

Executive Officer
Commercial Harbor Craft Regulations
California Air Resources Board
1001 I Street
Sacramento, CA 95814

November 8th, 2024

Subject: San Francisco Bay Area Water Emergency Transportation Authority – Resubmission of Alternative Control of Emissions (ACE) Plan

Dear CARB Executive Officer:

Pursuant to CCR Title 17, section 93118.5 (f) Alternative Control of Emissions (ACE), the San Francisco Bay Area Water Emergency Transportation Authority (WETA), the administering agency of San Francisco Bay Ferry services, is resubmitting an Alternative Control of Emissions plan to comply with the California Air Resources Board's Amendments to the Commercial Harborcraft regulations that were approved in 2022 and implemented on January 1, 2023. Our initial submission, dated March 19th 2024, has been updated to incorporate additional requirements clarified in subsequent staff level meetings.

Over the last four years, WETA has been working with CARB staff, the top marine engineers in the country and various marine propulsion and battery manufacturers to understand the opportunities to implement zero emission technology in the high speed, high passenger capacity marine sector. WETA was able to secure a California Energy Commission grant to develop a zero-emission blueprint detailing how the agency can achieve a zero-emission operation on its short and medium length routes. WETA also commissioned a life cycle analysis on different marine batteries capable of powering high speed zero emission vessels and has secured over \$136 million in funding from regional, state and federal sources to implement this ACE plan.

As a result of these various efforts, WETA feels confident in its commitment, included in this ACE plan, to transition at least 50% of its vessel fleet to zero emissions by 2035. The attached ACE Plan includes three documents, a spreadsheet with the actual calculations, a narrative detailing how the ACE Plan calculations were developed with relevant background information, and vessel compliance extension requests as required by CARB.

Our Board of Directors and staff understand that this goal is aggressive for the maritime industry at this time since we are only just now starting to see significant advancements of zero emission technology in this sector. We hope that this commitment will send the right signal to the maritime manufacturing industry to get options on the market as fast as possible while paving the way for other public and private vessel operators to adopt this technology on a faster timeline and at a lower cost.

We look forward to completing the public comment process for ACE Plans and starting to implement our transition to zero emissions. My staff is available to meet and discuss any questions you may have.

Sincerely,

Seamus Murphy
Executive Director

Cc: Chair of CARB

WETA Board of Directors

WATER EMERGENCY TRANSPORTATION AUTHORITY



Commercial Harbor Craft Alternative Compliance Emissions Plan Narrative

The Water Emergency Transit Authority (WETA) is a local agency with multi-county jurisdiction, which was established by the California Legislature to expand regional ferry service and coordinate waterborne emergency response activities on San Francisco Bay. WETA's vision is to develop, operate and manage an expanded and enhanced region-wide ferry system that provides a reliable, state-of-the-art, and attractive transportation option for the Bay Area, and to play a critical role in coordinating and providing water transportation to serve emergency response and economic recovery needs.

The WETA Alternative Control of Emissions (ACE) plan currently consists of 4 sets of calculations. The ACE plan requires a baseline emissions calculation. The baseline calculation is for the owner's fleet up through December 31st, 2034, assuming 2 years of extensions for every vessel. The ACE plan calculations are to show equal to or less emissions than the baseline emissions contemplated in the CHC rules.

The calculations provided differ from the regulation in that they provide for low and high use scenarios to firmly establish the robustness of WETA's plan. The reason for these multiple calculations is that service levels can be fluid and new future routes are not guaranteed. Therefore, the low use calculations contemplate running hours aligned to the low end of current operating hours to start with and only adds services that are known to be approved and funded. The low use scenario provides for a low level of operational service growth over the regulated period. The high calculations start with the high end of current operating hours and adds all the possible future services, even those that are currently not approved or funded.

The operating hours between the baseline and the ACE calculations are the same for both the low use and high use calculations. However, the individual vessel hours utilized per year change based on the ACE plan and when conversions, repowers and new build deliveries will take place. The assumptions represent WETA's best estimation for the two operating scenarios on how and when the plan will be achieved. The exact assumptions will be detailed in the body of this ACE plan narrative.

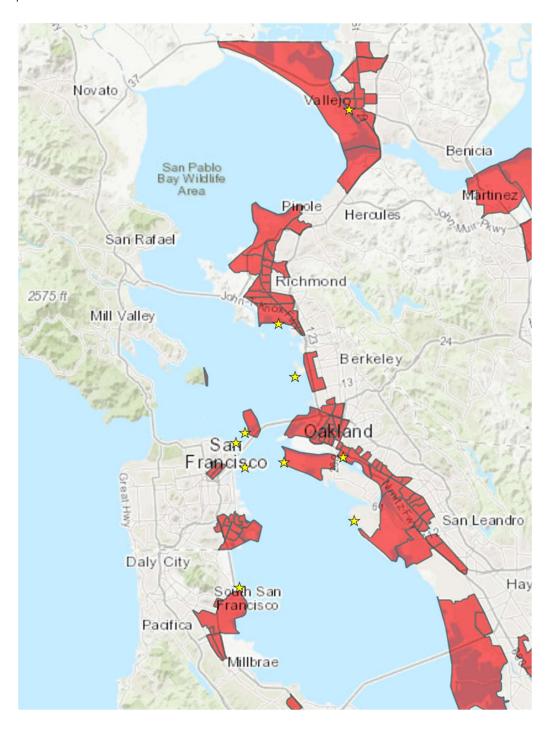
The calculations only address Nitrous Oxide (NO) and Particulate Matter (PM) emissions. These two are the only sources of emissions that the regulations aim to limit for diesel engines. The Tier 4 engines add Selective Catalytic Reduction (SCR's) that address NO emissions. The CARB Level 3 Verified Diesel Particulate Filters (DPF's) address the PM emissions.

Record Keeping

WETA has a robust electronic Preventative Maintenance (PM) planning and maintenance tracking program. The primary input into their system is vessel operating hours. All vessel operating hours are closely logged for input into their PM system in addition for use with CHC reporting and National Transportation Database (NTD) reporting that is required. WETA will be able to comply will all recordkeeping and reporting requirements CARB has for this ACE plan.

Impact to Disadvantaged Communities (DAC)

Every WETA ferry terminal is either directly located within a California EPA Disadvantaged Community, or located within the 2 mile range specified in CARBs CHC that warrants special DAC consideration. WETA vessels exclusively operate in the San Francisco Bay Area of the RCW. Every vessel route, and consequently all WETA vessel operations are exclusively within a DAC. No adjustments to vessel allocations as presented in this ACE plan result in a higher burden for a DAC over any other communities. The map below shows DACs in red and WETA terminals are indicated as yellow stars. Detailed terminal addresses and their distances to DACs are detailed in the Terminals Tab of the calculations spreadsheet.



Low Use Baseline Calculations

The low use baseline calculations are based off the CHC regulations regarding calculation guidance and vessel compliance. Based on guidance provided from CARB staff, each vessel is assumed to have two-year extensions before compliance date for the model year of engine installed. Draft extension requests and justifications, in-line with extension (e)(12)(E)2. "Feasibility Extension E2", and (e)(12)(E)5. "Scheduling Exceptions E5", are provided as Appendix 6 to this plan.

All vessels are assumed to comply with the CHC regulations by repowering to the most stringent EPA Tier currently available with the addition of a CARB Level 3 Validated DPF following the two-year extension. The values used for the different EPA Tier and CARB CHC compliant EPA Tier 4 + DPF are sourced from CARB documentation from the CHC rulemaking. So as not to repeat this for every line in the baseline calculation the EPA emissions values for NOx and PM for each engine tier and horsepower level are sourced from the ISOR Appendix H table H-5. These are the values that CARB used for their emissions calculations, so it is assumed they are acceptable to use for these emissions calculations. It is assumed that CARB utilized the figures in Table H-5 for very specific reasons and these ACE plan calculations should follow the same guidance. The emissions values used for the EPA Tier 4+DPF and EPA Tier 3+DPF were sourced from the Final Regulation Order for the CHC regulations tables 11 and 12 for performance standards.

The low use baseline calculation contemplates the existing services and minimal future routes. The existing routes are estimated with a low growth in service hours based off the low end of service hours experienced historically. The future routes are estimated to have a low level of service hours. Repower impacts on individual vessel operating hours for the given project years were accommodated in both the baseline and ACE operating hour plans.

Operating Hours

Operating hours presented in this report refer to vessel operating hours, not the sum total of engine operating hours. WETA vessels exclusively operate with both propulsion engines online and typically a single generator. Central Bay hour usage starts at 23,500 vessel operating hours a year in 2023. The operating hours are estimated to increase to 25,250 hours in 2026 and increase to 28,000 hours in 2027. These increases in operating hours are accounting for the assumption of the Treasure Island route, expected to start in FY26/27, and some service growth. The service hours increase again in 2028 to 29,500 hours per year to account for additional service growth. The annual estimated service hours for Central Bay operations flat line from 2028 through 2034 assuming no additional growth or additional service.

North Bay hour usage starts at 13,500 operating hours a year in 2023. The annual estimated service hours for North Bay operations are a flat line through 2034 assuming no additional growth or additional service.

Existing Routes	Location
Oakland/Alameda Main Street to San Francisco	Central Bay
Oakland/Alameda Main Street to South San Francisco	Central Bay
Oakland/Alameda Main Street to Oracle Park	Central Bay
Oakland/Alameda Main Street to Chase Center	Central Bay
Alameda Sea Plane Lagoon to San Francisco	Central Bay
Alameda Harbor Bay to San Francisco	Central Bay
San Francisco Ferry Building to Pier 41 Central Bay	
Richmond to San Francisco	Central Bay

Mare Island to Vallejo	North Bay
Vallejo to San Francisco	North Bay
Vallejo to Giants Stadium/Oracle Park	North Bay

The "Baseline Low" use tab on the calculation spreadsheet contemplates the addition of service on the following routes.

Future Routes	Location
San Francisco to Treasure Island	Central Bay
San Francisco to Mission Bay	Central Bay

Baseline Low Calculation Vessel Nomenclature

The "Baseline Low" use tab on the calculation's spreadsheet includes the following existing vessels. Vessels that are part of a class are considered to have similar propulsion configurations only differing in model year of the engines.

Existing Vessels		
Vessel Class	Vessel Name	
Gemini Class	Gemini	
	Pisces	
	Scorpio	
	Taurus	
Hydrus Class	Hydrus	
	Cetus	
	Argo	
	Carina	
	Peralta	
	Bay Breeze	
Pyxis Class	Pyxis	
	Vela	
	Lyra	
Intintoli Class	Intintoli	
	Mare Island	
Dorado Class	Dorado	
	Delphinus	
	Currently Under Construction	
320	Hull 160 – Shipyard Number, name pending selection process	
PAX DPF Class	Hull 161– Shipyard Number, name pending selection process	
Future Planed Construction		
149PAX ZEAT Class	149PAX ZEAT#1 – In design process no shipyard awarded	
	yet, Short Run all battery electric vessel	
	149PAX ZEAT#2 – In design process no shipyard awarded	
	yet, Short Run all battery electric vessel	
	149PAX ZEAT#3 – In design process no shipyard awarded	
	yet, Short Run all battery electric vessel	
400PAX DPF Class	400PAX DPF#1 – In design process no shipyard awarded yet,	
	EPA T4+DPF	

400PAX DPF#2 – In design process no shipyard awarded yet,
EPA T4+DPF

Low Use ACE Calculations

The low use ACE calculation contemplates the existing services and minimal future routes. The existing routes are estimated with a low growth in service hours based off the low end of service hours experienced historically. The future routes are estimated to have a low level of service hours. All emissions factors are derived in the same manner as they were for the baseline calculations, however unused configurations of the vessel's rows are hidden for clarity. As an example, where a vessel is not contemplated to be repowered in the ACE calculations the DPF configuration rows of the vessel are hidden. The major difference in the ACE calculations is that the emissions reducing vessel repower projects and all battery electric vessels are used to offset the emissions from vessel classes that are not possible to be repowered with CARB mandated EPA Tier 4+DPF engines.

WETA has recently built two new classes of vessels with EPA Tier 4 engines; the Pyxis class vessels (Pyxis, Vela and Lyra) and the Dorado Class (Dorado and Delphinus). At the time of their design and construction, it was not known that CARB would require additional emissions equipment above federal standards. Further modification of these new vessels to comply with CHC regulations is not possible because the required equipment (DPF's) represent an extreme increase in equipment volume and weight. In the case of the subject 5 vessels, the DPF's proposed by the engine distributor as meeting the manufactures requirements represents the addition of equipment equal to the volume of the existing main engines and weighing as much as 50% of the weight of the existing main engines. The vessels, as designed, did not account for this drastic increase in propulsion machinery volume and weight. The analogy is like someone asking you to add a box to your car that is the same size as your engine. It can be done but you will either have to pay to have someone lengthen your car by 2 or 3 feet or lose your back seat and your rear window. The subject vessels would require tens of millions of dollars to add the space required for the DPF's. A similar scope of work was attempted by WETA for an existing vessel to be converted to EPA Tier 4. The SCR's required an additional 8 feet of hull length added to the vessel to account for them. In that case all bids received were either equal to or significantly high enough to warrant reassigning the vessel to another FTA operator out of California and building a new boat that was designed around the EPA Tier 4 equipment.

The Dorado class was originally planned to have a 3rd and 4th vessel with matching configurations to the first 2 hulls in the class but due to production delays and the publication of the new CHC regulations they were re-bid with a different propulsion package that had a more favorable path to CHC compliance. As such they are referred to as a different class, the 320PAX DPF Class, in this plan. WETA has been working closely with the selected engine manufacturer to try and get their European Engine+SCR+DPF system certified to EPA Tier 4 and Validated to CARB Level 3 for the DPF. The class Hulls 160 and 161 are therefore calculated in the ACE plan as starting as CHC compliant propulsion systems. Below is a detailed list of assumptions used in the low use ACE calculations per vessel class.

Gemini Class (Gemini, Pisces, Scorpio, & Taurus)

The Gemini Class is currently operating with MAN EPA Tier 4 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Gemini Class will not be repowered and operated in this configuration through the 2034 emissions year.

Hydrus Class (Hydrus, Cetus, Argo, & Carina)

The Hydrus Class is currently operating with MTU EPA Tier 3 main engines with aftermarket non-certified SCR's and EPA Tier 3 generators. The Hydrus Class is planned to be converted to full battery electric propulsion that will result in zero emissions at the vessel. The CHC regulations do not require ZEAT for these vessels.

These vessels are being converted to ZEAT to offset the other vessels that cannot be brought into compliance. The calculations still show emissions for this vessel after the repower. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

The low use ACE calculations assume the vessels conversion schedule will be completed as follows:

Hydrus - repowered to full battery electric propulsion in 2028.

Cetus - repowered to full battery electric propulsion in 2029.

Argo - repowered to full battery electric propulsion in 2030.

Carina - repowered to full battery electric propulsion in 2031.

Peralta

The Peralta is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Peralta will not be repowered due to its age. The Peralta will be operated through the 2029 emissions year and it's replacement vessel has not yet been determined.

Bay Breeze

The Bay Breeze is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Bay Breeze will not be repowered. The Bay Breeze will be operated through the 2025 emissions year, whereupon it will be replaced by the 320PAX Tier 4+DPF Class - Hull 160.

Pyxis Class (Pyxis, Vela, & Lyra)

The Pyxis class is currently operating with MTU EPA Tier 4 main engines and EPA Tier 3 generators. The low use ACE calculations assume the Pyxis Class will not be repowered and will be operated in this configuration through the 2034 emissions year.

The Pyxis class vessels were built between 2017 and 2019 and were used by MTU to obtain their EPA Tier 4 certification for the 4000 series engines. The Pyxis class were the first EPA tier 4 fast ferries built in the USA. The design of the vessel was tailored to the new EPA Tier 4 SCRs as these were the first units in production for MTU. Given that the vessels were designed around the leading edge of emissions control technology just a few years ago, there was no weight or space allowance for additional emissions control equipment. This is the reason that the Pyxis class vessels are not going to be repowered. The repower would require additional hull length, higher output engines and larger waterjets to account for the additional 20,000 lbs. of weight from the installation of DPFs and additional hull length that would be required to fit the DPFs. Additionally, the engines installed in the Pyxis class are the highest output EPA Tier 4 fast ferry rated/suitable engines available in the US today. There are higher rated engines available, but they are either not EPA Tier 4 rated or offer a power to weight/size factor that is implausible for fast ferry operations. The Pyxis class are currently operating at the bare minimum speed to meet service requirements and are at the limit of the installed waterjets capacity for a vessel of this size and weight. All these factors make it near impossible, and certainly financially implausible, to repower these vessels to be CHC compliant.

Intintoli Class (Intintoli & Mare Island)

The Intintoli class is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Intintoli class will not be repowered, Intintoli will be run through the 2027 emissions year,

and Mare Island will be run through the 2028 emissions year. These vessels will be replaced by the 400PAX ZEAT class - hulls 1 and 2.

Dorado Class (Dorado & Delphinus)

The Dorado class is currently operating with MAN EPA Tier 4 main engines and EPA Tier 3 generators. The low use ACE calculations assume the Dorado class will not be repowered and operated in this configuration through the 2034 emissions year.

The Dorado was delivered in 2022 and Delphinus is due to enter service in early 2024. Both vessels were delivered 4 years after the start of construction. Due to the COVID-19 pandemic, labor shortages and supply chain issues resulted in significant delays and the extended build time. The Dorado class vessels were designed around the leading edge of emissions control technology just a few years ago and the engineering and design of the vessel did not allow for the additional space and weight for the emissions control equipment required under CARB's CHC regulations. For this reason, the Dorado class vessels are not going to be repowered.

320PAX Tier 4+DPF Class (Hulls 160 & 161)

The 320PAX Tier 4+DPF Class is currently under construction with MAN EPA Tier 4 main engines and EPA Tier 3 generators. WETA is working to certify of the MAN propulsion package with CARB compliant DPF's to EPA Tier 4 and CARB Level 3 but it is not known if this will be achieved prior to machinery delivery. Hulls 160 and 161 were a modification of the Dorado class to a propulsion configuration that offered a better path to CHC compliance. The contract for these vessels was put to bid after CARB published its intensions to require DPF's in addition to the highest emissions tier available. At the time of Contract award and vessel design there were no approved DPF's for the generators. The designer was not able to maintain an adequate space reservation for the addition of future generator DPF's.

The low use ACE calculation assumes hull 160 (Bay Breeze replacement) will not be repowered and operated without DPF's through the 2034 emissions year. Hull 160 is forecast to be delivered in late 2024, 4 years after the start of construction. Hull 161(Solano replacement) is forecast to be delivered in 2025, 4 years after the start of construction. Due to the COVID-19 pandemic, labor shortages and supply chain issues resulted in significant delays and the extended build time.

149PAX ZEAT Class (#1, #2, & #3)

Starting in 2026, WETA will be assuming the operation of passenger ferry service to Treasure Island and Mission Bay. Both of these new routes are considered short run (under 3 nautical miles) ferry routes as defined by the amended CHC regulations. 149PAX ZEAT Class will be a 149-passenger medium speed all battery electric ferry operating on short run ferry routes. 149 PAX ZEATs #1 and #2 are planned to enter service in 2026. 149PAX ZEAT #3 is planned to enter service in 2027.

This class of vessel is currently under design and the estimated power required has been used for these calculations. The calculations still show emissions for this vessel. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

400PAX ZEAT Class (#1 & #2)

The 400PAX ZEAT Class will be a 250-400 passenger medium speed all battery electric ferry. This class is not slated for short run ferry routes and could be constructed as a diesel engine powered vessel. 400PAX ZEAT #1 (Intintoli's replacement) is forecasted to enter service in 2027. 400PAX ZEAT #2 (Mare Island's replacement) is forecasted to enter service in 2028.

This class of vessel is currently under design and the estimated power level has been used for these calculations. The calculations still show emissions for this vessel. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

Operating Hours

The Central Bay and North Bay operating hours for existing and future routes in the Low Use ACE Calculations match the Low Use Baseline operating hour totals. The exact hour allocations for each vessel differ between the two plans to accommodate the planned vessel conversion schedules required to meet each plan.

ACE Low Calculation Vessel Nomenclature

The "ACE Low" use tab on the calculation's spreadsheet includes the following existing vessels, vessels under construction and vessels in design and or planning. Vessels that are part of a class are considered to have similar propulsion configurations only differing in model year of the engines.

Existing Vessels		
Vessel Class	Vessel Name	
Gemini Class	Gemini	
	Pisces	
	Scorpio	
	Taurus	
Hydrus Class	Hydrus	
	Cetus	
	Argo	
	Carina	
	Peralta	
	Bay Breeze	
Pyxis Class	Pyxis	
	Vela	
	Lyra	
Intintoli Class	Intintoli	
	Mare Island	
Dorado Class	Dorado	
	Delphinus	
Currently Under Construction		
320PAX DPF Class	Hull 160 – Shipyard Number, name pending selection process	
	Hull 160 – Shipyard Number, name pending selection process	
Future Planed Construction		

149PAX ZEAT Class	149PAX ZEAT#1 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
	149PAX ZEAT#2 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
	149PAX ZEAT#3 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
400PAX ZEAT Class	400PAX ZEAT#1 - In design process no shipyard awarded yet,
	full battery electric vessel.
	400PAX ZEAT#2 - In design process no shipyard awarded yet,
	full battery electric vessel.

