated through the budgetary process. The District's decision to award a contract to the successful bidder is dependent upon the bidder's agreement to limit all claims for payments by the District to the unit prices or lump sum bids proposed herein. Further, in the event the bidder is awarded the contract for the material stated herein and a dispute arises between the bidder and the District regarding unreasonable delays, claims for extra compensation, or any of the provisions of the contract, the bidder agrees to limit the total of all claims against the District for this contract, including any damages, to the total funds appropriated by the District for this contract.

## **13. DAMAGES FOR FAILURE TO DELIVER MATERIAL IN TIMELY MANNER**

In addition to and separate from any other remedy for a breach provided for in these documents, District shall, in the event material is not delivered to District by the date specified on the proposal form, be entitled to purchase materials of like kind and quality. Successful bidder shall pay the costs and all incidental expenses therefore. In the event that District avails itself of the remedy provided for in this paragraph, it may, at its option, deduct the costs of purchasing substitute material or recover from successful bidder the cost of the substitute materials and incidental expenses. In the event that District brings an action to enforce the terms of this paragraph, it shall be entitled to an award of its attorneys' fees and costs.

## **14. SPECIAL PROVISIONS**

### **A. Pre-delivery service:**

The following pre-delivery service will be performed prior to acceptance of the unit:

- 1) Engine will be filled to proper oil level.
- 2) Transmission will be checked and filled to proper oil level.
- 3) Cooling system will be checked and filled to proper level and will contain anti-freeze to -40 degrees Fahrenheit.

- 4) All Tires will be balanced.
- 5) Front end will be properly aligned.
- 6) Headlights will be properly adjusted.
- 7) All other necessary fluids will be checked and filled to proper levels.

#### **B. Delivery**

Time required for delivery may be a determining factor in award of this bid. Vehicles will be delivered to the TDPUD, 11570 Donner Pass Road, Truckee, California.

#### **C. Substitutions**

All parts of the vehicles must comply with the specifications for that part. Where the specifications allow for "approved equals," the bidder may include in the bid parts from another manufacturer that equal or exceed the specific part mentioned in these specifications. **However, the bidder must provide a list with his bid that itemizes all those parts he is including as an equal.** In addition, the bidder must submit three copies of manufacturer's information detailing each part or item that is included as an equal. The information must describe the part in sufficient detail to demonstrate that the part does indeed equal or exceed in every respect the part or item specified. The District will be the sole judge of the suitability of the parts or items offered as equals. Bids containing parts or items that are inferior to those specified will not be accepted.

#### **D. Post-delivery inspection**

If the vehicle is delivered minus any part, item or accessory issued as standard manufacturer's equipment and/or as specified by the TDPUD, the successful bidder will be notified immediately. If the missing part, item or accessory cannot be provided and installed within 72 hours, TDPUD reserves the right to buy the item or part from another source and bill the successful bidder for the cost, including installation.

#### **E. Warranty**

The vehicle and all related equipment shall be covered by the manufacturer's standard warranties for a minimum of 36 months or 36000 miles, whichever occurs first. Copies of warranties must be furnished with bid.

If all or any part of this equipment should prove defective in workmanship or materials, the bidder shall replace or repair the part or defect without cost to the TDPUD.

The bidder is the prime contractor and is responsible to provide a complete and totally integrated finished product that satisfies these specifications in every respect.

#### **F. Diagnostic**

Diagnostic Software and Hardware of Current Version will be supplied at time of delivery. One set of paper or digital repair manuals shall be provided for vehicle and all appurtenances and two sets of crane operator's manuals shall be provided.

## **G. Special notes**

- No vehicle will be accepted with a noise decibel reading (includes all standard and add-on accessories) higher than 87 DBA with the exception of back-up alarm.
- Tires must be M & S (mud and snow) rated.
- Four (4) sets of factory keys shall be included for all ignition, door, compartments, etc. at the time of delivery.