High Use Baseline Calculations

The high use baseline calculations are based off the CHC regulations regarding calculation guidance and vessel compliance. Based on guidance provided from CARB staff, each vessel is assumed to have two-year extensions before compliance date for the model year of engine installed. Draft extension requests and justifications, in-line with extension (e)(12)(E)2. "Feasibility Extension E2", and (e)(12)(E)5. "Scheduling Exceptions E5", are provided as Appendix 6 to this plan.

All vessels are assumed to comply with the CHC regulations by repowering to the most stringent EPA Tier currently available with the addition of a CARB Level 3 Validated DPF following the two-year extension. The values used for the different EPA Tier and CARB CHC compliant EPA Tier 4 + DPF are sourced from CARB documentation from the CHC rulemaking.

The "Baseline High" tab on the calculation spreadsheet contemplates the existing service plus the addition of all future planned routes, even ones that are still in the preliminary planning processes. The following routes are estimated with a high growth in service hours based off the high end of service hours experienced. The future routes are estimated at a high level of operating hours. Repower impacts on individual vessel operating hours for the given project years were accommodated in both the baseline and ACE operating hour plans.

Operating Hours

Operating hours presented in this report refer to vessel operating hours, not the sum total of engine operating hours. WETA vessels exclusively operate with both propulsion engines online and typically a single generator. Central Bay hour usage starts out higher at 31,000 vessel operating hours a year in 2023. The operating hours are estimated to increase to 33,500 hours in 2026 and increase to 38,000 hours in 2027. These increases in operating hours are accounting for the assumption of the Treasure Island route and the addition of the Mission Bay, Treasure Island/Mission Bay/San Francisco triangle and the Berkeley routes and some service growth. The service hours increase again in 2028 to 55,000 hours per year to account for possible future increase in service routes. The annual estimated service hours for Central Bay operations flat line from 2028 through 2034 assuming no additional growth or additional service.

North Bay hour usage starts at 17,000 operating hours a year in 2023. The annual estimated service hours for North Bay operations flat line through 2034 assuming no additional growth or additional service.

Existing Routes	Location
Oakland/Alameda Main Street to San Francisco	Central Bay
Oakland/Alameda Main Street to South San Francisco	Central Bay
Oakland/Alameda Main Street to Oracle Park	Central Bay
Oakland/Alameda Main Street to Chase Center	Central Bay
Alameda Sea Plane Lagoon to San Francisco	Central Bay
Alameda Harbor Bay to San Francisco Central Bay	
San Francisco Ferry Building to Pier 41 Central Bay	
Richmond to San Francisco	Central Bay
Mare Island to Vallejo	North Bay
Vallejo to San Francisco	North Bay
Vallejo to Giants Stadium/Oracle Park	North Bay

The "Baseline High" use tab on the calculation spreadsheet contemplates the addition of service on the following routes.

Future Routes	Location
San Francisco to Treasure Island	Central Bay
San Francisco to Mission Bay	Central Bay
San Francisco to Treasure Island to Mission Bay	Central Bay
Berkeley to San Francisco	Central Bay
Berkeley to Oracle Park	Central Bay
Berkeley to Chase Center	Central Bay
Oakland/Alameda to Larkspur Landing	Central Bay
To Be Determined Future Routes	Central Bay

Baseline High Calculation Vessel Nomenclature

The "Baseline High" use tab on the calculation's spreadsheet includes the following existing vessels, vessels under construction and vessels in design and or planning. Vessels that are part of a class are considered to have similar propulsion configurations only differing in model year of the engines.

Existing Vessels		
Vessel Class	Vessel Name	
Gemini Class	Gemini	
	Pisces	
	Scorpio	
	Taurus	
Hydrus Class	Hydrus	
	Cetus	
	Argo	
	Carina	
	Peralta	
	Bay Breeze	
Pyxis Class	Pyxis	
	Vela	
	Lyra	
Intintoli Class	Intintoli	
	Mare Island	
Dorado Class	Dorado	
	Delphinus	
	Currently Under Construction	
320PAX DPF Class	Hull 160 – Shipyard Number, name pending selection process	
	Hull 160 – Shipyard Number, name pending selection process	
Future Planed Construction		
149PAX ZEAT Class	149PAX ZEAT#1 - In design process no shipyard awarded yet,	
	Short Run all battery electric vessel	
	149PAX ZEAT#2 - In design process no shipyard awarded yet,	
	Short Run all battery electric vessel	

	149PAX ZEAT#3 - In design process no shipyard awarded yet, Short Run all battery electric vessel
400PAX DPF Class	400PAX DPF#1 – Notionally planned if ACE Plan is not
	approved, EPA T4+DPF 400PAX DPF#2 – Notionally planned if ACE Plan is not
	approved, EPA T4+DPF

High Use ACE Calculations

The High use ACE calculation contemplates the existing service plus the addition of all future planned routes, even ones that are still in the preliminary planning processes which have not been fully funded. The existing routes are estimated with a high growth in service hours. The future routes are estimated at a high level of operating hours. All emissions factors are derived in the same manner as they were for the baseline calculations, however unused configurations of the vessel's rows are hidden for clarity. As an example, where a vessel is not contemplated to be repowered in the ACE calculations the DPF configuration rows of the vessel are hidden. The major difference in the ACE calculations is that emissions reducing repowers and all battery electric vessels are used to offset emissions from other vessel classes that are not possible to repower with CARB mandated EPA Tier 4+DPF engines.

WETA has recently built two new classes of vessels with EPA Tier 4 engines; the Pyxis class vessels (Pyxis, Vela and Lyra) and the Dorado Class (Dorado and Delphinus). At the time of their design and construction, it was not known that CARB would require additional emissions equipment above federal standards. Further modification of these new vessels to comply with CHC regulations is not possible because the required equipment (DPF's) represent an extreme increase in equipment volume and weight. In the case of the subject 5 vessels, the DPF's proposed by the engine distributor as meeting the manufactures requirements represents the addition of equipment equal to the volume of the existing main engines and weighing as much as 50% of the weight of the existing main engines. The vessels, as designed, did not account for this drastic increase in propulsion machinery volume and weight. The analogy is like someone asking you to add a box to your car that is the same size as your engine. It can be done but you will either have to pay to have someone lengthen your car by 2 or 3 feet or lose your back seat and your rear window. The subject vessels would require tens of millions of dollars to add the space required for the DPF's. A similar scope of work was attempted by WETA for an existing vessel to be converted to EPA Tier 4. The SCR's required an additional 8 feet of hull length added to the vessel to account for them. In that case all bids received were either equal to or significantly high enough to warrant reassigning the vessel to another FTA operator out of California and building a new boat that was designed around the EPA Tier 4 equipment.

The Dorado class was originally planned to have a 3rd and 4th vessel with matching configurations to the first 2 hulls in the class but due to production delays and the publication of the new CHC regulations they were re-bid with a different propulsion package that had a more favorable path to CHC compliance. As such they are referred to as a different class, the 320PAX DPF Class, in this plan. WETA has been working closely with the selected engine manufacturer to try and get their European Engine+SCR+DPF system certified to EPA Tier 4 and Validated to CARB Level 3 for the DPF. The class hulls 160 and 161 are therefore calculated in the ACE plan as starting as CHC compliant propulsion systems. Below is a detailed list of assumptions used in the high use ACE calculations per vessel class.

Gemini Class (Gemini, Pisces, Scorpio, & Taurus)

The Gemini Class is currently operating with MAN EPA Tier 4 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Gemini Class will not be repowered and operated in this configuration through the 2034 emissions year.

Hydrus Class (Hydrus, Cetus, Argo, & Carina)

The Hydrus Class is currently operating with MTU EPA Tier 3 main engines with aftermarket non-certified SCR's and EPA Tier 3 generators. The Hydrus Class is planned to be converted to full battery electric propulsion that will result in zero emissions at the vessel. The CHC regulations do not require ZEAT for these vessels.

These vessels are being converted to ZEAT to offset the other vessels that cannot be brought into compliance. The calculations still show emissions for this vessel after the repower. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

The low use ACE calculations assume the vessels conversion schedule will be completed as follows:

Hydrus - repowered to full battery electric propulsion in 2028.

Cetus - repowered to full battery electric propulsion in 2029.

Argo - repowered to full battery electric propulsion in 2030.

Carina - repowered to full battery electric propulsion in 2031.

Peralta

The Peralta is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Peralta will not be repowered due to its age. The Peralta will be operated through the 2029 emissions year and it's replacement vessel has not yet been determined.

Bay Breeze

The Bay Breeze is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Bay Breeze will not be repowered. The Bay Breeze will be operated through the 2025 emissions year, whereupon it will be replaced by the 320PAX Tier 4+DPF Class - Hull 160.

Pyxis Class (Pyxis, Vela, & Lyra)

The Pyxis class is currently operating with MTU EPA Tier 4 main engines and EPA Tier 3 generators. The low use ACE calculations assume the Pyxis Class will not be repowered and will be operated in this configuration through the 2034 emissions year.

The Pyxis class vessels were built between 2017 and 2019 and were used by MTU to obtain their EPA Tier 4 certification for the 4000 series engines. The Pyxis class were the first EPA tier 4 fast ferries built in the USA. The design of the vessel was tailored to the new EPA Tier 4 SCRs as these were the first units in production for MTU. Given that the vessels were designed around the leading edge of emissions control technology just a few years ago, there was no weight or space allowance for additional emissions control equipment. This is the reason that the Pyxis class vessels are not going to be repowered. The repower would require additional hull length, higher output engines and larger waterjets to account for the additional 20,000 lbs. of weight from the installation of DPFs and additional hull length that would be required to fit the DPFs. Additionally, the engines installed in the Pyxis class are the highest output EPA Tier 4 fast ferry rated/suitable engines available in the US today. There are higher rated engines available, but they are either not EPA Tier 4 rated or offer a power to weight/size factor that is implausible for fast ferry operations. The Pyxis class are currently operating at the bare minimum speed to meet service requirements and are

at the limit of the installed waterjets capacity for a vessel of this size and weight. All these factors make it near impossible, and certainly financially implausible, to repower these vessels to be CHC compliant.

Intintoli Class (Intintoli & Mare Island)

The Intintoli class is currently operating with MAN EPA Tier 2 main engines and EPA Tier 2 generators. The low use ACE calculations assume the Intintoli class will not be repowered, Intintoli will be run through the 2027 emissions year, and Mare Island will be run through the 2028 emissions year. These vessels will be replaced by the 400PAX ZEAT class - hulls 1 and 2.

Dorado Class (Dorado & Delphinus)

The Dorado class is currently operating with MAN EPA Tier 4 main engines and EPA Tier 3 generators. The low use ACE calculations assume the Dorado class will not be repowered and operated in this configuration through the 2034 emissions year.

The Dorado was delivered in 2022 and Delphinus is due to enter service in early 2024. Both vessels were delivered 4 years after the start of construction. Due to the COVID-19 pandemic, labor shortages and supply chain issues resulted in significant delays and the extended build time. The Dorado class vessels were designed around the leading edge of emissions control technology just a few years ago and the engineering and design of the vessel did not allow for the additional space and weight for the emissions control equipment required under CARB's CHC regulations. For this reason, the Dorado class vessels are not going to be repowered.

320PAX DPF Class (Hulls 160 & 161)

The 320PAX DPF Class is currently under construction with MAN EPA Tier 4 main engines and EPA Tier 3 generators. WETA is working to certify of the MAN propulsion package with CARB compliant DPF's to EPA Tier 4 and CARB Level 3 but it is not known if this will be achieved prior to machinery delivery. Hulls 160 and 161 were a modification of the Dorado class to a propulsion configuration that offered a better path to CHC compliance. The contract for these vessels was put to bid after CARB published its intensions to require DPF's in addition to the highest emissions tier available. At the time of Contract award and vessel design there were no approved DPF's for the generators. The designer was not able to maintain an adequate space reservation for the addition of future generator DPF's.

The low use ACE calculation assumes hull 160 (Bay Breeze replacement) will not be repowered and operated without DPF's through the 2034 emissions year. Hull 160 is forecast to be delivered in late 2024, 4 years after the start of construction. Hull 161(Solano replacement) is forecast to be delivered in 2025, 4 years after the start of construction. Due to the COVID-19 pandemic, labor shortages and supply chain issues resulted in significant delays and the extended build time.

149PAX ZEAT Class (#1, #2, & #3)

Starting in 2026, WETA will be assuming the operation of passenger ferry service to Treasure Island and Mission Bay. Both of these new routes are considered short run (under 3 nautical miles) ferry routes as defined by the amended CHC regulations. 149PAX ZEAT Class will be a 149-passenger medium speed all battery electric ferry operating on short run ferry routes. 149 PAX ZEATs #1 and #2 are planned to enter service in 2026. 149PAX ZEAT #3 is planned to enter service in 2027.

This class of vessel is currently under design and the estimated power required has been used for these calculations. The calculations still show emissions for this vessel. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data

indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

400PAX ZEAT Class (#1 & #2)

The 400PAX ZEAT Class will be a 250-400 passenger medium speed all battery electric ferry. This class is not slated for short run ferry routes and could be constructed as a diesel engine powered vessel. 400PAX ZEAT #1 (Intintoli's replacement) is forecasted to enter service in 2027. 400PAX ZEAT #2 (Mare Island's replacement) is forecasted to enter service in 2028.

This class of vessel is currently under design and the estimated power level has been used for these calculations. The calculations still show emissions for this vessel. Those emissions are based off the emissions for the CAMX electrical grid for the electricity used to charge the vessel. The only emissions used are NOx as the eGRID data indicates that there are no PM emissions from the electrical grid. Calculating the emissions from the GRID was not required but was used to fairly calculate the impact of the electric vessels and fairly evaluate the difference between battery electric and hydrogen fuel cell vessels.

Operating Hours

The Central Bay and North Bay operating hours for existing and future routes in the High Use ACE Calculations match the High Use Baseline operating hour totals. The exact hour allocations for each vessel differ between the two plans to accommodate the planned vessel conversion schedules required to meet each plan.

ACE High Calculation Vessel Nomenclature

The "ACE high use" tab on the calculation's spreadsheet includes the following existing vessels, vessels under constructure and vessels in design and or planning. Vessels that are part of a class are considered to have similar propulsion configurations only differing in model year of the engines.

Existing Vessels	
Vessel Class	Vessel Name
Gemini Class	Gemini
	Pisces
	Scorpio
	Taurus
Hydrus Class	Hydrus
	Cetus
	Argo
	Carina
	Peralta
	Bay Breeze
Pyxis Class	Pyxis
	Vela
	Lyra
Intintoli Class	Intintoli
	Mare Island
Dorado Class	Dorado
	Delphinus

	Currently Under Construction
320PAX DPF Class	Hull 160 – Shipyard Number, name pending selection process
	Hull 160 – Shipyard Number, name pending selection process
	Future Planed Construction
149PAX ZEAT Class	149PAX ZEAT#1 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
	149PAX ZEAT#2 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
	149PAX ZEAT#3 - In design process no shipyard awarded yet,
	Short Run all battery electric vessel
400PAX ZEAT Class	400PAX ZEAT#1 - In design process no shipyard awarded yet,
	full battery electric vessel.
	400PAX ZEAT#2 - In design process no shipyard awarded yet,
	full battery electric vessel.

Conclusions

WETA Alternative Control of Emissions (ACE) Pla	n Calculation Sur	nmarv Table
ACE Strategy	Fleet A	Averaging
Number of Vessels in ACE plan total:		24
Vessels in ACE plan in service now		16
Vessels under construction		3
Vessels in Design phase		5
	Low Use Plan	High Use Plan
Nominal Compliance Baseline Total Emissions (lbs)	2,570,984	3,757,768
ACE Scenario Total Emissions (lbs)	2,143,796	2,895,487
ACE Plan Total Emissions Reduction (lbs)	427,188	862,281
Percentage Reduction	16.62%	22.95%
	0.544.000	0.740.400
Nominal Compliance Baseline - NOx (lbs)	2,541,629	3,716,109
ACE Scenario - NOx (lbs)	2,114,467	2,853,970
ACE Plan NOx Reduction (lbs)	427,163	862,139
Percentage Reduction	16.81%	23.20%
Nominal Compliance Baseline - PM (lbs)	29,355	41,658
ACE Scenarion - PM (lbs)	29,329	41,517
ACE Plan PM Reduction (lbs)	26	142
Percentage Reduction	0.09%	0.34%

The calculations submitted represent WETA's best estimate of a range of operating hours and routes that are, or could be, serviced in the effective period of the new CHC regulation. The time period is January 1st, 2023, to December 31st, 2034. These calculations were devised to show that the ACE plan as proposed by WETA provides for

equal to or less emissions than the CARB CHC baseline calculations for each scenario considered. The two scenarios have been chosen to show that the plan is robust and will outperform CARB's requirements throughout a range of operating scenarios.

The calculations were also intended to show a margin between the ACE emissions and the CARB baseline emissions. In both the low use and high use scenarios the calculations proved that WETA's alternative compliance plan will provide for less emissions than what CARB is regulating CHC to. In the low use scenario, the ACE plan provides a 16.6% reduction in emission (NOx+PM) when compared to the CARB CHC low use baseline. In the high use scenario, the ACE plan provides a 22.8% reduction in emissions when compared to the CARB CHC high use baseline. The high use case sees substantial emissions reductions, even over the low use case by relying heavily on the use of battery electric drive vessels which are expected to see substantial improvements in vessel reliability. The predicted reductions in overall fleetwide emissions are substantially beyond what the regulation requires, notably achieved while executing a capital plan that is aggressive but realistic.

Given the reduction of emissions compared to the CHC rules, WETA does not intend to apply for any further vessel compliance extensions upon approval of this ACE plan.

WETA is achieving these reductions but undertaking a program to electrify their routes where it is reasonable. WETA has expended considerable effort to determine the phases that these routes can be logically converted to full battery electric operation and has started the implementation program. This program offered WETA and CARB the largest emissions reductions in a manner that was both possible and fiscally obtainable. The baseline compliance as detailed in the CHC regulations was not possible for WETA to achieve with the assets currently in their fleet. The proposal as detailed in this Alternative Control of Emission plan is possible and offers what WETA believes to be the best path forward with the most responsible use of the public funding available to WETA.

Any inquiries or further clarifications regarding this ACE plan should be directed to:

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Senior Marine Project Manager
rybka@watertransit.org
510.847.4461

Appendix 1: Detailed Calculation Columns Description

<u>Column A – Vessel</u> This Column contains the subject vessel name for the row being calculated. The vessel name is repeated for each row that corresponds to either a propulsion or auxiliary engine for that vessel. As an example, the first vessel Gemini, has four rows, one for each of the two propulsion engines and one for each of the two auxiliary engines.

You will note that the vessel name changes on subsequent sections from Gemini to Gemini DPF. The rows where the name has changed to Gemini DPF signifying changes to the subject engines to comply with CARB CHC regulations. The subject engine will be EPA Tier 3 or 4 +DPF based on the highest emissions tier available today. You will also note some vessels have two configurations and some have three. This is based on the compliance dates for the propulsion and auxiliary engines. Where those two classifications of engines do not have the same compliance year the repower to the CARB compliant engine and emissions systems are staggered to strictly align with the compliance timelines provided in the regulations.

Finally, in Column A you will note that after each configuration of the vessel there is a separator line labeled Gemini Annual Hours as an example. These annual hours are input further over to the right in columns U through AG. Those hours are the hours operated that calendar year under that emissions configuration.

<u>Column B – Type</u> This column contains the identification of the engines for that row. Engines are identified as Main or Aux. Main engines are propulsion engines used to move the vessel through the water. Aux is short for Auxiliary engines which are used to generate electrical energy for the vessels support systems.

Column C – OEM This column contains the common name of the engine original equipment manufacturer. While the name used here may not be the full legal names of the OEM it is enough for someone familiar with heavyduty off-road diesel engine manufacturers. Where future repowers or new builds do not have a clear direction TBD is used in this column to signify the exact equipment cannot be chosen at this time. The horsepower levels are estimated to the best of our ability based off the current craft, planned craft and engineering analysis.

At the summary row below each vessel configuration Column C has a label of "Gen Hour Factor". This is the percentage of main engine running hours that the generators are running. There are always two generators on each vessel with only one running at a time therefore the running hours are not equal to the main engine running hours. There will be more description in the Column D section for the number.

<u>Column D – Model</u> This column contains the model number of the engine for that row. Where future repowers or new builds do not have a clear direction TBD is used in this column to signify the exact equipment cannot be chosen at this time.

At the summary row below each vessel configuration Column D has the "Gen Hour Factor" number input. This is the factor multiplied against the main engine operating hours to represent the generator operating hours. There are two generators with only one running at a time. However, the generator often runs when the main engines are offline during layovers. Each vessel configuration has a section for a specific factor, however looking at the historical data all the vessels currently have their generators running about 2/3^{rds} of their main engine operating hours. This was left in each vessel configuration in case any of the operators using this format intend to employ alternative or hybrid generator scenarios that might change this factor for the different vessel configurations.

<u>Column E – Engine Family</u> This column contains the EPA engine family number where it is known. Where future repowers or new builds do not have a clear direction TBD is used in this column to signify the exact equipment cannot be chosen at this time or future changes to EPA family numbers are possible.

<u>Column F – Year</u> This column contains the year the subject engine was manufacturer according to the tag on the engine block.

<u>Column G – HP</u> This column contains the rated horsepower of the subject engine.

<u>Column H – EPA Tier</u> This column contains the EPA emission Tier that the subject engine has or will have in the case of future new builds or repowers.

<u>Column I – Compliance Year</u> This column contains the compliance year for the subject engine based on the year of manufacture and Table 14 or Table 17 from CHC regulation.

<u>Column J – Baseline 2yr ext.</u> This column contains the year repower has to take place based on ACE plan guidance of 2 years of extensions from the compliance dates in Column I.

Column K – NOx g/bhp-hr This column contains the mass of Nitrous Oxides emissions from the subject engine in grams per brake horsepower hour. These values are sourced from CARB's ISOR Appendix H table H-5 based on engine EPA emissions Tier rating and horsepower bin as defined by CARB. These values are used as this is the standard that CARB used in their calculations to justify these new CHC regulations. The emissions values from this table are applied for all engines, including CARB Tier4+DPF and Tier3+DPF engines as values in Table 12 of the CHC regulations are less conservative and integrate Hydro Carbon emissions into the NOx emission numbers. Use of these emission numbers was agreed upon during WETA's meeting with CARB on 13 March 2023 and documented in the meeting notes sent via email on that day. If any further definition is required as to the source of these values, please refer to ISOR Appendix H from the Proposed Amendments to the CHC Regulation for CARB's explanations.

Column L – LF ISOR Appendix H Table H-9 This column contains the Load Factors for the propulsion and auxiliary engines used in the calculations. These values are sourced from CARB's ISOR Appendix H table H-9 based on CARB's review of all the Ferries. These LF's have been reviewed and represent a very good average LF for WETA's ferry operations. Some routes have higher LF's, and some routes have lower LF's. Since no one vessel is dedicated to any one specific route the CARB LF's are used in the calculations as WETA believes they represent the best average of the fleet and the routes. If any further definition is required as to the source of these values, please refer to ISOR Appendix H from the Proposed Amendments to the CHC Regulation for CARB's explanations.

<u>Column M – NOx R99 Reduction</u> This column contains the percentage reduction of NOx emissions per engine EPA emissions tiers as outlined in ISOR Appendix E and applied per WETA's meeting with CARB on 13 March 2023 and documented in the meeting notes sent via email on that day.

<u>Column N – NOx Emissions lbs./hr</u> This column contains the calculated NOx emission in pounds per hour for the subject engine in that row. This is calculated by multiplying the columns G, K, L, and (1-M) by the ratio of pounds per gram 0.0220462.

Column O – NOx eGrid Emissions lbs./hr

This column contains the calculated NOx emission in pounds per hour for the subject electric prime mover. This is calculated by dividing the emissions data from the EPA eGrid for CAMX (California) region for Nitrous Oxide (NO) emissions in pounds per megawatt hour by a factor if 1340.482 to convert from megawatt hours to pounds per horsepower hours. This calculation will come into play in the ACE low and ACE high tab calculations for electric vessels. While these are zero emissions vessels at the vessel themselves

there are emissions from the power grid to charge them. Only NO is calculated as PM emission values are not provided in the eGRID reporting. It is assumed that the emissions regulations on stationary power plants has no measurable PM emissions.

Column P thru AA – 2023 -2034 NOx Emissions in lbs. These columns contain the calculated NOx emission in pounds for the subject engine or prime mover in that row for the subject year (year located in Row 2). The summary rows contain the planned operating hours for each vessel in the associated year. The emissions are calculated by multiplying the correct NOx emissions classification in lbs. per hour (either Column N or O) by the estimated operating hours for the subject year. For auxiliary engines, the hours are additionally multiplied by the generator hour factor associated with that engine. As an example, in row 3 and column P (2023) for the Gemini propulsion engine the calculated value in cell P3 is equal to N3*V7. Cell V7 is the low estimate of the operating hours for the subject vessel for the subject year on the "Baseline Low" and "Ace Low" tabs. "Baseline High" and "Ace High" tabs the estimated hours represent the high estimated operating hours.

At the bottom of the sheet there are totals in these columns for total annual NOx Emissions for the fleet, "Central Bay Hour Usage", "North Bay Hour Usage" and "Total Vessel Hour Usage". These values are calculated by summing emissions and separately the individual vessel annual hours for the subject column year that are to be allocated to the subject Operations center. This is done to help estimate total service hours, future service additions and as a check on existing service hours to ensure individual vessel annual hours are estimated accurately. The individual vessels annual operating hour allocation changes depending on a great number of factors including service levels, new routes, vessel retirement, vessel repowers and major maintenance allowances.

<u>Column AB – NOx Emissions 2023 thru 2034, lbs.</u> This column contains the estimated NOx emission in pounds for the subject engine or prime mover in that row for the period from January1, 2023 through December 31, 2034. This number is the summation of the values from columns P through AA for the subject row.

At the bottom of the sheet on each tab or scenario (Baseline Low, Baseline High, ACE Low and ACE High) there is a totaled emissions for all the vessels through the entire time contemplated. This number is the summation of all the values in Column AH.

Column AC – PM g/bhp-hr This column contains the mass of Particulate Matter emissions from the subject engine in grams per brake horsepower hour. These values are sourced from CARB's ISOR Appendix H table H-5 based on engine EPA emissions Tier rating and horsepower bin as defined by CARB. These values are used as this is the standard that CARB used in their calculations to justify these new CHC regulations. Use of these emission numbers was agreed upon during WETA's meeting with CARB on 13 March 2023 and documented in the meeting notes sent via email on that day. If any further definition is required as to the source of these values, please refer to ISOR Appendix H from the Proposed Amendments to the CHC Regulation for CARB's explanations.

<u>Column AD – PM CARB Tier 4+DPF g/bhp-hr</u> This column contains the PM emissions from the subject engine in grams per brake horsepower hour. This number is the sum of the NOx and PM emissions from Table 11 of the final CHC regulation order for EPA Tier 4 engines with the addition of a CARB Level 3 validated DPF.

<u>Column AE – CARB Tier 3+DPF g/bhp-hr</u> This column contains the PM emissions from the subject engine in grams per brake horsepower hour. This number is the sum of the NOx and PM emissions from Table 12 of the final CHC regulation order for EPA Tier 3 engines with the addition of a CARB Level 3 validated DPF.

<u>Column AF – LF ISOR Appendix H Table H-9</u> This column contains the Load Factors for the propulsion and auxiliary engines used in the calculations. These values are sourced from CARB's ISOR Appendix H table H-9 based on CARB's review of all the Ferries. These LF's have been reviewed and represent a very good average LF for WETA's

ferry operations. Some routes have higher LF's, and some routes have lower LF's. Since no one vessel is dedicated to any one specific route the CARB LF's are used in the calculations as WETA believes they represent the best average of the fleet and the routes. If any further definition is required as to the source of these values, please refer to ISOR Appendix H from the Proposed Amendments to the CHC Regulation for CARB's explanations.

<u>Column AG – PM R99 Reduction</u> This column contains the percentage reduction of PM emissions per engine EPA emissions tiers as outlined in ISOR Appendix E and applied per WETA's meeting with CARB on 13 March 2023 and documented in the meeting notes sent via email on that day.

<u>Column AH –PM Emissions lbs./hr</u> This column contains the calculated PM emission in pounds per hour for the subject engine in that row. This is calculated by multiplying columns G, AF, (1-AG) and the applicable PM emissions rate (columns AC, AD, or AE) by the ratio of pounds per gram 0.0220462.

Column AI thru AT -2023 -2034 PM Emissions in lbs. These columns contain the calculated PM emission in pounds for the subject engine or prime mover in that row for the subject year (year located in Row 2). The summary rows contain the planned operating hours for each vessel in the associated year. The emissions are calculated by multiplying the PM emissions classification in lbs. per hour (Column AH) by the estimated operating hours for the subject year. For auxiliary engines, the hours are additionally multiplied by the generator hour factor associated with that engine.

At the bottom of the sheet there are totals in these columns for total annual PM Emissions for the fleet, "Central Bay Hour Usage", "North Bay Hour Usage" and "Total Vessel Hour Usage". These values are calculated by summing emissions and separately the individual vessel annual hours for the subject column year that are to be allocated to the subject Operations center. This is done to help estimate total service hours, future service additions and as a check on existing service hours to ensure individual vessel annual hours are estimated accurately. The individual vessels annual operating hour allocation changes depending on a great number of factors including service levels, new routes, vessel retirement, vessel repowers and major maintenance allowances.

<u>Column AU – PM Emissions 2023 thru 2034, lbs.</u> This column contains the estimated PM emission in pounds for the subject engine or prime mover in that row for the period from January1, 2023 through December 31, 2034. This number is the summation of the values from columns P through AA for the subject row.

At the bottom of the sheet on each tab or scenario (Baseline Low, Baseline High, ACE Low and ACE High) there is a totaled emissions for all the vessels through the entire time contemplated. This number is the summation of all the values in Column AH.

<u>Column AV – Total Emissions 2023 thru 2034, lbs.</u> This column contains the Total estimated emission (NOx + PM) in pounds for the subject engine or prime mover in that row for the period from January1, 2023 through December 31, 2034. This number is the summation of the values from columns AB and AU for the subject row.

At the bottom of the sheet on each tab or scenario (Baseline Low, Baseline High, ACE Low and ACE High) there is a totaled emissions for all the vessels through the entire time contemplated. This number is the summation of all the values in Column AV.

Appendix 2: Attestations

Application for Alternative Control of Emissions (ACE) for the Commercial Harbor Craft Regulation

Attestations

Confirm eac	ch of the following statement by selecting TRUE from the dropdown menu to the left of each statement.
True	I, an authorized representative of San Francisco Bay Ferry / Water Emergency Transportation Authority, attest to the veracity of the information submitted in the ACE application packet and declaring that the information submitted accurately represents the actual and/or intended long-term operation of the ACE plan described in the application packet.
True	Emission reductions included in this ACE only includes diesel PM and NOx emissions from harbor craft within the applicant's fleet that operate within a single specified California air basin, or another defined geographic area approved by the E.O $93118.5 \ section (f)(1)(G)$
True	Applicant will maintain operating records of: 1. all the reporting and recordkeeping requirements specified in subsection (m) and (o) on and after January 1, 2023; 2. maintenance procedures; and 3. emissions test results 93118.5 section (f)(1)(H)
True	Applicant will retain records and reports for the lifetime of each engine and must submit these records and reports to the E.O. in the manner specified in the approved ACE or upon request by the E.O. 93118.5 section (f)(1)(H)
True	Emission reductions included in this ACE does not include reductions that are otherwise required by any local, State, or federal rule, regulation, or statute, or that are achieved or estimated from equipment not located in the region to which the ACE applies. 93118.5 section (f)(1)(I)
True	The ACE application does not use equipment acquired by funds or grants that prohibit use of funds to comply with State regulations, laws, or mandates. 93118.5 section (f)(1)(I)
True	Applicant will not operate any harbor craft under the ACE unless the person has first been notified in writing by the E.O. of the ACE's approval. Prior to such approval, the applicant must comply with the requirements in the CHC regulation on and after January 1, 2023. 93118.5 section $(f)(1)(J)$