### **Fleet Information**

The District OEM Fleet ID numbers are as follows:

- GM Fleet # 000914231
- Ford Fleet # UI 060

By signing the Proposal on Page 11, Bidder warrants the following:

**NONCOLLUSION DECLARATION  
TO BE EXECUTED BY  
BIDDER AND SUBMITTED WITH BID**

The undersigned declares: I am the \_\_\_\_\_ of \_\_\_\_\_,  
the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose. Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on \_\_\_\_\_ [date], at \_\_\_\_\_ [city], \_\_\_\_\_ [state].

# BID SCHEDULE

Description	Unit Cost (FOB Truckee) Tax Not Included
Heavy Duty 1-Ton Service Truck	

**Total** \_\_\_\_\_

## DELIVERY DATE

If the bid is awarded to me, I will deliver the equipment within \_\_\_\_\_ calendar days after receiving formal notice of the award of the bid.

In compliance with your Notice to Bidders, and subject to all the conditions thereof, the undersigned offers and agrees, if this proposal be accepted within 60 calendar days from the date of the opening, to furnish the fuel services upon which prices are quoted, at the price set opposite each item.

Date: \_\_\_\_\_

Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature of person authorized to sign this proposal)

Title: \_\_\_\_\_

Email Address: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

I acknowledge receipt of the following addenda:

No. 1:	_____ signed	_____ dated
No. 2:	_____ signed	_____ dated
No. 3:	_____ signed	_____ dated
No. 4:	_____ signed	_____ dated

# TECHNICAL SPECIFICATIONS

## 1 Ton Service Truck

### GENERAL SPECIFICATIONS

The following specifications are not to be considered as restrictive; however the specifications are based on desired performance levels with features deemed necessary to accomplish specific functions. The bidder shall complete every space in the Bidders Response column by check mark (X) under **Yes** and **No** to indicate item being bid is exactly as specified. All **No** and all deviations whatsoever must be fully explained or it will be assumed that the features and performance are as specified without exception. Failure to deliver unit as proposed will result in rejection of the unit and/or nonpayment.

### Bidders Response

Cab & Chassis	Bidders Response		
Description	Yes	No	Deviations
One Double Cab, 3500 4x4 Service Body Truck			
Wheatland Yellow/School Bus Yellow			
6.6 liter Turbo Diesel V8			
10-speed Allison 1000 Automatic Transmission			
California Emission Compliant			
14000 GVWR Dual Rear Wheel			
Four wheel drive			
Manual shift transfer case floor mounted			
220 amp alternator			
Limited slip rear differential			
3.42 Gear ratio			
Four wheel antilock disc brakes			
Cab & Chassis	Bidders Response		
Description	Yes	No	Deviations
External engine oil cooler			
External transmission oil cooler			
Frame mounted front recovery hooks			

Air conditioning			
Power steering			
Tilt wheel			
Interior color - Grey Interior split bench seat			
Solar tinted windows			
Up-fitter switch panel			
Snow Plow Prep Package			
Integrated 120V inverter			
Full size spare tire and wheel			
Standard AM-FM radio with speakers			
Bluetooth Communication System			
Back up camera with alarm			
Daytime running lamps			
All terrain M+S tires			
Trailer towing package bumper pull			
Integrated electric brake controller			
Receiver tube for trailer hitch Class V			
Dual trailer electric connections 4 way flat and 7 way round pin			
Telescoping trailer tow mirrors			
Cargo box LED light			

Service Body Specifications	Bidders Response		
	Yes	No	Deviations
<b>Description</b>			
Service body will be of heavy-duty construction and will incorporate undercoating technology to resist rust for at least six years. Bed design will be a Knapheide 696D54F40 or equivalent. All compartments are to be watertight.			
Overall length to be 96"			
Overall width to be 94"			