									ISOR Appendix H Table H-5	045545					Emissions years, Vessel in seprate lines dependant or	n emissions conf			HC Regulation Table 11	040015				missions years, Vessel in seprate lines dependant o			
Vessel	Туре	OEM	Model	Engine Family	Year	HP EPA Tier	Compliance Year	baseline 2yr ext	NOx g/bhp-hr	ISOR Appendix H Table H-9	NOx R99 NO Reduction Emiss s lbs	Ox NOx eGr sions Emissior /hr lbs/hr	2023 NOx in lbs	s 2024	2025 2026 2027 2028 2029	2030	2031 2032 2033 2034 NOx Emission 2023 thru 2034 lbs		CARB PM CARB + DPF Tier 3+ DPF p-hr g/bhp-hr	ISOR appendix H Table H-9	PM R99 PM Reduction Emissions s lbs/hr	2023 NOx in lbs 202	24 2025	2026 2027 2028 2029	2030	PM Emissions 2031 2032 2033 2034 2023 thru 2034, lbs	Total Emissions , 2023 thru 2034, lbs
Gemini Gemini Gemini	Main Main Aux Aux	MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045TF275 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275		1,450 4 1,450 4 87 2	2028 2028 2024 2024	2030 2030 2026 2026	1.04 1.04 4.02	0.31 0.31 0.39 0.39	0% 1.0 0% 1.0 10% 0.1	03 03 07	2,06 2,06 36	51 1,546 51 1,546 51 271 51 271	1,546 1,546 - - - 1,546 1,546 - - - 271 271 - - -		6,69 6,69 1,17	9 0.03 9 0.03 3 0.17		0.31 0.31 0.39 0.39	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	42 42 12	31 31 31 31 9 9	31		135 135 39	5 6,834 5 6,834 9 1,211
Gemini Annual Hours Gemini	, (5.,)	Gen Hour Factor MAN	67% D2862LE489	D2862LE489	2007	1,450 4	2028	2030	1.04	0.39	0% 1.0	Annual Hou	rs 2,00	00 1,500	1,500 1,500 - 773 1,031 1,54	6 2,061	5,41	1 0.03		0.31	30% 0.02081	2,000 1,	500 1,500 	1,500	- 1 42	109	9 5,520
Gemini Gemini DPF Gemini DPF	Main Aux Aux	MAN John Deere John Deere Gen Hour	D2862LE489 4045 4045	D2862LE489 unknown unknown	2024	1,450 4 87 3+DPF 87 3+DPF	2028	2030	1.04 3.22 3.22	0.31 0.39 0.39	0% 1.0 0% 0.2 0% 0.2	24	-		- - 773 1,031 1,54 - - 120 161 24 - - 120 161 24	.6 2,061 .1 321 .1 321	- - - 5,41 - - - 84 - - - 84	1 0.03 3 3	0.013 0.013	0.31 0.39 0.39	30% 0.02081 0% 0.00097 0% 0.00097	- - -	 	- 16 21 3 - 0 1 - 0 1	1 42 1 1 1 1	109 3 3	3 846 3 846
Gemini 1/2 DPF Hours Gemini DPF Gemini DPF	Main Main	Factor MAN MAN	D2862LE48B D2862LE48B	D2862LE48B D2862LE48B		1,450 4+DPF 1,450 4+DPF			1.04	0.31	0% 1.0 0% 1.0	03	rs -	-		2,000	1,031 1,546 1,031 515 4,12 1,031 1,546 1,031 515 4,12	2 0. 2 0.	005	0.31 0.31	0% 0.00495 0% 0.00495		 	- 750 1,000 1,500	2,000	5 7 5 2 20 5 7 5 2 20	0 4,142 0 4,142
Gemini DPF Gemini DPF Gemini DPF Hours	Aux Aux	John Deere John Deere Gen Hour Factor	4045 4045 67%	unknown unknown	2024	87 3+DPF 87 3+DPF			3.22	0.39	0% 0.2 0% 0.2	-7	rs -	-		-	161 241 161 80 64 161 241 161 80 64 1,000 1,500 1,000 500	2	0.013	0.39	0% 0.00097 0% 0.00097		 		-	1 1 1 0 3 1 1 1 1 0 3 1,000 1,500 1,000 500	3 645
Pisces Pisces Pisces Pisces		MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2008	1,450 4 1,450 4 87 2	2028 2028 2024 2024	2030 2030 2026 2026	1.04 1.04 4.02	0.31 0.31 0.39	0% 1.0 0% 1.0 10% 0.1	03	2,06 2,06 36	51 1,546 51 1,546 51 271 51 271	1,546		6,44 6,44 1,12	1 0.03		0.31 0.31 0.39 0.39	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	42 42 12	31 31 31 31 9 9	26		130 130 37	0 6,571 0 6,571 7 1,165
Pisces Annual Hours Pisces	Main	Gen Hour Factor MAN	4045TF275 67% D2862LE489	D2862LE489	2021	1,450 4	2028	2030	1.04	0.31	0% 1.0	Annual Hou	rs 2,00	00 1,500	1,500 1,250 - - 773 1,031 1,54	6 2,061	5,41	1 0.03		0.31	30% 0.02081	2,000 1,	500 1,500	1,250	1 42	109	1,103
Pisces Pisces DPF Pisces DPF	Main Aux Aux	MAN John Deere John Deere Gen Hour	D2862LE489 4045 4045	D2862LE489 unknown unknown	2021 2024 2024	1,450 4 87 3+DPF 87 3+DPF	2028	2030	1.04 3.22 3.22	0.31 0.39 0.39	0% 1.0 0% 0.2 0% 0.2	.7	-		- - 773 1,031 1,54 - - 120 161 24 - - 120 161 24	2,061 1 321 1 321	5,41 84 84	1 0.03 3 3	0.013 0.013	0.31 0.39 0.39	30% 0.02081 0% 0.00097 0% 0.00097	- - -	 	- 16 21 3 - 0 1 - 0 1	1 42 1 1 1 1	109 3 3	3 846 3 846
Pisces 1/2 DPF Hours Pisces DPF Pisces DPF Pisces DPF	Main Main Aux	Factor MAN MAN John Deere	D2862LE48B D2862LE48B 4045	D2862LE48B D2862LE48B unknown	2030 2030	1,450 4+DPF 1,450 4+DPF 87 3+DPF			1.04 1.04	0.31 0.31	0% 1.0 0% 1.0	Annual Hou					1,031 1,546 1,031 1,031 4,63 1,031 1,546 1,031 1,031 4,63	8 0. 8 0.	005 0.013	0.31 0.31	0% 0.00495 0% 0.00495	- - -	 	- /50 1,000 1,50 		5 7 5 5 22 5 7 5 5 22 1 1 1 1 1 2	2 4,660 2 4,660
Pisces DPF Pisces DPF Hours	Aux	John Deere Gen Hour Factor	4045 67%	unknown	2024	87 3+DPF			3.22	0.39	0% 0.2	Annual Ho	rs	-		-	161 241 161 161 72 161 241 161 161 72 1,000 1,500 1,000 1,000	3	0.013	0.39	0% 0.00097	-			-	1 1 1 1 1 3 1,000 1,500 1,000 1,000	3 726
Scorpio Scorpio Scorpio	Main Main Aux Aux	MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045TF275 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2021 2008 2008	1,450 4 1,450 4 87 2 87 2	2028 2028 2024 2024	2030 2030 2026 2026	1.04 1.04 4.02 4.02	0.31 0.31 0.39 0.39	0% 1.0 0% 1.0 10% 0.2 10% 0.2	03 03 27 27	2,06 2,06 36 36	51 2,061 51 2,061 51 361 51 361	1,546 1,288 - - - 1,546 1,288 - - - 271 226 - - - 271 226 - - -		6,95 6,95 1,21 1,21	7 0.03 8 0.17		0.31	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	42 42 12 12	42 31 42 31 12 9 12 9	26 - - 26 - - 7 - - 7 - -		140 140 40 40	7,097 0 7,097 0 1,258
Scorpio Annual Hours Scorpio	Main Main	Gen Hour Factor MAN MAN	67% D2862LE489 D2862LE489	D2862LE489 D2862LE489	2021	1,450 4 1,450 4	2028	2030	1.04	0.31	0% 1.0	Annual Hou	rs 2,00	2,000	1,500 1,250	2,061	5,92	6 0.03		0.31	30% 0.02081	2,000 2,	000 1,500 	1,250	2 42	120	6,046
Scorpio Scorpio DPF Scorpio DPF Scorpio 1/2 DPF Hours	Aux	John Deere John Deere Gen Hour	4045 4045 67%	unknown unknown	2024 2024 2024	87 3+DPF 87 3+DPF	2026	2030	3.22 3.22	0.39	0% 0.2 0% 0.2	24 Annual Hot	- -	-	120 161 32 - 120 161 32 - 120 161 32	1 321 1 321 2 321	92 92	3	0.013 0.013	0.39	0% 0.00097 0% 0.00097	- - -		- 16 21 2 - 0 1 - 0 1	1 1 1 1 1 1 2 2 000	120 4 4	4 927 4 927
Scorpio DPF Scorpio DPF Scorpio DPF	Main Main Aux	Factor MAN MAN John Deere	D2862LE48B D2862LE48B 4045	D2862LE48B D2862LE48B unknown	2030 2030 2024	1,450 4+DPF 1,450 4+DPF 87 3+DPF			1.04 1.04 3.22	0.31 0.31 0.39	0% 1.0 0% 1.0 0% 0.3	03 03 04	-				1,031 1,546 1,031 1,031 4,63 1,031 1,546 1,031 1,031 4,63 161 241 161 161 72	8 0. 8 0.	005 0.013	0.31 0.31 0.39	0% 0.00495 0% 0.00495 0% 0.00097	- - -	 			5 7 5 5 22 5 7 5 5 22 1 1 1 1 3	2 4,660 2 4,660 3 726
Scorpio DPF Scorpio DPF Hours		John Deere Gen Hour Factor	4045 67%	unknown	2024	87 3+DPF	2020	2020	3.22	0.39	0% 0.3	Annual Ho	rs	- 2.064	4.546	-	161 241 161 161 72 1,000 1,500 1,000 1,000	3	0.013	0.39	0% 0.00097	-			-	1 1 1 1 3 1,000 1,500 1,000 1,000	726
Taurus Taurus Taurus Taurus	Main Main Aux Aux	MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045TF275 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2021 2009 2009	1,450 4 1,450 4 87 2 87 2	2028 2028 2024 2024	2030 2030 2026 2026	1.04 1.04 4.02 4.02	0.31 0.31 0.39 0.39	0% 1.0 0% 1.0 10% 0.2 10% 0.2	03 03 27 27	2,06 2,06 36 36	51 2,061 51 2,061 51 361 51 361	1,546 1,546 - - - 1,546 1,546 - - - 271 271 - - - 271 271 - - -	-	7,21 7,21 1,26 - 1,26	4 0.03 3 0.17		0.31 0.39	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	42 42 12 12	42 31 42 31 12 9 12 9	31		146 42 42	5 7,360 6 7,360 2 1,305 42 1,305
Taurus Annual Hours Taurus Taurus		Gen Hour Factor MAN MAN	67% D2862LE489	D2862LE489	2021	1,450 4 1,450 4	2028	2030	1.04	0.31	0% 1.0	Annual Hou	rs 2,00	2,000	1,500 1,500	7 2,061	6,44	0.00		0.31	30% 0.02081 30% 0.02081	2,000 2,	000 1,500 	1,500	2 42	130 130	6,571
Taurus DPF Taurus DPF Taurus 1/2 DPF Hours	Aux Aux	John Deere John Deere Gen Hour	4045 4045 .667	unknown	2024 2024	87 3+DPF 87 3+DPF	2020	2000	3.22 3.22	0.39	0% 0.2 0% 0.2	24 Annual Hot	rs -	-	120 161 40 120 161 40 750 1,000 2,50	2,301 321 321 321 2,000	1,00 1,00	4	0.013 0.013	0.39	0% 0.00097 0% 0.00097			- 0 1 - 0 1 - 750 1.000 2.50	2 1 2 1 2 2 1 2 2 1 2 2 2 2 1 2 2 2 2 2	4 4	1,008 4 1,008
Taurus DPF Taurus DPF Taurus DPF	Main Main Aux	Factor MAN MAN John Deere	D2862LE48B D2862LE48B 4045	D2862LE48B D2862LE48B unknown		1,450 4+DPF 1,450 4+DPF 87 3+DPF			1.04 1.04 3.22	0.31 0.31 0.39	0% 1.0 0% 1.0 0% 0.2	03 03 024	-			-	1,031 1,546 1,031 2,061 5,66 1,031 1,546 1,031 2,061 5,66 161 241 161 321 88	8 0. 8 0. 3	005 0.013	0.31 0.31 0.39	0% 0.00495 0% 0.00495 0% 0.00097	- - -	 		- - -	5 7 5 10 27 5 7 5 10 27 1 1 1 1 4	7 5,696 7 5,696 4 887
Taurus DPF Taurus DPF Hours Hvdrus	Aux	John Deere Gen Hour Factor MTU	4045 .667 12V4000M64	unknown FMDDN76.3MTK	2024	87 3+DPF 1.950 3	2026	2028	3.22	0.39	10% 4.4	Annual Ho	rs 12.17	71 12 171	11,065 11,065 13,278 8,852 -	-	161 241 161 321 88 1,000 1,500 1,000 2,000	1 0.05	0.013	0.39	0% 0.00097 30% 0.04664	- 129	 	117 140 92	-	1 1 1 1 1 4 1,000 1,500 1,000 2,000	1 887
Hydrus Hydrus Hydrus	Main Aux Aux	MTU John Deere John Deere	12V4000M64 12V4000M64 4045AFM85 4045AFM85	FMDDN76.3MTK EJDXN06.8148 EJDXN06.8148		1,950 3 1,950 3 162 3 162 3	2026 2026 2026 2026	2028 2028 2028 2028	3.69 3.22 3.22	0.31 0.39 0.39	10% 4.4 10% 0.4	13	12,17 12,17 74	71 12,171 71 12,171 40 740 40 740	11,065 11,065 13,278 8,832 - 11,065 11,065 13,278 8,852 - 673 673 807 538 - 673 673 807 538 -	-	68,60 4,17 4,17	1 0.05		0.31 0.39 0.39	30% 0.04664	128 128 13 13	128 117 128 117 13 11 13 11	117 140 93 - 117 140 93 - 11 14 9 - 11 14 9 -	-	723 71 71	3 69,324 1 4,242 1 4,242
Hydrus Annual Hours Hydrus DPF Hydrus DPF	Main Main	Gen Hour Factor MTU MTU	67% 12V4000M65L 12V4000M65L	Unknown Unknown	2028	2,000 4+DPF 2,000 4+DPF			1.04 1.04	0.31	0% 1.4 0% 1.4	Annual Hou	rs 2,75	2,750	2,500 2,500 3,000 2,000 - - - - - - - -	2,843 2,843	2,843 2,488 2,132 2,132 12,43 2,843 2,488 2,132 2,132 12,43	8 0. 8 0.	005	0.31 0.31	0% 0.00683 0% 0.00683	2,750 2, - -	750 2,500 	2,500 3,000 2,000 - 	- 14 14	14 12 10 10 60 14 12 10 10 60	0 12,498 50 12,498
Hydrus DPF Hydrus DPF Hydrus DPF Hours	Aux Aux	John Deere John Deere Gen Hour Factor	4045 4045 67%	unknown unknown	2028 2028	162 3+DPF 162 3+DPF			3.22 3.22	0.39 0.39	0% 0.4 0% 0.4	15 Annual Hot	rs	-		598 598 2,000	598 523 449 449 2,61 598 523 449 449 2,61 2,000 1,750 1,500 1,500	6	0.013 0.013	0.39 0.39	0% 0.00181 0% 0.00181	- -	 		2 2 2,000	2 2 2 2 11 2 2 2 2 2 11 2,000 1,750 1,500 1,500	1 2,627 1 2,627
Cetus Cetus Cetus	Main Main Aux	MTU MTU John Deere	12V4000M64 12V4000M64 4045AFM85	FMDDN76.3MTK FMDDN76.3MTK EJDXN06.8148	2015 2015 2016	1,950 3 1,950 3 162 3	2026 2026 2027	2028 2028 2029	3.69 3.69 3.22	0.31 0.31 0.39	10% 4.4 10% 4.4 10% 0.4	_	12,17 12,17 74	71 12,171 71 12,171 40 740	11,065 11,065 14,384 8,852 - 11,065 11,065 14,384 8,852 - 673 673 875 538 -		69,70 69,70 4,23	7 0.00		0.31 0.31 0.39	30% 0.04664 30% 0.04664 30% 0.00683	128 128 13	128 117 128 117 13 11	117 152 93 - 117 152 93 - 11 15 9 -		735 725 72	5 70,442 5 70,442 2 4,310
Cetus Cetus Annual Hours Cetus DPF	Aux Main	John Deere Gen Hour Factor MTU	4045AFM85 67% 12V4000M65I	EJDXN06.8148 Unknown	2016	162 3 2.000 4+DPF	2027	2029	3.22	0.39	0% 1.4	Annual Hou	74 rs 2,75	740 740 740 740 740 740	673 673 875 538 - 2,500 2,500 3,250 2,000	2.843	2.843 2.488 2.132 2.132 12.43	0.01	005	0.39	0.00683	2,750 2,	13 11 750 2,500	11 15 9 - 2,500 3,250 2,000 -	- 14	72 60	4,310
Cetus DPF Cetus DPF Cetus DPF	Main Aux	MTU John Deere John Deere	12V4000M65L 4045 4045	Unknown unknown unknown		2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 3.22 3.22	0.31 0.39 0.39	0% 1.4 0% 0.4 0% 0.4	15	-	- - -		2,843 598 598	2,843 2,488 2,132 2,132 12,43 598 523 449 449 2,61 598 523 449 449 2,61	8 0.	0.013 0.013	0.31 0.39 0.39	0% 0.00683 0% 0.00181 0% 0.00181	- - -	 	 	14 2 2	14 12 10 10 60 2 2 2 2 11 2 2 2 2 11	12,498 1 2,627 .1 2,627
Cetus DPF Hours Argo Argo	Main Main	Gen Hour Factor MTU MTU	67% 12V4000M64 12V4000M64	FMDDN76.3MTK FMDDN76.3MTK	2016 2016	1,950 3 1,950 3	2027 2027	2029 2029	3.69 3.69	0.31 0.31	10% 4.4 10% 4.4	_	13,27 13,27	78 13,278 78 13,278	8,852 11,065 14,384 8,852 2,21 8,852 11,065 14,384 8,852 2,21	2,000 3 - 3 -	2,000 1,750 1,500 1,500 - - - - 71,92 - - - - 71,92	0 0.05 0 0.05		0.31 0.31	30% 0.04664 30% 0.04664	140 140		117 152 93 2 117 152 93 2 2 2 2	2,000 3 - 3 -	2,000 1,750 1,500 1,500 - - - - - - - - 758	8 72,678 58 72,678
Argo Argo Argo Annual Hours	Aux Aux	John Deere John Deere Gen Hour Factor	4045AFM85 4045AFM85 67%	EJDXN06.8148 EJDXN06.8148	2014 2016	162 3 162 3	2026 2027	2028 2029	3.22 3.22	0.39 0.39	10% 0.4 10% 0.4	40 Annual Ho	80 80 rs 3,00	07 807 07 807 00 3,000	538 673 875 538 13 538 673 875 538 13 2,000 2,500 3,250 2,000 50	5 - 5 -	4,37 4,37	3 0.07 3 0.07		0.39 0.39	30% 0.00683 30% 0.00683	14 14 3,000 3,	14 9 14 9 000 2,000	11 15 9 11 15 9 2,500 3,250 2,000 50	2 - 2 - 0 -	74 74 74	4,447
Argo DPF Argo DPF Argo DPF	Main Main Aux	MTU MTU John Deere	12V4000M65L 12V4000M65L 4045	Unknown Unknown unknown		2,000 4+DPF 2,000 4+DPF 162 3+DPF			1.04 1.04 3.22	0.31 0.31 0.39	0% 1.4 0% 1.4 0% 0.4	12 12 15	-			3,554 3,554 748	2,843 2,488 2,488 2,132 13,50 2,843 2,488 2,488 2,132 13,50 598 523 523 449 2,84	5 0.	0.013	0.31 0.31 0.39	0% 0.00683 0% 0.00683 0% 0.00181	- - -	 		17 17 3	14 12 12 10 65 14 12 12 10 65 2 2 2 2 2 11	5 13,570 5 13,570 .1 2,852
Argo DPF Argo DPF Hours Carina	Aux Main	John Deere Gen Hour Factor MTU	4045 67% 12V4000M64	unknown FMDDN76.3MTK	2029	162 3+DPF 1,950 3	2027	2029	3.22	0.39	10% 4.4	Annual Hou	rs 12,17	71 13,278	8,852 11,065 14,384 8,852 4,42	748 2,500	598 523 523 449 2,84 2,000 1,750 1,750 1,500 - - - - 73,02	7 0.05	0.013	0.39	0% 0.00181 30% 0.04664	- - 128	 140 93		2,500 7 -	2 2 2 2 11 2,000 1,750 1,750 1,500 770	2,852 /0 73,797
Carina Carina Carina	Main Aux Aux	MTU John Deere John Deere Gen Hour	12V4000M64 4045AFM85 4045AFM85	FMDDN76.3MTK EJDXN06.8148 EJDXN06.8148	2016 2017 2017	1,950 3 162 3 162 3	2027 2027 2027 2027	2029 2029 2029	3.69 3.22 3.22	0.31 0.39 0.39	10% 4.4 10% 0.4 10% 0.4	10	12,17 74	71 13,278 40 807 40 807	8,852 11,065 14,384 8,852 4,42 538 673 875 538 26 538 673 875 538 26	9 -	73,02 4,44 4,44	0.07		0.39	30% 0.04664 30% 0.00683 30% 0.00683	128 13 13	140 93 14 9 14 9	117 152 93 4 11 15 9 11 15 9	7 -	770 75 75) 73,797 5 4,515 5 4,515
Carina Annual Hours Carina DPF Carina DPF	Main Main	Gen Hour Factor MTU MTU John Deere John Deere Gen Hour	67% 12V4000M65L 12V4000M65L	Unknown Unknown unknown	2029 2029	2,000 4+DPF 2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 1.04	0.31 0.31	0% 1.4 0% 1.4	12	rs 2,75	3,000	2,000 2,500 3,250 2,000 1,00 - - - - - - - - - -	2,132 2,132	2,843 2,488 2,488 2,132 12,08 2,843 2,488 2,488 2,132 12,08	-	005	0.31 0.31	0% 0.00683 0% 0.00683	2,750 3, - -	000 2,000 	2,500 3,250 2,000 1,00 - - - - - - - -	10 10	14 12 12 10 58 14 12 12 10 58	8 12,141 58 12,141
Carina DPF Carina DPF Carina DPF Hours	Aux Aux	John Deere John Deere Gen Hour Factor	4045 4045 67%	unknown unknown	2029 2029	162 3+DPF 162 3+DPF			3.22 3.22	0.39 0.39	0% 0.4 0% 0.4	•	rs	-		449 449 1,500	598 523 523 449 2,54 598 523 523 449 2,54 2,000 1,750 1,750 1,500	2 2	0.013 0.013	0.39 0.39	0% 0.00181 0% 0.00181	- - -			2 2 1,500	2 2 2 2 10 2 2 2 2 10 2,000 1,750 1,750 1,500	2,552 0 2,552
Peralta Peralta Peralta		Cummins Cummins John Deere	QSK50 QSK50 4045TF275	7CEXM019.AAB 7CEXM019.AAB 8ADEM06.8275	2007 2008	1,600 2 87 2	2024 2024 2024	2026 2026 2026	5.08 5.08 4.02	0.31 0.31 0.39	10% 5.0 10% 5.0 10% 0.3	27	11,24 11,24 40	19 14,998 06 541	11,249		48,74 48,74 1,75	5 0.09 9 0.17		0.31 0.39	30% 0.00890	155 155 13	207 155 207 155 18 13	155 155 13		672 672 58	49,416 72 49,416 58 1,817
Peralta Peralta Annual Hours Peralta DPF	Aux Main	John Deere Gen Hour Factor MTU	4045TF275 67% 12V4000M65L	8ADEM06.8275 Unknown	2008	87 2 2,000 4+DPF	2024	2026	1.04	0.39	0% 1.4	Annual Ho	rs 2,25	311	400 400		1,75 2,84	5 0.17	005	0.31	0.00890 0.00683	2,250 3,	18 13 000 2,250 	13		- - - - 58 - - - - - - - - - - 14	1,817 4 2,857
Peralta DPF Peralta DPF Peralta DPF	Main Aux Aux	MTU MTU John Deere John Deere Gen Hour	12V4000M65L 4045 4045	Unknown unknown unknown	2029 2029	2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 3.22 3.22	0.31 0.39 0.39	0% 1.4 0% 0.4 0% 0.4	15 15	-		- - 355 1,422 1,06 - - 75 299 22 - - 75 299 22		2,84 59 59		0.013 0.013	0.31 0.39 0.39	0% 0.00683 0% 0.00181 0% 0.00181	- - -	 	- 2 7 - 0 1 - 0 1	5 - 1 - 1 -	14 2 2	2,857 2 600 2 600
Peralta DPF Hours Bay Breeze Bay Breeze	Main Main	Gen Hour Factor MTU MTU John Deere	67% 16V2000M70 16V2000M70 4045TF270	7MDDM31.8MRR 7MDDM31.8MRR 8ADEM06.8275	2007 2010	1,410 2 1,410 2	2024 2025 2024	2026 2027	5.08 5.08	0.31 0.31	10% 4.4 10% 4.4 10% 0.2		8,81 8,81	0,012	1,101 - <td></td> <td> 18,72 18,72</td> <td>4 0.09</td> <td></td> <td>0.31</td> <td>30% 0.06071 30% 0.06071</td> <td>121 121</td> <td>121 15 121 15</td> <td>- 250 1,000 75 </td> <td></td> <td> 258 258</td> <td>8 18,982 8 18,982</td>		18,72 18,72	4 0.09		0.31	30% 0.06071 30% 0.06071	121 121	121 15 121 15	- 250 1,000 75 		258 258	8 18,982 8 18,982
Bay Breeze Bay Breeze	Aux Aux	John Deere John Deere	4045TF270 4045TF270	8ADEM06.8275 8ADEM06.8275	2008 2008	87 2 87 2	2024 2024	2026 2026	4.02 4.02	0.39 0.39	10% 0.2 10% 0.2		36 36	361 361 361 361	45 45	-	76 76	7 0.17 7 0.17		0.39 0.39	30% 0.00890 30% 0.00890	12 12	12 1 12 1		-	25 25	5 792 5 792