Overall height to be 41.25"			
Compartment depth to be 20"			
Pipe Vise Bracket & Pipe Support (Curb side)			
Expanded metal headache rack with 6 inch ears on outer top corners to hold longer material in place.			
Front compartments to have heavy duty latching mechanic type tool boxes.			
Rear compartments to have adjustable shelves and dividers.			
Horizontal compartments with divided pull out shelf, center in height on both sides.			
Headache rack with keepers on top edges for hauling long material over cab.			
Go light remote spot light attached to top corner passenger side of headache rack.			
Rear bumper tread plate with recess to accommodate a 2" x 2" receiver.			
Rock guards on the front corners of the bed body – aluminum.			
Tail lights – LED recessed in body, markers to be affixed on front & rear sides.			
Fuel filler recessed and reinforced into the bed wall and will allow for easy filling with fuel at commercial pumps. No exceptions.			
Interior led lighting on all compartments.			
6 Way amber strobe lights to be connected to upfitter switches, Grill, rear edge of hood, and rear of body all LED lighting.			
Compartment door latches shall be steel slam type latch with Master Locking System.			
Trailer connections will have a seven-way round pin type trailer connector and be mounted near the receiver.			
Cargo tie-downs - Six recessed "D" rings mounted in bed for cargo tie down 2 front, 2 rear, 2 middle.			
Hitch - Two "D" rings will be mounted near the receiver Class v super duty hitch.			
Paint color shall match cab, "Wheatland Yellow". Paint to be guaranteed for a minimum of 5 years against rusting, peeling or Lifting.			
1 Western Pro Plus Straight Blade Snowplow with the Ultra Mount 2 mounting system installed on Trucks.			
1 Yamaha EF5500DE Generator mounted and hard wired drivers side on top of service body.			

## **AGREEMENT**

This Agreement is entered into as of the \_\_\_\_\_, by and between the Truckee Donner Public Utility District, a local public agency of the State of California (the "District" and/or "Owner") and \_\_\_\_\_ ("Successful Bidder"). The parties hereto agree as follows:

### **1. DESCRIPTION OF WORK**

Successful Bidder agrees, for the consideration and under the terms and conditions hereinafter set forth, to furnish the materials which are described on the Notice and Instructions to Bidders, Specifications and Agreement, all of which are attached hereto and incorporated herein by reference.

### **2. CONTRACT PRICE**

The District shall pay Successful Bidder the price set forth in the bid, hereinafter called "Contract Price."

### **3. INDEMNITY AGREEMENT**

Successful Bidder shall defend, indemnify and save harmless the District and its elected and appointed officials, employees and agents, and each of them, of and from any and all claims, demands, causes of action, damages, costs, expenses, losses, or liabilities, in law or in equity, of every kind and nature whatsoever, for, but not limited to, injury to or death of Successful Bidder, or any other person, and arising out of or in any manner directly or indirectly connected with the this Agreement or the material provided under this Agreement, however caused, regardless of any negligence of the District or its agents or servants, , except the active negligence or willful misconduct of the District or its elected and appointed officials, employees and agents . Said indemnification shall include the defense of any actions or other legal proceedings and reimbursement of attorneys' fees and other legal expenses incurred by the District and shall include any and all penalties imposed upon the District on account of the violation of any law or regulation by Successful Bidder.

### **4. DAMAGES FOR FAILURE TO DELIVER MATERIALS IN TIMELY MANNER**

In addition to and separate from any other remedy for a breach provided for in this Agreement, District shall, in the event the materials are not delivered to District by the date specified on the proposal form, be entitled to purchase materials of like kind and quality from another provider. Successful Bidder shall pay the costs and all incidental expenses from the contract price therefore. In the event that District avails itself of the remedy provided for in this paragraph, it may, at its option, deduct the costs of purchasing substitute materials or recover from Successful Bidder the cost of substitute materials and incidental expenses. In the event that District brings an action to enforce the terms of this paragraph, it shall be entitled to an award of its attorneys' fees and costs.

### **5. GUARANTEE AND WARRANTY**

Successful Bidder guarantees that the materials furnished under this Agreement meet all the requirements of the Specifications. SUCCESSFUL BIDDER GUARANTEES AND WARRANTS THAT THE MATERIALS FURNISHED UNDER THIS AGREEMENT ARE MERCHANTABLE AND FIT FOR THE PURPOSE FOR WHICH THEY WERE SOLD AND ARE FREE FROM DEFECTS CAUSED BY DEFECTIVE MATERIAL OR FAULTY WORKMANSHIP. ANY PROVISION IN THIS AGREEMENT OR IN ANY INVOICE, STATEMENT, PURCHASE ORDER OR OTHER DOCUMENT TO EXCLUDE, DISCLAIM, LIMIT OR MODIFY ANY IMPLIED OR EXPRESS WARRANTY IS NULL AND VOID AND SHALL HAVE NO FORCE OR EFFECT.