Bay Breeze Annual Hours	Gen Hour	67%								Annual Hours	2,000	2,000	250						2,0	00 2,000	250		-		-	
Pyxis Main Pyxis Main	Factor MTU MTU	16V4000M65L 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2017 3,433 4 2017 3,433 4 2017 3,433 4	2027	2029	1.04	0.31 0 0.31 0	0% 2.44 0% 2.44		4,880 4,880	4,270 4,270	4,270 4,270 4,880 7,320 6,3 4,270 4,270 4,880 7,320 6,3 7,320 6,3 7,320 6,3 7,320 6,3	100 -	35,991 35,991	0.03 0.03	0.31	30% 0.04 30% 0.04	927	99 86 99 86	86 86 99 86 86 99	148 123 148 123	-		- 727 - 727	36,718 36,718
Pyxis Aux Pyxis Aux Pyxis Hours	John Deere John Deere Gen Hour	6068AFM85E 6068AFM85E 67%	HJDXN06.8148 HJDXN06.8148	2017 245 3 2017 245 3	2027	2029	3.22	0.39 10	0% 0.61 0% 0.61	Annual Hours	814 814	712 712 1 750	712 712 814 1,221 1,0 712 712 814 1,221 1,0 1,750 1,750 2,000 3,000 2,5	017 -	6,003 6,003	0.07	0.39	30% 0.0°	032	14 12 14 12 12 14 1750	12 12 14 12 12 14 1,750 1,750 2,000	21 17 21 17 3,000 2,500	-		- 101 - 101	6,104
Pyxis+DPF Main Pyxis+DPF Main	Factor MTU MTU	16V4000M65L 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2017 3,433 4+DPI 2017 3,433 4+DPI	F F		1.04 1.04	0.31 0 0.31 0	0% 2.44 0% 2.44	Aundaniours		-		- 2,440 - 2,440	4,880 8,540 6,100 4,880 26,841 4,880 8,540 6,100 4,880 26,841		0.31 0.31	0% 0.0° 0% 0.0°	173 - 173 -				12 12	23 41 29 23 41 29	23 129 23 129	26,970 26,970
Pyxis+DPF Aux Pyxis+DPF Aux	John Deere John Deere Gen Hour	6068AFM85E 6068AFM85E	HJDXN06.8148 HJDXN06.8148	2017 245 3+DPF 2017 245 3+DPF			3.22 3.22	0.39 0 0.39 0	0.68 0% 0.68		-	-		- 452 - 452	904 1,583 1,131 904 4,974 904 1,583 1,131 904 4,974 4,974		0.013 0.39 0.013 0.39	0% 0.00 0% 0.00	274 -				2 2	4 6 5 4 6 5	4 20 4 20	4,994 4,994
Pyxis+DPF Hours Vela Main	Factor MTU	67% 16V4000M65L 16V4000M65I	MMDDN76.3MTS	2018 3,433 4	2027	2029	1.04	0.31 0	0% 2.44 0% 2.44	Annual Hours	4,880	3,660	4,270 4,270 5,490 7,320 6,7	710 -	2,000 3,500 2,500 2,000 - - - - 36,601	0.03	0.31	30% 0.04	021	99 74	86 86 111	148 135	1,000	2,000 3,500 2,500 - - -	- 739	37,340
VelaMainVelaAuxVelaAux	MTU John Deere John Deere	6068AFM85E	MMDDN76.3MTS HJDXN06.8148 HJDXN06.8148	2018 3,433 4 2017 245 3 2017 245 3	2027 2027 2027	2029 2029 2029	3.22 3.22	0.39 10	0% 2.44 0% 0.61 0% 0.61		4,880 814 814	610 610	4,270 4,270 5,490 7,320 6,3 712 712 916 1,221 1,3 712 712 916 1,221 1,3	710 - 119 - 119 -	36,601 6,105 6,105	0.03 0.07 0.07	0.31 0.39 0.39	30% 0.0	927 032 032	99 74 14 10 14 10	86 86 111 12 12 15 12 12 15	148 135 21 19 21 19	- - -		- 739 - 103 - 103	6,208 6,208
Vela Hours Vela+DPF Main	Gen Hour Factor MTU	67% 16V4000M65L	MMDDN76.3MTS	2018 3,433 4+DPI	F		1.04	0.31 0	0% 2.44	Annual Hours	2,000	1,500	1,750	750 - 2,440	7,320 8,540 6,100 6,710 31,111	0.005	0.31	0% 0.0	2,0	00 1,500	1,750 1,750 2,250	3,000 2,750	- 12	35 41 29	- 32 150	31,260
Vela+DPF Main Vela+DPF Aux Vela+DPF Aux	MTU John Deere John Deere	16V4000M65L 6068AFM85E 6068AFM85E	MMDDN76.3MTS HJDXN06.8148 HJDXN06.8148	2018 3,433 4+DPI 2017 245 3+DPI 2017 245 3+DPI	F F		1.04 3.22	0.31 0 0.39 0 0.39 0	0% 2.44 0% 0.68 0% 0.68		-	-		- 2,440 - 452	7,320 8,540 6,100 6,710 31,111 1,357 1,583 1,131 1,244 5,766 1,357 1,583 1,131 1,244 5,766	0.005	0.31 0.013 0.39 0.013 0.39	0% 0.0° 0% 0.00	173 - 1274 -	-			12 2	35 41 29 5 6 5	32 150 5 23	31,260 5,789
Vela+DPF Hours	Gen Hour Factor	67%				0000	4.04	0.00	0.00	Annual Hours	1.000	2.550		1,000	3,000 3,500 2,500 2,750	0.03	0.00	0,0	-				1,000	3,000 3,500 2,500	2,750	3,763
LyraMainLyraMainLyraAux	MTU MTU John Deere	16V4000M65L 6068AFM85E	MMDDN76.3MTS MMDDN76.3MTS HJDXN06.8148	2018 3,433 4 2018 3,433 4 2017 245 3	2027 2027 2027	2029 2029 2029	1.04 1.04 3.22	0.31 0 0.31 0 0.39 10	0% 2.44 0% 2.44 0% 0.61		4,880 4,880 814	3,660 3,660 610	4,880 4,270 5,490 6,100 6,7 4,880 4,270 5,490 6,100 6,7 814 712 916 1,017 1,7	710 - 710 - 119 -	35,991 35,991 6,003	0.03 0.03 0.07	0.31 0.31 0.39	30% 0.04 30% 0.04 30% 0.07	927 927 032	99 74 99 74 14 10	99 86 111 99 86 111 14 12 15	123 135 123 135 17 19	- - -		- 727 - 727 - 101	36,718 36,718 6,104
Lyra Hours Aux	John Deere Gen Hour Factor	6068AFM85E 67%	HJDXN06.8148	2017 245 3	2027	2029	3.22	0.39	0% 0.61	Annual Hours	2,000	1,500	814 712 916 1,017 1,3 2,000 1,750 2,250 2,500 2,5	119 - 750	6,003	0.07	0.39	30% 0.0	2,0	14 10 00 1,500	14 12 15 2,000 1,750 2,250	17 19 2,500 2,750	-		- 101 -	6,104
Lyra+DPF Main Lyra+DPF Main	MTU MTU	16V4000M65L 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS HJDXN06.8148	2018 3,433 4+DPI 2018 3,433 4+DPI 2017 245 3+DPI	F		1.04 1.04	0.31 0 0.31 0)% 2.44)% 2.44		-	-		- 2,440 - 2,440	7,320 8,540 6,100 6,710 31,111 7,320 8,540 6,100 6,710 31,111 1,357 1,582 1,131 1,244 5,766	0.005 0.005	0.31 0.31 0.013 0.39	0% 0.0° 0% 0.0°	173 - 173 -	-			12 12	35 41 29 35 41 29	32 150 32 150	31,260 31,260
Lyra+DPF Aux Lyra+DPF Hours	Gen Hour	6068AFM85E 6068AFM85E 67%	HJDXN06.8148				3.22	0.39 0	0.68	Annual Hours	-	-		- 452 - 452	1,357 1,583 1,131 1,244 5,766 1,357 1,583 1,131 1,244 5,766 3,000 3,500 2,500 2,750		0.013 0.39	0% 0.00)274 -	-			2 2 1.000	5 6 5 5 6 5	5 23 5 23	5,789
Intintoli Main Intintoli Main	Factor MTU MTU	16V4000M73L 16V4000M73L	AMDDN86.2MTR AMDDN86.2MTR	2010 3,433 2 2009 3,433 2	2025 2024	2027 2026	5.08 5.08	0.31 10 0.31 10	0% 10.73 0% 10.73	71111001110015	26,817 26,817	_0,0	26,817 24,136 10,727 - 26,817 24,136 10,727 -		115,315 115,315	0.00	0.31	30% 0.1 ² 30% 0.1 ⁴		70 370 70 370	370 333 148 370 333 148		-		- 1,589 - 1,589	116,903 116,903
Intintoli Aux Intintoli Aux	John Deere John Deere Gen Hour	6068TF275	HJDXN06.8148 HJDXN06.8148	2011 150 2 2011 150 2	2025 2025	2027 2027	3.02 3.02	0.39 10 0.39 10	0% 0.35 0% 0.35		584 584	584 584	584 526 234 - 584 526 234 -		2,512 2,512	0.11 0.11	0.39	30% 0.00 30% 0.00)993)993	17 17 17 17	17 15 7 17 15 7		-		- 71 - 71	2,583 2,583
Mare Island Main	Factor MTU	67% 16V4000M73L	AMDDN86.2MTR	2009 3,433 2	2024	2026	5.08	0.31 10	0% 10.73	Annual Hours	20,017	20,017	2,500 2,250 1,000 26,817 10,727 -		91,179	0.00	0.31	30% 0.14		00 2,500 70 370	2,500 2,250 1,000 370 148 -		-		- 1,256	92,435
Mare IslandMainMare IslandAuxMare IslandAux	MTU John Deere John Deere	16V4000M73L 6068TF275 6068TF275	AMDDN86.2MTR HJDXN06.8148 HJDXN06.8148	2009 3,433 2 2010 150 2 2011 150 2	2024 2025 2025	2026 2027 2027	5.08 3.02 3.02	0.31 10 0.39 10 0.39 10	0% 10.73 0% 0.35 0% 0.35		26,817 584 584	26,817 584 584	26,817 10,727 - - 584 234 - - 584 234 - -	 	91,179 1,986 1,986	0.09 0.11 0.11	0.31 0.39 0.39	30% 0.14 30% 0.00 30% 0.00	993 993	70 370 17 17 17 17	370 148 - 17 7 - 17 7 -	 			- 1,256 - 56 - 56	92,435 2,043 2,043
Mare Island Hours Dorado Main	Gen Hour Factor MTU	67% 12V4000M65L	MMDDN76.3MTS	2019 2,575 4	2027	2029	1.04	0.31 0	0% 1.83	Annual Hours	2,500 4,576	2,500 3,203	2,500 1,000 - 5,491 4,576 5,491 5,491 5,491	491 -	34.317	0.03	0.31	30% 0.03	2,5	00 2,500	2,500 1,000 111 92 111	111 111	-		- 693	35.010
DoradoMainDoradoAuxDoradoAux	MTU MTU John Deere John Deere	12V4000M65L 4045AFM85	MMDDN76.3MTS KJDXN06.8148 KJDXN06.8148	2019 2,575 4 2019 148 3 2019 148 3	2027 2027	2029 2029	1.04 3.22	0.31 0 0.39 10	0% 1.83 0% 0.37		4,576 615	3,203 430	5,491 4,576 5,491 5,491 5,491 738 615 738 738	491 - 738 -	34,317 4,610	0.03 0.07	0.31 0.39 0.39	30% 0.03	3696 3624	92 65 10 7	111 92 111 12 10 12	111 111 12 12	-		- 693 - 78	35,010 4,688
Dorado Hours	Gen Hour Factor	67%			2021	2029	3.22	0.39	0.37	Annual Hours	2,500	1,750	3,000 2,500 3,000 3,000 3,0	000	4,010	0.07			2,5	00 1,750	3,000 2,500 3,000	3,000 3,000	-		-	4,000
Dorado+DPFMainDorado+DPFAux	MTU MTU John Deere	12V4000M65L 12V4000M65L 4045AFM85	MMDDN76.3MTS MMDDN76.3MTS KJDXN06.8148	2019 2,575 4+DPI 2019 2,575 4+DPI 2019 148 3+DPI			1.04 1.04 3.22	0.31 0 0.31 0 0.39 0	0% 1.83 0% 1.83 0% 0.41		- - -			- 1,373 - 1,373 - 205	3,660 5,491 4,576 4,576 19,675 3,660 5,491 4,576 4,576 19,675 546 819 683 683 2,937	0.003	0.31 0.31 0.013 0.39	0% 0.00 0% 0.00 0% 0.00	- 1880 -			 	7 7 1	18 26 22 18 26 22 2 3 3	22 95 22 95 3 12	19,770 19,770 2,948
Dorado+DPF Aux Dorado+DPF Hours	John Deere Gen Hour Factor	4045AFM85 67%	KJDXN06.8148	2019 148 3+DPI	F		3.22	0.39 0	0.41	Annual Hours	-	-		- 205 750	546 819 683 683 2,937 2,000 3,000 2,500 2,500		0.013 0.39	0% 0.00	165 -	-			750	2 3 3 2,000 3,000 2,500	3 12 2,500	2,948
DephinusMainDephinusMainDephinusAux	MTU MTU John Deere	12V4000M65L 12V4000M65L 4045AFM85	MMDDN76.3MTS MMDDN76.3MTS KJDXN06.8148	2022 2,575 4 2022 2,575 4 2020 148 3	2029 2029	2031 2031	1.04 1.04	0.31 0 0.31 0	0% 1.83 0% 1.83		-	3,660 3,660	5,491 4,576 5,491 5,491 5,4 5,491 4,576 5,491 5,491 5,4	491 5,948 491 5,948	3,660 39,808 3,660 39,808	0.03 0.03	0.31 0.31 0.39	0070 0.00	3696 - 3696 -	74 74	111 92 111 111 92 111	111 111 111 111	120 120	74	- 804 - 804	40,611 40,611
Dephinus Aux Dephinus Hours	John Deere Gen Hour	4045AFM85 67%	KJDXN06.8148	2020 148 3	2028	2030	3.22	0.39	0% 0.37	Annual Hours	-	492	738 615 738 738 738 738 738 738 738 738 738 738	738 799 738 799	492 5,347 492 5,347 2,000	0.07	0.39			2,000	12 10 12 12 10 12 3,000 2,500 3,000	12 12 12 12 3,000 3,000	14	2.000	- 90 - 90	5,438
Dephinus+DPF Main Dephinus+DPF Main	Factor MTU MTU	12V4000M65L 12V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2022 2,575 4+DPI 2022 2,575 4+DPI	F F		1.04 1.04	0.31 0 0.31 0	0% 1.83 0% 1.83		-	-			5,491 5,491 10,981 5,491 5,491 10,981	0.005 0.005	0.31 0.31	0% 0.00 0% 0.00	0880 - 0880 -	-		 	-	26 26	26 53 26 53	11,034 11,034
Dephinus+DPF Aux Dephinus+DPF Aux	John Deere John Deere Gen Hour	4045AFM85	KJDXN06.8148 KJDXN06.8148	2020 148 3+DPI 2020 148 3+DPI	F		3.22 3.22	0.39 0 0.39 0	0% 0.41 0% 0.41		-	-			819 819 1,639 819 819 1,639		0.013 0.39 0.013 0.39	0% 0.00 0% 0.00	o165 -	-			-	3 3	3 7 3 7	1,646 1,646
Dephinus+DPF Hours Hull 160 TBD Name Main Hull 160 TBD Name Main	Factor MAN MAN	D2862LE489	D2862LE489	2023 1,450 4+DPI	F		1.04	0.31 0	0% 1.03	Annual Hours	-	-	2,577 2,577 3,092 2,577 2,8 3,577 3,577 3,092 3,577 3,9	834 3,350	2,834 19,839 2,834 19,839	0.000	0.31	0% 0.00	0495 -	-	12 12 15 13 13 15	12 14	16	14	- 95	19,935
Hull 160 TBD Name Main Hull 160 TBD Name Main	MAN MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489 D2862LE489	2023 1,450 4+DPI 2023 1,450 4+DPI 2023 1,450 4+DPI	F F		1.04 1.04 1.04	0.31 0 0.31 0	0% 1.03 0% 1.03 0% 1.03			- - -	2,577 2,577 3,092 2,577 2,577 2,577 2,577 3,092 2,577 2,8 2,577 2,577 3,092 2,577 2,8	834 3,350 834 3,350	2,834 - - - 19,839 2,834 - - - 19,839 2,834 - - - 19,839	0.000	0.31 0.31 0.31	0% 0.00 0% 0.00	1495 - 1495 - 1495 -		12 12 15 12 12 15 12 12 15	12 14 12 14 12 14	16 16	14 14 14	- 95 - 95 - 95	19,935 19,935 19,935
Hull 160 TBD Name Aux	John Deere John Deere Gen Hour		KJDXN06.8148 KJDXN06.8148	2023 148 3 2023 148 3	2029	2031	3.22	0.39 10 0.39 10	0% 0.37 0% 0.37	Arguelllaura	-	-	615 615 738 615 6 615 615 738 615 6	676 799 676 799	676 4,733 676 4,733	0.07	0.39	30% 0.00 30% 0.00	- 10624 - 10624 - 10624 - 10624 - 10624 - 10624	-	10 10 12 10 10 12	10 11 10 11	14	11	- 80 - 80	4,813
Hull 160 Hours Hull 160+DPF TBD Name Main Hull 160+DPF TBD Name Main	Factor MAN MAN	D2862LE48B D2862LE48B	D2862LE48B D2862LE48B	2031 1,450 4+DPI 2031 1,450 4+DPI	F F		1.04	0.31 0 0.31 0	0% 1.03 0% 1.03	Annual Hours	-	-			- 1,546 3,092 3,092 7,730 - 1,546 3,092 3,092 7,730	0.005 0.005	0.31	0% 0.00)495 -)495 -	-				- 7 15 - 7 15	15 37	7,767
Hull 160+DPF TBD Name Main Hull 160+DPF TBD Name Main	MAN MAN	D2862LE48B D2862LE48B	D2862LE48B D2862LE48B	2031 1,450 4+DPI 2031 1,450 4+DPI	F		1.04	0.31 0 0.31 0	0% 1.03 0% 1.03			-			- 1,546 3,092 3,092 7,730 - 1,546 3,092 3,092 7,730		0.31	0% 0.00 0% 0.00)495 -)495 -	-			-	- 7 15 - 7 15	15 37 15 37	7,767 7,767
Hull 160+DPF TBD Name Aux Hull 160+DPF TBD Name Aux Hull 160+DPF Hours	John Deere John Deere Gen Hour	4045 4045 67%	unknown unknown	2031 148 3+DPI 2031 148 3+DPI	_		3.22	0.39 0	0.41 0% 0.41	Annual Hours	-	-			- 410 819 819 2,049 - 410 819 819 2,049 1,500 3,000 3,000		0.013 0.39 0.013 0.39	0% 0.00	0165 -	-			-	- 2 3 - 2 3 - 1500 3,000	3 8	2,057
Hull 161 TBD Name Main Hull 161 TBD Name Main	Factor MAN MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489	2024 1,450 4+DPI 2024 1,450 4+DPI	F F		1.04 1.04	0.31 0 0.31 0	0% 1.03 0% 1.03	711110011	-	-		834 3,350 834 3,350	2,834 17,778 2,834 17,778	0.005 0.005	0.31	0% 0.00 0% 0.00)495 -)495 -	-	2 12 15 2 12 15	12 14 12 14	16 16	14 14	- 85 - 85	17,864 17,864
Hull 161 TBD Name Main Hull 161 TBD Name Main Hull 161 TBD Name Aux	MAN MAN John Deere	D2862LE489 D2862LE489 4045AFM85	D2862LE489 D2862LE489 KJDXN06.8148	2024 1,450 4+DPI 2024 1,450 4+DPI 2024 1,450 4+DPI 2024 148 3		2031	1.04 1.04 3.22	0.31 0 0.31 0 0.39 10	0% 1.03 0% 1.03 0% 0.37		-	-	515 2,577 3,092 2,577 2,8 515 2,577 3,092 2,577 2,8 123 615 738 615 6	834 3,350 834 3,350	2,834 - - - 17,778 2,834 - - - 17,778 676 - - - 4,241	0.005 0.005	0.31 0.31 0.39	0% 0.00 0% 0.00 30% 0.00)495 -)495 -)624 -		2 12 15 2 12 15 2 10 12	12 14 12 14 10 11	16 16	14	- 85 - 85	17,864 17,864
Hull 161 TBD Name Aux Hull 161 Hours	John Deere Gen Hour		KJDXN06.8148	2024 148 3	2029	2031	3.22	0.39 10	0% 0.37	Annual Hours	-	-	123 615 738 615 6 500 2,500 3,000 2,500 2,7	750 3,250	676 4,241 2,750	0.07	0.39	5575 5151	0624	-	2 10 12 2 10 12 500 2,500 3,000	10 11 11 2,500 2,750	14	11	- 72 - 72	4,313
Hull 161+DPF TBD Name Main Hull 161+DPF TBD Name Main	Factor MAN MAN	D2862LE48B D2862LE48B	D2862LE48B D2862LE48B	2024 1,450 4+DPF 2024 1,450 4+DPF			1.04 1.04	0.31 0 0.31 0	0% 1.03 0% 1.03		-	-			- 1,546 3,092 3,092 7,730 - 1,546 3,092 3,092 7,730	0.005 0.005	0.31 0.31	0% 0.00 0% 0.00)495 -				-	- 7 15 - 7 15	15 37 15 37	7,767 7,767
Hull 161+DPF TBD Name Main Hull 161+DPF TBD Name Main Hull 161+DPF TBD Name Aux	MAN MAN John Deere	D2862LE48B D2862LE48B 4045	D2862LE48B D2862LE48B unknown	2024 1,450 4+DPF 2024 1,450 4+DPF 2025 148 3+DPF	F		1.04 1.04 3.22	0.31 0 0.31 0 0.39 0	0% 1.03 0% 1.03 0% 0.41		- - -			 	- 1,546 3,092 3,092 7,730 - 1,546 3,092 3,092 7,730 - 410 819 819 2,049	0.005	0.31 0.31 0.013 0.39	5,6				 	- - -	- 7 15 - 7 15 - 2 3	15 37 15 37 3 8	7,767 7,767 2,057
Hull 161+DPF TBD Name Aux Hull 161+DPF Hours	John Deere Gen Hour Factor	4045 67%	unknown	2025 148 3+DPI	F		3.22	0.39 0	0.41	Annual Hours	-	-			- 410 819 819 2,049 1,500 3,000 3,000		0.013 0.39	0% 0.00	165	-			-	- 2 3 - 1,500 3,000	3 8	2,057
149PAX ZEAT #1 TBD Name Main 149PAX ZEAT #1TBD Name Main	TBD TBD TBD	TDB TDB	TBD TBD	2025 670 ZEAT 2025 670 ZEAT 2025 20 ZEAT				0.31 0.31		0.0895 0.0895	-	-	- 134 224 224 2 - 134 224 224 2 - 5 8 8	224 224 224 224	224 224 224 224 1,925 224 224 224 224 1,925 8 8 8 8 72		0.31 0.31 0.39		-	-			-			1,925 1,925
149PAX ZEAT #1TBD Name Aux 149PAX ZEAT #1 Hours	Gen Hour Factor	100%	ומח					0.39		0.0034 Annual Hours	-	-	- 5 8 8 1,500 2,500 2,500 2,500 2,500	8 8 8 500 2,500	8 8 8 8 72 2,500 2,500 2,500 2,500		0.39		-	-	- 1,500 2,500	2,500 2,500	2,500	2,500 2,500 2,500	2,500	72
149PAX ZEAT #2 TBD NameMain149PAX ZEAT #2 TBD NameMain149PAX ZEAT #2 TBD NameAux	TBD TBD TBD	TDB TDB TBD	TBD TBD TBD	2025 670 ZEAT 2025 670 ZEAT 2025 20 ZEAT	-			0.31 0.31 0.39		0.0895 0.0895 0.0034			- 90 179 224 2 - 90 179 224 2 - 3 7 8	224 224 224 224 8 8	224 224 224 224 1,835 224 224 224 224 1,835 8 8 8 8 69		0.31 0.31 0.39		-		 	 				1,835 1,835 69
149PAX ZEAT #2 Hours 149PAX ZEAT #3 TBD Name Main	Gen Hour Factor TBD	100% TDB	TBD	2026 670 ZEAT				0.31		Annual Hours 0.0895	_	-	1,000 2,000 2,500 2,5 - 134 224 3	2,500 2,500 224 224	2,500 2,500 2,500 2,500 224 224 224 224 1,701		0.31			-	- 1,000 2,000 	2,500 2,500	2,500	2,500 2,500 2,500	2,500	1.701
149PAX ZEAT #3 TBD Name Main 149PAX ZEAT #3 TBD Name Aux	TBD TBD Gen Hour	TDB TBD	TBD TBD	2026 670 ZEAT 2026 670 ZEAT 2026 20 ZEAT				0.31 0.39		0.0895 0.0034	-	-	134 224 2 5 8	224 224 8 8	224 224 224 224 1,701 8 8 8 8 64		0.31		-	-			-			1,701
149PAX ZEAT #3 Hours 400PAX DPF #1 TBD Name Main	Factor MTU	100% 12V4000M65L	Unknown	2029 2,000 4+DPF			1.04	0.01	0% 1.42	Annual Hours	-	-	4,265 4,2	2,500 2,500 2,65 4,265 4,265	2,500 2,500 2,500 2,500 4,265 4,265 4,265 4,265 4,265 4,265 4,265 29,852	0.005	0.31	0% 0.00		-	1,500 	2,500 2,500 21 21 31 31	2,500	2,500 2,500 2,500 21 21 21	2,500	29,996
400PAX DPF #1 TBD Name Main 400PAX DPF #1 TBD Name Aux 400PAX DPF #1 TBD Name Aux	John Deere	12V4000M65L 4045 4045	Unknown unknown unknown	2029 2,000 4+DPI 2029 162 3+DPI 2029 162 3+DPI	F		1.04 3.22 3.22	0.39 0	0% 1.42 0% 0.45 0% 0.45		- - -		4,265 4,2 897 8	265 4,265 897 897 897 897	4,265 4,265 4,265 4,265 29,852 897 897 897 897 6,279 897 897 897 897 6,279		0.31 0.013 0.39 0.013 0.39	0% 0.00 0% 0.00 0% 0.00				21 21 4 4 4 4	21 4 4	21 21 21 4 4 4 4 4 4	21 144 4 25 4 25	29,996 6,304 6,304
400PAX DPF #1 Hours 400PAX DPF #2 TBD Name Main	Gen Hour Factor MTU	67% 12V4000M65L	Unknown	2029 2,000 4+DPI	F		1.04	0.31	0% 1.42	Annual Hours	_	-		3,000 620 4,265	4,265 4,265 4,265 25,943	0.005	0.31	0% 0.00	0683	-		3,000 3,000 - 22	3,000	3,000 3,000 21 21 21 21	3,000 125	26,068
400PAX DPF #2 TBD Name Main 400PAX DPF #2 TBD Name Aux	MTU John Deere	12V4000M65L 4045	Unknown	2029 2,000 4+DPI 2029 2,000 4+DPI 2029 162 3+DPI 2029 162 3+DPI	F F		1.04 3.22 3.22	0.31 0 0.39 0 0.39 0	0% 1.42 0% 0.45 0% 0.45		-	-	4,6		4,265 4,265 4,265 25,943 897 897 897 5.460		0.31 0.013 0.39 0.013 0.39	0% 0.00)181 -	-		- 22 - 4	21 4	21 21 21 4 4 4	21 125 4 22	26,068 5,482
400PAX DPF #2 TBD Name Aux 400PAX DPF #2 Hours	John Deere Gen Hour Factor	4045 67%	unknown	2029 102 3+DPI			3.22	ບ.ນສ 0	,, ₀ U.45	Annual Hours	-	-		972 897 250 3,000	897 897 897 897 5,460 3,000 3,000 3,000 3,000		0.013 0.39	0% 0.00	-	-		- 3,250	3,000	3,000 3,000 3,000	3,000	5,482
Total Emissions (lbs) Central Bay Hour Usage													304,324 275,956 240,355 196,165 153,2 23,500 25,250 28,000 29,500 29,500						4,6		4,352 3,800 3,139 23,500 25,250 28,000			846 687 690 29 500 29 500 29 500 2		2,543,853
North Bay Hour Usage Total Vessel Hour Usage											13 500 l	13 500 l	23,500 25,250 28,000 29,500 29,5 13,500 13,500 13,500 13,500 13,5 37,000 38,750 41,500 43,000 43,0	500 l 13 500 l	13 500 l 13 500 l 13 500 l 13 500 l				13,5 37,0	NN I 135NN I	23,500 25,250 28,000 13,500 13,500 13,500 37,000 38,750 41,500	12 500 L 12 500 L	12 500 l	13 500 13 500 13 500 1	2 500 I	
CARB T4+DPF T4+DPF CARB T3+DPF T3+DPF	0-3,700kw 0.9 <disp>1.2L</disp>	C1<7L <35kw/L	1.30	0.005 0.013																						
VAND 13+DFF 13+DFF	1.2L	>JJNW/L	J.ZZ	0.010																						

WETA ACE Plan - Baseline Low Calculations

eGRID	Elec	Nox	lbs/hp-hr	0.000388	0.000
Hydrogen			of H2, 55% eff 1 kg of l cell, 34% overall eff	H2 uses eGrid at load/.3 efficiency	34 for
g/kw-hr to g/bhp/hr	0.7457				

Table 17: Compliance Dates for Tier 2, Tier 3, or Tier 4 Engines on Ferries (Except Short-Run Ferries), Pilot Vessels, All Tug/Towboats, and Push Boats

Engine Model Year and Vessel <u>Category</u>	Compliance Date
2009 and earlier (Except Pilot Vessels)	12/31/2024
2012 and Earlier Pilot Vessels	<u>12/31/2025</u>
2010 – 2012 All Other Vessels*	<u>12/31/2025</u>
<u>2013 – 2015**</u>	<u>12/31/2026</u>
<u>2016 – 2019**</u>	12/31/2027
<u>2020 – 2021**</u>	<u>12/31/2028</u>
2022 and later**	<u>12/31/2029</u>

*Ferries (Except Short-Run Ferries), All Tug/Towboats, and Push Boats. **All vessels listed in the title of this table, including ferries (except short-run), pilot, all tug/towboats, and push boats. [Note: For example, for a 2020 model year diesel engine on a tugboat operating in Regulated California Waters, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(12)(C) by December 31, 2028.]