## **6. SHIPPING AND DELIVERY**

The Successful bidder shall prepare the materials for shipment in such a manner as to protect them from damage in transit and shall be responsible for and make good any and all damage incurred while loading, unloading or in transit. If the materials are damaged in shipment, they will be refused on delivery and it will be the vendor's responsibility to arrange for prompt inspection, repair or replacement of the materials.

The District requires 24 hours notice of delivery and an estimated arrival date and time.

The cost of the materials shall include shipping and delivery.

## **7. NOTICES**

Any and all notices or other matters required or permitted by this Agreement or by law to be served on, given to, or delivered to either party hereto by the other party to this Agreement shall be in writing and shall be deemed duly served, given, or delivered when personally delivered to the party to whom it is addressed or in lieu of such personal service, five days after deposited in the United States mail, first-class postage paid, addressed to the District at 11570 Donner Pass Road, Truckee, California 96161, or to Successful Bidder at: \_\_\_\_\_

Either party may change its address for the purpose of this section by giving written notice of such change to the other party in the manner provided in this section.

## **8. ATTORNEYS', EXPERTS' AND CONSULTANTS' FEES**

In the event of any litigation concerning any controversy, claim or dispute between the parties hereto, arising out of or relating to this Agreement or the breach hereof, or the interpretation hereof, the prevailing party shall be entitled to recover from the other party reasonable attorneys' fees, experts' fees, and consultants' fees, expenses and costs incurred therein or in the enforcement or collection of any judgment or award rendered therein.

## **9. CAPTIONS**

The captions and headings of the different sections of this Agreement are inserted for convenience of reference only, and are not to be taken as part of this agreement or to control or affect the meaning, construction, or effect of the same.

## **10. NECESSARY ACTS**

Each party to this Agreement agrees to perform any further acts and execute and deliver any further documents that may be reasonably necessary to carry out the provisions of this agreement.

## **11. ASSIGNMENT**

The Successful Bidder may not assign this Agreement or payments due under the Agreement without the prior written consent of the District.

## **12. GOVERNING LAW**

This Agreement shall be construed in accordance with, and governed by, the laws of the State of California.

## **13. FORUM**

Any litigation to enforce or interpret the provisions of this Agreement or the parties' rights and liabilities arising out of this Agreement or the performance hereunder shall be maintained only in the courts in the County of

Nevada, State of California, if in State court, or in or the Federal Court for the Eastern District of California, if in federal court.

**14. SOLE AND ONLY AGREEMENT**

This Agreement, including any exhibits attached hereto, constitutes the sole and only agreement of the parties hereto relating to the project and correctly sets forth the rights, duties and obligations of each to the other as of its date. Any prior agreements, promises, negotiations, or representations not expressly set forth in this Agreement is of no force and effect. This Agreement may only be amended or modified in a written document signed by both parties.

**15. DISTRICT POWERS**

Nothing herein contained shall be deemed to limit, restrict or modify any right, duty or obligation given, granted, or imposed upon the District by the laws of the State of California now in effect, or hereafter adopted, nor to limit or restrict the power or authority of the District.

**16. TIME OF ESSENCE**

Time is of the essence of this Agreement.

**17. SEVERABILITY**

In the event that any part or provision of this Agreement is found to be illegal or unconstitutional by a court of competent jurisdiction, such findings shall not affect the remaining parts, portions, or provisions of this Agreement.

**18. ASSIGNMENT OF RIGHTS**

Successful Bidder agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to this Agreement and that such assignment shall be made and become effective at the time the District tenders final payment to Successful Bidder, without further acknowledgment by the parties.

In witness whereof this instrument is executed by the duly authorized officials on the date first above written.

**TRUCKEE DONNER PUBLIC UTILITY DISTRICT**

\_\_\_\_\_  
**Brian C. Wright, General Manager** **Date**

\_\_\_\_\_  
**Distributing Company**

\_\_\_\_\_  
**Signature of Authorized Representative** **Date**

\_\_\_\_\_  
**Printed Name and Title**