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	ISOR Appendix H Table H-5	Emissions years, Vessel in seprate lines dependant on emissions configuration	ISOR Appendix H Table H-5 CHC Regulation Table 11	Emissions years, Vessel in seprate lines dependant on emissions configuration
Vessel Type OEM Model Engine Family Year HP EPA Compliance baseline 2yr ext	NOx g/bhp-hr CARB LF ISOR Appendix H Table H-9 NOx R99 Reduction S NOx Emissions Ibs/hr NOx eGrid Emissions Ibs/hr NOx in Ibs 2023 NOx in Ibs 2024 2025	5 2026 2027 2028 2029 2030 2031 2032	2033 PM Semissions 2034 NOx Emissions 2023 thru 2034, Ibs PM CARB PM CARB PM CARB ISOR PM R99 Emission 2004 Physical PM CARB Semission 2005 PM R99 Emission 2005 PM PM CARB Semission 2005 PM PM PM CARB Semission 2005 PM	PM Emissions Total Phone
Gemini Main MAN D2862LE489 D2862LE489 2021 1,450 4 2028 2030 Gemini Main MAN D2862LE489 D2862LE489 2021 1,450 4 2028 2030 Gemini Aux John Deere 4045TF275 7ADEM06.8275 2007 87 2 2024 2026 Gemini Aux John Deere 4045TF275 7ADEM06.8275 2007 87 2 2024 2026	1.04 0.31 0% 1.03 2,061 2,319 2,57 1.04 0.31 0% 1.03 2,061 2,319 2,57 4.02 0.39 10% 0.27 361 406 45 4.02 0.30 10% 0.37 361 406 45	77 1,546 1,288 1,031 1,288 1,031 1,031 1,031 77 1,546 1,288 1,031 1,288 1,031 1,031 1,031 51 271 226 180 226 180 180 180 51 231 236 180 236 180 180	515 515 16,232 0.03 0.31 30% 0.0208² 515 515 16,232 0.03 0.31 30% 0.0208² 90 90 2,842 0.17 0.39 30% 0.00890 90 90 2,842 0.17 0.39 30% 0.00890	42 47 52 31 26 21 26 21 21 21 10 10 328 16,560
Gemini Annual Hours Gen Hour Factor 67% D2862LE489 D2862LE489 2021 1,450 4 2028 2030	4.02 0.39 10% 0.27 361 406 43 Annual Hours 2,000 2,250 2,50 1.04 0.31 0% 1.03 2,061 2,319 2,57	31 271 226 180 226 180 180 30 1,500 1,250 1,000 1,000 1,000 1,000 77 1,546 1,288 1,031 1,031 1,288 1,031 515 37 1,546 1,288 1,031 1,288 1,031 515	500 500 515 515 15,717 0.03 0.31 30% 0.02087	2,000 2,250 2,500 1,500 1,250 1,000 1,250 1,000 1,000 1,000 500 500 42 47 52 31 26 21 21 26 21 10 10 10 317 16,034
Pisces Aux John Deere 4045TF275 7ADEM06.8275 2008 87 2 2024 2026 Pisces Aux John Deere 4045TF275 7ADEM06.8275 2008 87 2 2024 2026 Pisces Appual Hours Gen Hour 67% 67% 67% 67% 67% 67%	1.04 0.31 0% 1.03 2,061 2,319 2,57 4.02 0.39 10% 0.27 361 406 45 4.02 0.39 10% 0.27 361 406 45 Annual Hours 2,000 2,250 2,50	77 1,546 1,288 1,031 1,031 1,288 1,031 515 51 271 226 180 180 226 180 90 51 271 226 180 180 226 180 90 150 1,500 1,250 1,000 1,000 1,250 1,000 500	515 515 15,717 0.03 0.31 30% 0.02087 90 90 2,751 0.17 0.39 30% 0.00890 500	42 47 52 31 26 21 21 26 21 10 10 10 10 317 16,034 12 13 15 9 7 6 6 7 6 3 3 3 90 2,842 2000 2,250 2,500 1,500 1,250 1,000 1,250 1,000 500 500 500 500
Scorpio Main MAN D2862LE489 D2862LE489 2021 1,450 4 2028 2030 Scorpio Main MAN D2862LE489 D2862LE489 2021 1,450 4 2028 2030 Scorpio Aux John Deere 4045TF275 7ADEM06.8275 2008 87 2 2024 2026	1.04 0.31 0% 1.03 2,061 2,319 2,57 1.04 0.31 0% 1.03 2,061 2,319 2,57 4.02 0.39 10% 0.27 361 406 45	77 1,546 1,288 1,288 1,031 1,288 773 515 77 1,546 1,288 1,288 1,031 1,288 773 515 51 271 226 226 180 226 135 90	515 515 15,717 0.03 0.31 30% 0.02087 515 515 15,717 0.03 0.31 30% 0.02087 90 90 2,751 0.17 0.39 30% 0.00890	42 47 52 31 26 26 21 26 16 10 10 10 317 16,034 42 47 52 31 26 26 21 26 16 10 10 10 317 16,034 12 13 15 9 7 7 6 7 4 3 3 3 90 2,842
Scorpio Aux John Deere 4045TF275 7ADEM06.8275 2008 87 2 2024 2026 Scorpio Annual Hours Gen Hour Factor 67% D2862LE489 D2862LE489 D2862LE489 2021 1,450 4 2028 2030	4.02 0.39 10% 0.27 361 406 45 Annual Hours 2,000 2,250 2,50 1.04 0.31 0% 1.03 2,061 2,319 2,57	51 271 226 226 180 226 135 90 00 1,500 1,250 1,250 1,000 1,250 750 500 77 2,061 1,288 1,288 1,031 1,031 773 515	90 90 2,751 0.17 0.39 30% 0.00890 500 500 500 0.31 30% 0.02087 515 515 15,975 0.03 0.31 30% 0.02087	12 13 15 9 7 7 6 7 4 3 3 3 90 2,842 2,000 2,250 2,500 1,500 1,250 1,000 1,250 750 500 500 500 500 323 16,297
Taurus Main MAN D2862LE489 D2862LE489 2021 1,450 4 2028 2030 Taurus Aux John Deere 4045TF275 7ADEM06.8275 2009 87 2 2024 2026 Taurus Aprus Hours Gen Hour 670/<	1.04 0.31 0% 1.03 2,061 2,319 2,57 4.02 0.39 10% 0.27 361 406 45 4.02 0.39 10% 0.27 361 406 45	77 2,061 1,288 1,288 1,031 1,031 773 515 51 361 226 226 180 180 135 90 51 361 226 226 180 180 135 90	515 515 15,975 0.03 0.31 30% 0.02087 90 90 2,797 0.17 0.39 30% 0.00890 90 90 2,797 0.17 0.39 30% 0.00890	42 47 52 42 26 26 21 21 16 10 10 10 323 16,297 12 13 15 12 7 7 6 6 4 3 3 3 92 2,889 12 13 15 12 7 7 6 6 4 3 3 3 92 2,889
Taurus Annual Hours Gen Hour Factor 67% Main MTU 12V4000M64 FMDDN76.3MTK 2015 1,950 3 2026 2028 Hydrus Main MTU 12V4000M64 FMDDN76.3MTK 2015 1,950 3 2026 2028 Hydrus Aux John Deere 4045AFM85 EJDXN06.8148 2014 162 3 2026 2028	3.69 0.31 10% 4.43 13,278 13,278 13,278 11,06 3.69 0.31 10% 4.43 13,278 13,278 11,06 3.22 0.39 10% 0.40 807 807 67	30 2,000 1,250 1,250 1,000 1,000 750 500 65 11,065 11,065 - - - - - 73 673 673 - - - - -	500 500 500 500 0.04664 - - 59,749 0.05 0.31 30% 0.04664 - - - 59,749 0.05 0.31 30% 0.04664 - - - 3,633 0.07 0.39 30% 0.00683	140 140 117 117 117 630 60,379
Hydrus Aux John Deere 4045AFM85 EJDXN06.8148 2014 162 3 2026 2028 Hydrus Annual Hours Gen Hour Factor 67% TBD TBD TBD 2030 1,676 ZEAT	3.22 0.39 10% 0.40 807 807 67 Annual Hours 3,000 3,000 2,50	73 673 673	3,633 0.07 0.39 30% 0.00683 672 672 3,807 0.31 0.00000	14 14 11 11 11 - <td< td=""></td<>
Hydrus ZEAT	0.31 0.00 0.2239 - - - 0.39 0.00 0.0294 - - - Annual Hours - - -	- - - 448 672 672 672 - - - 59 88 88 88 - - - 2,000 3,000 3,000 3,000	672 672 3,807 0.31 0.00000 88 88 500 0.39 0.00000 3,000 3,000 0.00000	3,807
Cetus Main MTU 12V4000M64 FMDDN76.3MTK 2015 1,950 3 2026 2028 Cetus Main MTU 12V4000M64 FMDDN76.3MTK 2015 1,950 3 2026 2028 Cetus Aux John Deere 4045AFM85 EJDXN06.8148 2016 162 3 2027 2029 Cetus Aux John Deere 4045AFM85 EJDXN06.8148 2016 162 3 2027 2029	3.69 0.31 10% 4.43 13,278 13,278 11,06 3.69 0.31 10% 4.43 13,278 13,278 11,06 3.22 0.39 10% 0.40 807 807 67 3.22 0.39 10% 0.40 807 807 67	65 11,065 11,065 8,852 - - - 65 11,065 11,065 8,852 - - - 73 673 673 538 - - - 73 673 673 538 - - -	- - 68,601 0.05 0.31 30% 0.04664 - - 68,601 0.05 0.31 30% 0.04664 - - 4,171 0.07 0.39 30% 0.00683 - - - 0.39 30% 0.00683	140 140 117 117 117 93 - - - - - - 723 69,324 14 14 11 11 11 9 - - - - - - 71 4,242
Cetus Annual Hours Gen Hour Factor 67% TBD TBD TBD 2030 1,676 ZEAT Cetus ZEAT Main TBD TDB TBD 2030 1,676 ZEAT	Annual Hours 3,000 3,000 2,50 0.31 0.2239	00	672 672 3,135 0.00000 673 673 0.31 0.00000	3,000 3,000 2,500 2,500 2,500 2,000 3,135
Cetus ZEAT Aux TBD TBD TBD ZEAT Cetus ZEAT Hours Gen Hour Factor 100% TBD ZEAT	0.31 0.2239	59 88 88 2,000 3,000 3,000	88 88 412 0.39 0.00000 3,000 3,000 0.00000 - - 80,772 0.05 0.31 30% 0.04664	
Argo Main MTU 12V4000M64 FMDDN76.3MTK 2016 1,950 3 2027 2029 Argo Aux John Deere 4045AFM85 EJDXN06.8148 2014 162 3 2026 2028 Argo Aux John Deere 4045AFM85 EJDXN06.8148 2016 162 3 2027 2029	3.69 0.31 10% 4.43 13,278 13,278 11,06 3.69 0.31 10% 4.43 13,278 13,278 11,06 3.22 0.39 10% 0.40 807 807 67 3.22 0.39 10% 0.40 807 807 67 3.22 0.39 10% 0.40 807 807 67	65 11,065 11,065 12,171 8,852 - - - 73 673 673 740 538 - - - 73 673 673 740 538 - - - 73 673 673 740 538 - - -	80,772 0.05 0.31 30% 0.04664 4,911 0.07 0.39 30% 0.00683 4,911 0.07 0.39 30% 0.00683	140 140 117 117 117 128 93 -
Argo Annual Hours Gen Hour Factor 67% TBD TBD 2030 1,676 ZEAT Argo ZEAT Main TBD TDB TBD 2030 1,676 ZEAT Argo ZEAT Main TBD TDB TBD 2030 1,676 ZEAT Argo ZEAT Aux TBD TBD TBD 2030 175 ZEAT	Annual Hours 3,000 3,000 2,50 0.31 0.2239 - <t< td=""><td>200 2,500 2,500 2,750 2,000 - - - - - 448 672 - - - - - 448 672</td><td>672 672 2,463 0.31 0.00000 672 672 2,463 0.31 0.00000 672 672 2,463 0.31 0.00000</td><td></td></t<>	200 2,500 2,500 2,750 2,000 - - - - - 448 672 - - - - - 448 672	672 672 2,463 0.31 0.00000 672 672 2,463 0.31 0.00000 672 672 2,463 0.31 0.00000	
Argo ZEAT Hours Gen Hour Factor 100% Main FMDDN76.3MTK 2016 1,950 3 2027 2029	3.69 0.31 10% 4.43 13,278 13,278 11,06	55 11,065 11,065 12,171 12,171 8,852	3,000 3,000 0.00000 0.000000 0.000000 0.000000 0.000000	
Carina Main MTU 12V4000M64 FMDDN76.3MTK 2016 1,950 3 2027 2029 Carina Aux John Deere 4045AFM85 EJDXN06.8148 2017 162 3 2027 2029 Carina Annual Hours Gen Hour 67% EJDXN06.8148 2017 162 3 2027 2029	3.69 0.31 10% 4.43 13,278 13,278 11,06 3.22 0.39 10% 0.40 807 807 67 3.22 0.39 10% 0.40 807 807 67 Annual Hours 3,000 3,000 2,50	65 11,065 11,065 12,171 12,171 8,852 - - 73 673 673 740 740 538 - - 73 673 673 740 740 538 - - 90 2.500 2.500 2.750 2.750 2.000	- - 92,943 0.05 0.31 30% 0.04664 - - 5,651 0.07 0.39 30% 0.00683 - - 5,651 0.07 0.39 30% 0.00683	14 14 11 11 11 13 13 9 - - - - 96 5,747
Carina ZEAT Main TBD TDB TBD 2030 1,676 ZEAT Carina ZEAT Main TBD TDB TBD 2030 1,676 ZEAT Carina ZEAT Aux TBD TBD TBD 2030 175 ZEAT	0.31 0.2239 - - - 0.31 0.2239 - - - 0.39 0.0294 - - -	448 59	672 672 1,792 0.31 0.00000 672 672 1,792 0.31 0.00000 88 88 235 0.39 0.00000	1,792 235
Carina ZEAT Hours Gen Hour Factor 100% 7CEXM019.AAB 2007 1,600 2 2024 2026 Peralta Main Cummins QSK50 7CEXM019.AAB 2007 1,600 2 2024 2026 Peralta Aux John Deere 4045TF275 8ADEM06.8275 2008 87 2 2024 2026	5.08 0.31 10% 5.00 11,249 7,499 4,99 5.08 0.31 10% 5.00 11,249 7,499 4,99	2,000 99 4,999 2,500 2,500 99 4,999 2,500 2,500 2,500	3,000 3,000 36,246 0.09 0.31 30% 0.06889 - - - 36,246 0.09 0.31 30% 0.06889 - - 36,246 0.09 0.31 30% 0.06889	- - - - - - - - 2,000 3,000 3,000 3,000 155 103 69 69 34 34 - - - - - - 499 36,745 155 103 69 69 34 34 34 - - - - - 499 36,745
Peralta Aux John Deere 4045TF275 8ADEM06.8275 2008 87 2 2024 2026 Peralta Aux John Deere 4045TF275 8ADEM06.8275 2008 87 2 2024 2026 Peralta Annual Hours Gen Hour Factor 67% 67% 4045TF275 8ADEM06.8275 2008 87 2 2024 2026	4.02 0.39 10% 0.27 406 271 18 4.02 0.39 10% 0.27 406 271 18 Annual Hours 2,250 1,500 1,00	30 180 90 90 90 - - - 30 180 90 90 90 - - - 00 1,000 500 500 500 - - -	- - 1,308 0.17 0.39 30% 0.00890 - - 1,308 0.17 0.39 30% 0.00890	13 9 6 6 3 3 3 - </td
Bay Breeze Main MTU 16V2000M70 7MDDM31.8MRR 2007 1,410 2 2024 2026 Bay Breeze Main MTU 16V2000M70 7MDDM31.8MRR 2010 1,410 2 2025 2027 Bay Breeze Aux John Deere 4045TF270 8ADEM06.8275 2008 87 2 2024 2026 Bay Breeze Aux John Deere 4045TF270 8ADEM06.8275 2008 87 2 2024 2026	5.08 0.31 10% 4.41 5,507 4,406 - 5.08 0.31 10% 4.41 5,507 4,406 - 4.02 0.39 10% 0.27 226 180 - 4.02 0.39 10% 0.27 226 180 -		- - 9,913 0.09 0.31 30% 0.0607 - - 9,913 0.09 0.31 30% 0.0607 - - - 406 0.17 0.39 30% 0.00890 - - 406 0.17 0.39 30% 0.00890	76 61 - - - - - - - - 137 10,050 76 61 - - - - - - - 137 10,050 7 6 - - - - - - - - 13 419 7 6 - - - - - - - - 13 419
Bay Breeze Annual Hours Gen Hour Factor 67% MMDDN76.3MTS 2017 3,433 4 2027 2029 Pyxis Main MTU 16V4000M65L MMDDN76.3MTS 2017 3,433 4 2027 2029 Pyxis Main MTU 16V4000M65L MMDDN76.3MTS 2017 3,433 4 2027 2029	1.04 0.31 0% 2.44 4,880 4,880 5,49 1.04 0.31 0% 2.44 4,880 4,880 5,49 1.04 0.31 0% 2.44 4,880 4,880 5,49	90 3,660 4,880 5,490 4,880 4,880 6,100 4,880 90 3,660 4,880 5,490 4,880 4,880 6,100 4,880	4,880 6,100 61,002 0.03 0.31 30% 0.04927 4,880 6,100 61,002 0.03 0.31 30% 0.04927 0.31 0.31 0.31 0.04927 0.31 0.31 0.04927	
Pyxis Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029 Pyxis Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029 Pyxis Hours Gen Hour Factor 67% 67% 67% 1 4	3.22 0.39 10% 0.61 814 814 91 3.22 0.39 10% 0.61 814 814 91 Annual Hours 2,000 2,000 2,25	16 610 814 916 814 814 1,017 814 16 610 814 916 814 814 1,017 814 50 1,500 2,000 2,250 2,000 2,000 2,500 2,000	814 1,017 10,175 0.07 0.39 30% 0.01032 814 1,017 10,175 0.07 0.39 30% 0.01032 2,000 2,500 0.01032 0.01032	14 14 15 10 14 15 14 14 17 14 17 17 172 10,347 14 14 15 10 14 15 14 17 14 14 17 172 10,347 2,000 2,000 2,250 1,500 2,000 2,250 2,000 2,000 2,000 2,000 2,500 2,000 2,500
Vela Main MTU 16V4000M65L MMDDN76.3MTS 2018 3,433 4 2027 2029 Vela Main MTU 16V4000M65L MMDDN76.3MTS 2018 3,433 4 2027 2029 Vela Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029 Vela Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029	1.04 0.31 0% 2.44 4,880 4,880 5,49 1.04 0.31 0% 2.44 4,880 4,880 5,49 3.22 0.39 10% 0.61 814 814 91 3.22 0.39 10% 0.61 814 814 91	90 3,660 4,880 4,880 6,100 4,880 4,880 90 3,660 4,880 4,880 6,100 4,880 4,880 16 610 814 814 814 1,017 814 814 16 610 814 814 814 1,017 814 814	6,100 4,880 60,392 0.03 0.31 30% 0.04927 6,100 4,880 60,392 0.03 0.31 30% 0.04927 1,017 814 10,073 0.07 0.39 30% 0.01032 1,017 814 10,073 0.07 0.39 30% 0.01032 0,01032 0.01032 0.01032 0.01032	
Vela Hours Gen Hour Factor 67% MMDDN76.3MTS 2018 3,433 4 2027 2029 Lyra Main MTU 16V4000M65L MMDDN76.3MTS 2018 3,433 4 2027 2029 Lyra Main MTU 16V4000M65L MMDDN76.3MTS 2018 3,433 4 2027 2029	1.04 0.31 0% 2.44 4,880 4,880 5,49 1.04 0.31 0% 2.44 4,880 4,880 5,49	50 1,500 2,000 2,000 2,000 2,500 2,000 2,000 90 4,880 4,270 4,880 6,100 4,880 4,880 6,100 90 4,880 4,270 4,880 6,100 4,880 4,880 6,100	2,500 2,000 4,880 4,880 61,002 0.03 0.31 30% 0.04927 4,880 4,880 61,002 0.03 0.31 30% 0.04927	2,000 2,000 2,250 1,500 2,000 2,000 2,500 2,000 <th< td=""></th<>
Lyra Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029 Lyra Aux John Deere 6068AFM85E HJDXN06.8148 2017 245 3 2027 2029 Lyra Hours Gen Hour Factor 67% 67% 4	3.22 0.39 10% 0.61 814 814 91 3.22 0.39 10% 0.61 814 814 91 Annual Hours 2,000 2,000 2,25	16 814 712 814 1,017 814 814 1,017 16 814 712 814 1,017 814 814 1,017 50 2,000 1,750 2,000 2,500 2,000 2,000 2,500	814 814 10,175 0.07 0.39 30% 0.01032 814 814 10,175 0.07 0.39 30% 0.01032 2,000 2,000 0.00 <td< td=""><td>14 14 15 14 12 14 17 14 17 14 14 14 17 10,347 14 14 15 14 12 14 17 14 14 17 14 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 14 17 16 10,347 2,000</td></td<>	14 14 15 14 12 14 17 14 17 14 14 14 17 10,347 14 14 15 14 12 14 17 14 14 17 14 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 17 14 14 17 16 10,347 2,000
Intintoli Main MTU 16V4000M73L AMDDN86.2MTR 2010 3,433 2 2025 2027 Intintoli Main MTU 16V4000M73L AMDDN86.2MTR 2009 3,433 2 2024 2026 Intintoli Aux John Deere 6068TF275 HJDXN06.8148 2011 150 2 2025 2027 Intintoli Aux John Deere 6068TF275 HJDXN06.8148 2011 150 2 2025 2027	5.08 0.31 10% 10.73 26,817 10,727 10,727 5.08 0.31 10% 10.73 26,817 10,727 10,727 3.02 0.39 10% 0.35 584 234 23 3.02 0.39 10% 0.35 584 234 23	27 5,363 2,682 - - - - 27 5,363 2,682 - - - - 34 117 58 - - - - 34 117 58 - - - -	- - 56,316 0.09 0.31 30% 0.14787 - - 56,316 0.09 0.31 30% 0.14787 - - 1,227 0.11 0.39 30% 0.00993 - - 1,227 0.11 0.39 30% 0.00993	370 148 148 74 37 -
Intintoli Hours Gen Hour Factor 67% AMDDN86.2MTR 2009 3,433 2 2024 2026 Mare Island Main MTU 16V4000M73L AMDDN86.2MTR 2009 3,433 2 2024 2026 Mare Island Main MTU 16V4000M73L AMDDN86.2MTR 2009 3,433 2 2024 2026	5.08 0.31 10% 10.73 26,817 10,727 10,727 5.08 0.31 10% 10.73 26,817 10,727 10,727	27 10,727 5,363 2,682 - - - - 27 10,727 5,363 2,682 - - - - -	67,043 0.09 0.31 30% 0.1478° 67,043 0.09 0.31 30% 0.1478°	
Mare Island Aux John Deere 6068TF275 HJDXN06.8148 2010 150 2 2025 2027 Mare Island Aux John Deere 6068TF275 HJDXN06.8148 2011 150 2 2025 2027 Mare Island Hours Gen Hour Factor 67% 67% 1 1 1 2	3.02 0.39 10% 0.35 584 234 23 3.02 0.39 10% 0.35 584 234 23 Annual Hours 2,500 1,000 1,000	34 234 117 58 - - - 34 234 117 58 - - - 00 1,000 500 250	1,461 0.11 0.39 30% 0.00993 1,461 0.11 0.39 30% 0.00993	17 7 7 7 3 2 - - - - - - 41 1,502 17 7 7 7 3 2 - - - - - - - 41 1,502 2,500 1,000 1,000 500 250 - - - - - - - - - - -
Dorado Main MTU 12V4000M65L MMDDN76.3MTS 2019 2,575 4 2027 2029 Dorado Main MTU 12V4000M65L MMDDN76.3MTS 2019 2,575 4 2027 2029 Dorado Aux John Deere 4045AFM85 KJDXN06.8148 2019 148 3 2027 2029 Dorado Aux John Deere 4045AFM85 KJDXN06.8148 2019 148 3 2027 2029 Dorado Hours Gen Hour 67% 67% 4 2019 148 3 2027 2029	1.04 0.31 0% 1.83 4,576 5,491 4,576 1.04 0.31 0% 1.83 4,576 5,491 4,576 3.22 0.39 10% 0.37 615 738 61 3.22 0.39 10% 0.37 615 738 61	76 4,118 4,118 4,118 4,118 4,118 4,118 2,288 76 4,118 4,118 4,118 4,118 4,118 4,118 2,288 15 553 553 553 553 553 553 307 15 553 553 553 553 553 553 307	1,830 1,830 45,298 0.03 0.31 30% 0.03696 1,830 1,830 45,298 0.03 0.31 30% 0.03696 246 246 6,085 0.07 0.39 30% 0.00624 246 246 6,085 0.07 0.39 30% 0.00624	92 111 92 83 83 83 83 83 83 46 37 37 915 46,213 10 12 10 9 9 9 9 9 5 4 4 103 6,188
Dorado Adx Jofff Deere 4043AFM65 KJDXN06.8148 2019 148 3 2027 2029 Dorado Hours Gen Hour Factor 67% MMDDN76.3MTS 2022 2,575 4 2029 2031 Dephinus Main MTU 12V4000M65L MMDDN76.3MTS 2022 2,575 4 2029 2031	3.22 0.39 10% 0.37 613 738 613 Annual Hours 2,500 3,000 2,500 1.04 0.31 0% 1.83 - 4,576 5,49 1.04 0.31 0% 1.83 - 4,576 5,49	00 2,250 2,250 2,250 2,250 2,250 2,250 2,250 2,250 1,250 01 4,576 4,118 4,118 4,118 4,118 4,118 4,118 2,288 01 4,576 4,118 4,118 4,118 4,118 4,118 2,288	1,000 1,000 1,830 1,830 1,830 1,830 41,180 0.03 0.31 30% 0.31 30% 0.03696 0.31 30% 0.03696 0.31 30% 0.03696	2,500 3,000 2,500 2,250 2,250 2,250 2,250 2,250 1,250 1,000 1,000 1,000 - 92 111 92 83 83 83 83 46 37 37 832 42,012
Dephinus Main MTO 12V4000M65L MINIDDN76.3MTS 2022 2,375 4 2029 2031 Dephinus Aux John Deere 4045AFM85 KJDXN06.8148 2020 148 3 2028 2030 Dephinus Hours Gen Hour Factor 67% Factor 67% Aux	3.22 0.39 10% 0.37 - 615 73 3.22 0.39 10% 0.37 - 615 73 Annual Hours 2,500 3,00	31 4,576 4,118 4,118 4,118 4,118 4,118 2,288 38 615 553 553 553 553 553 307 38 615 553 553 553 553 553 307 00 2,500 2,250 2,250 2,250 2,250 2,250 1,250	1,830 1,830 41,180 0.03 0.31 30% 0.03696 246 246 5,532 0.07 0.39 30% 0.00624 1,000 1,000 0.00 0.39 30% 0.00624	- 10 12 10 9 9 9 9 5 4 4 9 9 5,625
Hull 160 TBD Name Main MAN D2862LE489 D2862LE489 2023 1,450 4+DPF Hull 160 TBD Name Main MAN D2862LE489 D2862LE489 2023 1,450 4+DPF Hull 160 TBD Name Main MAN D2862LE489 D2862LE489 2023 1,450 4+DPF	1.04 0.31 0% 1.03 - - 1,54 1.04 0.31 0% 1.03 - - 1,54 1.04 0.31 0% 1.03 - - 1,54 1.04 0.31 0% 1.03 - - 1,54	46 3,607 3,607 3,607 3,607 3,607 3,607 3,607	3,607 3,607 34,010 0.005 0.31 0% 0.00495 3,607 3,607 34,010 0.005 0.31 0% 0.00495 3,607 3,607 3607 3607 0.005 0.31 0% 0.00495 3,607 3,607 3,607 0.005 0.31 0% 0.00495	- - 7 17
Hull 160 TBD Name Aux John Deere 4045AFM85 KJDXN06.8148 2023 148 3 2029 2031 Hull 160 TBD Name Aux John Deere 4045AFM85 KJDXN06.8148 2023 148 3 2029 2031 Hull 160 Hours Gen Hour 67% </td <td>1.04 0.31 0% 1.03 - - 1,54 3.22 0.39 10% 0.37 - - - 36 3.22 0.39 10% 0.37 - - 36 Annual Hours 1,50</td> <td>46 3,607 3,607 3,607 3,607 3,607 3,607 59 860 860 860 860 860 860 69 860 860 860 860 860 860 69 3,500 3,500 3,500 3,500 3,500 3,500</td> <td>860 860 8,113 0.07 0.39 30% 0.00624 860 860 8,113 0.07 0.39 30% 0.00624</td> <td>- - 6 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 137 8,250</td>	1.04 0.31 0% 1.03 - - 1,54 3.22 0.39 10% 0.37 - - - 36 3.22 0.39 10% 0.37 - - 36 Annual Hours 1,50	46 3,607 3,607 3,607 3,607 3,607 3,607 59 860 860 860 860 860 860 69 860 860 860 860 860 860 69 3,500 3,500 3,500 3,500 3,500 3,500	860 860 8,113 0.07 0.39 30% 0.00624 860 860 8,113 0.07 0.39 30% 0.00624	- - 6 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 137 8,250
Hull 161 TBD Name Main MAN D2862LE489 D2862LE489 2024 1,450 4+DPF Hull 161 TBD Name Main MAN D2862LE489 D2862LE489 2024 1,450 4+DPF Hull 161 TBD Name Main MAN D2862LE489 D2862LE489 2024 1,450 4+DPF	1.04 0.31 0% 1.03 - - 25 1.04 0.31 0% 1.03 - - 25 1.04 0.31 0% 1.03 - - 25 1.04 0.31 0% 1.03 - - 25	58 3,607 3,607 3,607 3,607 3,607 3,607 58 3,607 3,607 3,607 3,607 3,607 58 3,607 3,607 3,607 3,607 3,607 58 3,607 3,607 3,607 3,607 3,607	3,607 3,607 32,722 0.005 0.31 0% 0.00495 3,607 3,607 32,722 0.005 0.31 0% 0.00495 3,607 3,607 32,722 0.005 0.31 0% 0.00495 0,00495 0.00495	- - 1 17
Hull 161 TBD Name Main MAN D2862LE489 D2862LE489 2024 1,450 4+DPF Hull 161 TBD Name Aux John Deere 4045AFM85 KJDXN06.8148 2024 148 3 2029 2031 Hull 161 TBD Name Aux John Deere 4045AFM85 KJDXN06.8148 2024 148 3 2029 2031	1.04 0.31 0% 1.03 - - 25 3.22 0.39 10% 0.37 - - 6 3.22 0.39 10% 0.37 - - 6	58 3,607 3,607 3,607 3,607 3,607 3,607 51 860 860 860 860 860 860 51 860 860 860 860 860 860	3,607 3,607 32,722 0.005 0.31 0% 0.00495 860 860 7,806 0.07 0.39 30% 0.00624 860 860 7,806 0.07 0.39 30% 0.00624	- - 1 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 132 7,938

Hull 161 Hours		Gen Hour Factor	67%							Annual Hours		250 3,50	3,500	,500 3,500	3,500 3,500	0 3,500 3	,500 3,500				250	3,500 3,50	0 3,500 3,50	3,500	3,500 3	500 3,500	3,500		
149PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2025	670 ZEA			0.31	0.0895	-	17	224	224 224	224 224	4 224	224 224	1,970	0.31		-			-	-		-	-	1,970
149PAX ZEAT #1TBD Name	Main	TBD	TDB	TBD	2025	670 ZEA	•		0.31	0.0895	-	17	224	224 224	224 224	4 224	224 224	1,970	0.31		-			-	-		-	-	1,970
149PAX ZEAT #1TBD Name	Aux	TBD	TBD	TBD	2025	20 ZEAT	•		0.39	0.0034	-		7 8	8 8	8 8	8 8	8 8	74	0.39		-			-	-		-	-	74
149PAX ZEAT #1 Hours		Gen Hour Factor	100%							Annual Hours		2,00	2,500 2	,500 2,500	2,500 2,500	0 2,500 2	,500 2,500				-	2,000 2,50	2,500 2,50	2,500	2,500 2	500 2,500	2,500		
149PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2025	670 ZEA	•		0.31	0.0895	-	9	179	224 224	224 224	4 224	224 224	1,835	0.31		-			-	-		-	-	1,835
149PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2025	670 ZEA	•		0.31	0.0895	-	9	179	224 224	224 224	4 224	224 224	1,835	0.31		-			-	-		-	-	1,835
149PAX ZEAT #2 TBD Name	Aux	TBD	TBD	TBD	2025	20 ZEAT	•		0.39	0.0034	-		7	8 8	8 8	8 8	8 8	69	0.39		-			-	-		-	-	69
149PAX ZEAT #2 Hours		Gen Hour Factor	100%							Annual Hours		1,00	2,000	,500 2,500	2,500 2,500	0 2,500 2	,500 2,500				-	1,000 2,00	2,500 2,50	2,500	2,500 2	500 2,500	2,500		
149PAX ZEAT #3 TBD Name	Main	TBD	TDB	TBD	2026	670 ZEA	•		0.31	0.0895	-		134	224 224	224 224	4 224	224 224	1,701	0.31		-			-	-		-	-	1,701
149PAX ZEAT #3 TBD Name	Main	TBD	TDB	TBD	2026	670 ZEAT	•		0.31	0.0895	-		134	224 224	224 224	4 224	224 224	1,701	0.31		-			-	-		-	-	1,701
149PAX ZEAT #3 TBD Name	Aux	TBD	TBD	TBD	2026	20 ZEAT	•		0.39	0.0034	-		5	8 8	8 8	8 8	8 8	64	0.39		-			-	-		-	-	64
149PAX ZEAT #3 Hours		Gen Hour Factor	100%							Annual Hours			1,500	,500 2,500	2,500 2,500	0 2,500 2	,500 2,500				-	- 1,50	2,500 2,50	2,500	2,500 2	500 2,500	2,500		
400PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2028	1,676 ZEA			0.31	0.2239	-		448	672 672	672 672	2 672	672 672	5,151	0.31		-			-	-		-	-	5,151
400PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2028	1,676 ZEA	•		0.31	0.2239	-		448	672 672	672 672	2 672	672 672	5,151	0.31		-			-	-		-	-	5,151
400PAX ZEAT #1 TBD Name	Aux	TBD	TBD	TBD	2028	175 ZEA	•		0.39	0.0294	-		59	88 88	88 88	8 88	88 88	677	0.39		-			-	-		-	-	677
400PAX ZEAT #1 Hours		Gen Hour Factor	100%							Annual Hours		-	2,000	,000 3,000	3,000 3,000	0 3,000 3	,000 3,000				-	- 2,00	3,000 3,00	3,000	3,000 3	000 3,000	3,000		
400PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2029	1,676 ZEA	•		0.31	0.2239	-		-	448 672	672 672	2 672	672 672	4,479	0.31		-			-	-		-	-	4,479
400PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2029	1,676 ZEA	•		0.31	0.2239	-		-	448 672	672 672	2 672	672 672	4,479	0.31		-			-	-		-	-	4,479
400PAX ZEAT #2 TBD Name	Aux	TBD	TBD	TBD	2029	175 ZEA	•		0.39	0.0294	-		-	59 88	88 88	8 88	88 88	588	0.39		-			-	-		-	-	588
400PAX ZEAT #2 Hours		Gen Hour Factor	100%							Annual Hours			- 2	,000 3,000	3,000 3,000	0 3,000 3	,000 3,000				-		2,000 3,00	3,000	3,000 3	000 3,000	3,000		
Total Emissions (lbs)											320.982 260.0	034 241 670 233 92	1 213 405 182	311 153,258 12	24 293 104 523	3 95 229 92	419 92 419	2,114,467		4.584 3.812	3 586	3,134 2,81	1 2,430 2,08	B5 1,742	1,484 1,	266 1 198	.198	29,329	2,143,796
Central Bay Hour Usage											0_0,00	500 23,500 25,25					,500 29,500	2,114,407		23 500 23 500	21.000	25,250 28,00					9 500	25,525	2,140,130
North Bay Hour Usage	+ +							+	+ + +		-,,		20,000 20	25,555	13 500 13 500	25,555 25	,		 	13.500 13.500		-,		_5,555			,,500		
Total Vessel Hour Usage											37.000 37.	500 13,500 13,50 000 37,000 38,75	13,300 13	,500 13,500 ,000 43,000	43 000 43 000	0 43,000 43	000 43 000			37,000 37,000	37,000	38 750 41 50	0 13,500 13,50 0 43,000 43,00	00 43 000	43 000 43	000 43 000 4	3,000		
Total Vossel Hour Osage											37,000 37,	37,000 38,73	7 41,300 43	,000 43,000	73,000 43,000	0	,555 45,555			37,000 37,000	37,000	30,730 41,30	43,000 43,00	43,000	43,000 43	43,000 4	,,,,,,,,,		

	T . DDE	0.0.700	0.1 71	4.00	0.005
CARB T4+DPF	T4+DPF	0-3,700kw	C1<7L	1.30	0.005
CARB T3+DPF	T3+DPF	0.9 <disp>1.2L</disp>	<35kw/L	3.22	0.013
eGRID	Elec	Nox	lbs/hp-hr	0.000388	0.000
Hydrodon		• • •	of H2, 55% eff 1 kg of cell, 34% overall eff	H2 uses eGrid at load/.3 efficiency	34 for
g/kw-hr to g/bhp/hr	0.7457				

<u>Table 17: Compliance Dates for Tier 2, Tier 3, or Tier 4 Engines on Ferries (Except Short-Run Ferries), Pilot Vessels, All Tug/Towboats, and Push Boats</u>

Engine Model Year and Vessel <u>Category</u>	Compliance Date
2009 and earlier (Except Pilot Vessels)	12/31/2024
2012 and Earlier Pilot Vessels	<u>12/31/2025</u>
2010 – 2012 All Other Vessels*	<u>12/31/2025</u>
<u>2013 – 2015**</u>	<u>12/31/2026</u>
<u>2016 – 2019**</u>	12/31/2027
<u>2020 – 2021**</u>	<u>12/31/2028</u>
2022 and later**	12/31/2029

*Ferries (Except Short-Run Ferries), All Tug/Towboats, and Push Boats. **All vessels listed in the title of this table, including ferries (except short-run), pilot, all tug/towboats, and push boats. [Note: For example, for a 2020 model year diesel engine on a tugboat operating in Regulated California Waters, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(12)(C) by December 31, 2028.]

			Model			EPA	Compliance	e baseline	ISOR Appendix H Table H-5	CARB LF	NOx R99 NO	x NOx eGrid	2023	Emission	ons years, Vessel in seprate lines dependant on emission	ns configu		NOx Emissions		-5 CHC Regulation Table 11 PM CARB PM CARB	CARB LF	PM R99 PM	2023		s years, Vessel in seprate line	·		PM	Emissions Total
Vessel	Type Main	MAN	D2862LE489	D2862LE489	Year 2021	1,450 4	Year 2028	2yr ext 2030	g/bhp-hr	Appendix H Table H-9 0.31	Reduction Emiss s lbs	3	NOx in lbs 2024 20 2,577 2,577 2	2,577 2	2026 2027 2028 2029 203 2,061	30 2	2031 2032 2033 2034	2023 thru 2034, lbs 9,791	g/bhp-	-hr Tier 4+ DPF Tier 3+ DPF g/bhp-hr g/bhp-hr	appendix H Table H-9 0.31	30% 0.02081	NOx in lbs 52 5	. 2025 2 0	026 2027 202 42	8 2029	2030 2031 2032 2033	- 2034 2023	3 thru 2034, Emissions 2023 thru 2034, lbs
Gemini Gemini Gemini Gemini Gemini	Aux	John Deere John Deere Gen Hour	D2862LE489 4045TF275 4045TF275 67%	D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2007 2007	1,450 4 87 2 87 2	2028 2024 2024	2030 2026 2026	1.04 4.02 4.02	0.31 0.39 0.39	0% 1.0 10% 0.2 10% 0.2	7	2,577 2,577 2 451 451 451 451 2,500 2,500 2	2,577 2 451 451 2,500 2	2,061	-	 	9,791 1,714 1,714	0.03 0.17 0.17		0.39	30% 0.02081 30% 0.00890 30% 0.00890	52 5 15 1 15 1	5 15 5 15 0 2 500	42 12 12		 		198 9,989 56 1,770 56 1,770
Gemini Gemini Gemini Gemini Gemini DPF	Main Main Aux	Factor MAN MAN John Deere	D2862LE489 D2862LE489 4045	D2862LE489 D2862LE489 unknown	2021 2021 2024	1,450 4 1,450 4 87 3+DPF	2028	2030 2030	1.04 1.04 3.22	0.31 0.31 0.39	0% 1.0 0% 1.0 0% 0.2	Annual Hours 3 3	 		- 1,031 3,350 4,122 4, - 1,031 3,350 4,122 4, - 161 522 642	,122 ,122	 	12,625 12,625 1 967	5 0.03 5 0.03	0.013	0.31 0.31 0.39	30% 0.02081 30% 0.02081 0% 0.00097	 		- 21 - 21 - 1	68 83 68 83	83 83	- - -	255 12,880 255 12,880 8 1 975
Gemini DPF Gemini 1/2 DPF Hours Gemini DPF	Aux	John Deere Gen Hour Factor MAN	4045 67% D2862LE48B	unknown D2862LE48B	2024	87 3+DPF			3.22	0.39	0% 0.2			-	- 161 522 642 1,000 3,250 4,000 4,	642	2 061 4 122 4 122	1,967		0.013	0.39	0% 0.00097 0% 0.00495		-	- 1,000 3,2	2 3	4,000		8 1,975
Gemini DFF Gemini DPF Gemini DPF	Main Aux Aux	MAN John Deere John Deere Gen Hour	D2862LE48B 4045 4045	D2862LE48B unknown unknown	2030 2030 2024 2024	1,450 4+DFF 87 3+DPF 87 3+DPF			1.04 1.04 3.22 3.22	0.31 0.39 0.39	0% 1.0 0% 0.2 0% 0.2	1				-	2,001 4,122 4,122 4,122 2,061 4,122 4,122 4,122 321 642 642 642 321 642 642 642	14,429 2,248 2,248	3	0.005 0.013 0.013	0.31 0.39	0% 0.00495 0% 0.00097 0% 0.00097		- - -			- 10 20 2 - 1 3 3 - 1 3	0 20 3 3 3 3	69 14,498 9 2,257 9 2,257
Gemini DPF Hours Pisces Pisces	Main Main	Factor MAN MAN	67% D2862LE489 D2862LE489	D2862LE489 D2862LE489	2021 2021	1,450 4 1,450 4	2028 2028	2030 2030	1.04	0.31 0.31	0% 1.0 0% 1.0	*			2,061	-	2,000 4,000 4,000 4,000 - - - - - - - -	9,276 9,276	6 0.03 6 0.03			30% 0.02081 30% 0.02081	52 5 52 5	- 2 42 2 42			- 2,000 4,000 4,00 - - - - - - - -	0 4,000 - -	187 9,463 187 9,463
Pisces Pisces Pisces Annual Hours	Aux	John Deere John Deere Gen Hour Factor	4045TF275 4045TF275 67%	7ADEM06.8275 7ADEM06.8275	2008	87 2 87 2	2024	2026	4.02	0.39	10% 0.2 10% 0.2	Annual Hours	451 451 451 451 2,500 2,500 2	361 361 2,000 2	361	-	 	1,624 1,624	0.17		0.39	30% 0.00890 30% 0.00890	15 1 15 1 2,500 2,50	5 12 5 12 0 2,000 2	12 12 2,000	- - -	 		53 1,677 53 1,677
Pisces Pisces DPF Pisces DPF		MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045 4045	D2862LE489 D2862LE489 unknown unknown	2021 2021 2024 2024	1,450 4 1,450 4 87 3+DPF 87 3+DPF	2028	2030	1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	0% 1.0 0% 1.0 0% 0.2 0% 0.2	*			- 1,031 3,350 4,122 4, - 1,031 3,350 4,122 4, - 161 522 642 - 161 522 642	642 642		12,625 12,625 1,967 1,967	6 0.03 6 0.03	0.013 0.013	0.31	30% 0.02081 30% 0.02081 0% 0.00097 0% 0.00097	 	- - -	- 21 - 21 - 1 - 1	68 83 68 83 2 3 2 3	83	- - -	255 12,880 255 12,880 8 1,975 8 1,975
Pisces 1/2 DPF Hours Pisces DPF Pisces DPF	Main Main	Gen Hour Factor MAN MAN	67% D2862LE48B D2862LE48B	D2862LE48B D2862LE48B	2030 2030	1,450 4+DPF 1,450 4+DPF			1.04 1.04	0.31 0.31	0% 1.0 0% 1.0	Annual Hours 3 3		-	1,000 3,250 4,000 4, 	-,000 - -	2,061 4,122 4,122 4,122 2,061 4,122 4,122 4,122	14,429 14,429		0.005 0.005	0.31 0.31	0% 0.00495 0% 0.00495	 		- 1,000 3,2 	250 4,000	4,000 - - - - 10 20 2 - 10 20 2	- 0 20 0 20	69 14,498 69 14,498
Pisces DPF Pisces DPF Pisces DPF Hours	Aux	John Deere John Deere Gen Hour Factor	4045 4045 67%	unknown unknown	2024 2024	87 3+DPF 87 3+DPF			3.22 3.22	0.39	0% 0.2 0% 0.2	4 Annual Hours		-		-	321 642 642 642 321 642 642 642 2,000 4,000 4,000 4,000	2,248 2,248	3	0.013 0.013		0% 0.00097 0% 0.00097	 		 		- 1 3 - 1 3 - 2,000 4,000 4,00	3 3 3 3 0 4,000 4,000	9 2,257 9 2,257
Scorpio Scorpio Scorpio		MAN MAN John Deere John Deere	D2862LE489 D2862LE489 4045TF275 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2021 2008 2008	1,450 4 1,450 4 87 2 87 2	2028 2028 2024 2024	2030 2030 2026 2026	1.04 1.04 4.02 4.02	0.31 0.31 0.39 0.39	0% 1.0 0% 1.0 10% 0.2 10% 0.2	3 3 7	2,577 2,577 2 2,577 2,577 2 451 451 451 451	2,061 2 2,061 2 361 361	2,061	- - -		9,276 9,276 1,624 1,624	0.03 0.03 0.17 0.17		0.39	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	52 5 52 5 15 1	2 42 2 42 5 12 5 12	42 42 12		 		187 9,463 187 9,463 53 1,677 53 1,677
Scorpio Annual Hours Scorpio Scorpio	Main Main	Gen Hour Factor MAN MAN	67% D2862LE489 D2862LE489	D2862LE489 D2862LE489	2021	1,450 4	2028	2030	1.04	0.31	0% 1.0	Annual Hours 3	2,500 2,500 2	2,000 2	2,000 - 1,031 3,607 4,122 4, - 1,031 3,607 4,122 4,	,122		12,883	3 0.03 3 0.02		0.31	30% 0.02081 30% 0.02081	2,500 2,50	2,000	2,000 21	73 83	83		260 13,143 260 12,143
Scorpio DPF Scorpio DPF Scorpio 1/2 DPF Hours	Aux Aux	John Deere John Deere Gen Hour Factor	4045 4045 67%	unknown unknown	2024 2024 2024	87 3+DPF 87 3+DPF	2020	2000	3.22	0.39	0% 0.2 0% 0.2			-	- 161 562 642 - 161 562 642 1,000 3,500 4,000 4,	642 642 -,000		2,007 2,007	7	0.013 0.013	0.39	0% 0.00097 0% 0.00097			- 1 - 1 - 1,000 3,5	2 3 2 3 500 4,000	3 3 4,000		8 2,015 8 2,015
Scorpio DPF Scorpio DPF Scorpio DPF		MAN MAN John Deere	D2862LE48B D2862LE48B 4045	unknown		1,450 4+DPF 1,450 4+DPF 87 3+DPF			3.22	0.31 0.31 0.39	0% 1.0 0% 1.0 0% 0.2	3	 				2,061 4,122 4,122 4,122 2,061 4,122 4,122 4,122 321 642 642 642 324 642 642 642	14,429 14,429 2,248		0.005 0.005 0.013	0.31 0.39	0% 0.00495 0% 0.00495 0% 0.00097	 		 	 	- 10 20 2 - 10 20 2 - 1 3	0 20 0 20 3 3	69 14,498 69 14,498 9 2,257
Scorpio DPF Scorpio DPF Hours Taurus	Main	John Deere Gen Hour Factor MAN	4045 67% D2862LE489	D2862LE489	2024	1,450 4	2028	2030	1.04	0.39	0% 0.2	Annual Hours	2,577 2,577 2	2,061 2	2,061	-	2,000 4,000 4,000 4,000 	9,276	0.03	0.013	0.31	0% 0.00097 30% 0.02081	52 5	- 42	42		- 2,000 4,000 4,000 	0 4,000 -	187 9,463
Taurus Taurus Taurus Taurus Annual Hours	Aux	John Deere John Deere Gen Hour	D2862LE489 4045TF275 4045TF275 67%	D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2009 2009	87 2 87 2	2028 2024 2024	2026 2026	4.02 4.02	0.39	10% 0.2 10% 0.2	Annual Hours	451 451 451 451	2,061 2 361 361 2,000 2	2,001	-		1,624 1,624	0.03 0.17 0.17		0.39	30% 0.02081 30% 0.00890 30% 0.00890	15 1 15 1 2,500 2,50	5 12 5 12 0 2,000 2	12 12 2,000	- - -		- - -	53 1,677 53 1,677
Taurus Taurus Taurus DPF	Main Main Aux	Factor MAN MAN John Deere	D2862LE489 D2862LE489 4045		1 2024	1,450 4 1,450 4 87 3+DPF	2028 2028	2030	1.04 1.04 3.22	0.31 0.31 0.39	0% 1.0 0% 1.0 0% 0.2	3 3			- 1,031 3,607 4,122 4, - 1,031 3,607 4,122 4, - 161 562 642	,122 ,122 642	 	12,883 12,883 2,007	0.03 0.03	0.013	0.31 0.39	30% 0.02081 30% 0.02081 0% 0.00097	 		- 21 - 21 - 1	73 83 73 83 2 3	83 83		260 13,143 260 13,143 8 2,015
Taurus DPF Taurus 1/2 DPF Hours Taurus DPF		Gen Hour Factor MAN	.667 D2862LE48B	unknown D2862LE48B		87 3+DPF 1,450 4+DPF			1.04	0.39	0% 0.2	Annual Hours		-	- 161 562 642 1,000 3,500 4,000 4,	642	2,061 4,122 3,607 3,607	13,398	3	0.013		0% 0.00097 0% 0.00495	 		- 1 - 1,000 3,5 	2 3 500 4,000 	3 4,000 - 10 20	- - 7 17	64 13,462
Taurus DPF Taurus DPF Taurus DPF Taurus DPF Hours	Aux	MAN John Deere John Deere Gen Hour	D2862LE48B 4045 4045	D2862LE48B unknown unknown	2030 2024 2024	1,450 4+DPF 87 3+DPF 87 3+DPF			1.04 3.22 3.22	0.31 0.39 0.39	0% 1.0 0% 0.2 0% 0.2	•		-		-	2,061 4,122 3,607 3,607 321 642 562 562 321 642 562 562 2,000 4,000 3,500 3,500	13,398 2,088 2,088	3 3	0.005 0.013 0.013		0% 0.00495 0% 0.00097 0% 0.00097	 	- - -	 		- 10 20 7 - 1 3 - 1 3 - 3 - 3 50	7 17 2 2 2 2 2 2 2 3 500 3 500 3	64 13,462 8 2,096 8 2,096
Hydrus Hydrus Hydrus	Main Main	Factor MTU MTU John Deere	12V4000M64 12V4000M64 4045AFM85	FMDDN76.3MTK FMDDN76.3MTK EJDXN06.8148	2015 2015 2014	1,950 3 1,950 3 162 3	2026 2026 2026	2028 2028 2028	3.69 3.69 3.22	0.31 0.31 0.39	10% 4.4 10% 4.4 10% 0.4	3	, ,	5,491 15 5,491 15 942	15,491 17,703 15,491 - 15,491 17,703 15,491 - 942 1,076 942 -			95,156 95,156 5,786	3 0.05 3 0.05 3 0.07		0.31	30% 0.04664 30% 0.04664 30% 0.00683	163 16 163 16 16 1	3 163 3 163 6 16	163 187 1 163 187 1 16 18	63 - 63 - 16 -			1,003 96,159 1,003 96,159 98 5,884
Hydrus Hydrus Annual Hours Hydrus DPF		John Deere Gen Hour Factor MTU	4045AFM85 67% 12V4000M65L	EJDXN06.8148 Unknown		162 3 2,000 4+DPF	2026	2028	3.22	0.39	0% 1.4	Annual Hours	942 942 3,500 3,500 3	942	942 1,076 942 - 3,500 4,000 3,500 - - - -	5,397	6,397 5,331 4,975 4,975	5,786 28,075	0.07	0.005		0.00683	16 1 3,500 3,50	6 16 0 3,500 3	16 18 3,500 4,000 3,5	16 - 500 -		- - 4 24	135 28,210
Hydrus DPF Hydrus DPF Hydrus DPF	Aux	MTU John Deere John Deere Gen Hour	12V4000M65L 4045 4045	Unknown unknown unknown	2028 2028 2028	2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 3.22 3.22	0.31 0.39 0.39	0% 1.4 0% 0.4 0% 0.4	5			6, 1, 1,	,346 ,346	6,397 5,331 4,975 4,975 1,346 1,121 1,047 1,047 1,346 1,121 1,047 1,047	28,075 5,905 5,905	5 5 5	0.005 0.013 0.013		0% 0.00683 0% 0.00181 0% 0.00181	 		 		31 31 26 2 5 5 5 5 5 5	4 24 4 4 4 4	135 28,210 24 5,929 24 5,929
Hydrus DPF Hours Cetus Cetus Cetus	Main Main	Factor MTU MTU John Deere	67% 12V4000M64 12V4000M64 4045AFM85	FMDDN76.3MTK FMDDN76.3MTK EJDXN06.8148	2015 2015 2016	1,950 3 1,950 3 162 3	2026 2026 2027	2028 2028 2029	3.69 3.69 3.22	0.31 0.31 0.39	10% 4.4 10% 4.4 10% 0.4	3	15,491 15,491 15 15,491 15,491 15 942 942	5,491 15 5,491 15		- - -	4,500 3,750 3,500 3,500 - - - - - - - - - - - -	97,369 97,369 5.920	0.05 0.05 0.07		0.31	30% 0.04664 30% 0.04664 30% 0.00683	163 16 163 16 16 1	- 3 163 3 163 6 16	163 187 1 163 187 1	87 - 87 -	4,500 4,500 3,750 3,50 - - - - - - - - - - - -		1,026 98,395 1,026 98,395 100 6.020
Cetus Annual Hours Cetus DPF	Aux	John Deere Gen Hour Factor	4045AFM85 67%	EJDXN06.8148	2016	162 3	2027	2029	3.22	0.39	10% 0.4	Annual Hours	942 942 3,500 3,500 3	942	942 1,076 1,076 - 3,500 4,000 4,000	- 397	6.397 5.331 4.975 4.975	5,920	0.07	0.005	0.39	30% 0.00683 0% 0.00683	3,500 3,50	6 16 0 3,500 3	16 18 3,500 4,000 4,0	18 -		- - 4 24	100 6,020
Cetus DPF Cetus DPF Cetus DPF	Main Aux Aux	MTU John Deere John Deere	12V4000M65L 4045 4045	Unknown unknown unknown	2028 2028 2028 2028	2,000 4+DFF 162 3+DPF 162 3+DPF			1.04 3.22 3.22	0.31 0.39 0.39	0% 1.4 0% 0.4 0% 0.4	2		-	1, 1,	,346 ,346	6,397 5,331 4,975 4,975 1,346 1,121 1,047 1,047 1,346 1,121 1,047 1,047	28,075 5,905 5,905	5 5 5	0.005 0.013 0.013	0.31 0.39	0% 0.00683 0% 0.00181 0% 0.00181			 		31 31 26 2 5 5 5 5 5 5	4 24 4 4 4 4 4	135 28,210 24 5,929 24 5,929
Cetus DPF Hours Argo Argo	Main Main	Gen Hour Factor MTU MTU	12V4000M64	FMDDN76.3MTK FMDDN76.3MTK		1,950 3 1,950 3	2027 2027	2029 2029	3.69 3.69	0.31 0.31	10% 4.4 10% 4.4	3	15,491 15,491 13 15,491 15,491 13	3,278 15 3,278 15		- -	4,500 3,750 3,500 3,500 - - - - - - - -	115,073 115,073	3 0.05 3 0.05		0.31	30% 0.04664 30% 0.04664	163 16 163 16	- 3 140 3 140	163 187 1 163 187 1 163 187 1	87 210 87 210	4,500 4,500 3,750 3,50 - - - - - - - -	3,500	1,213 116,285 1,213 116,285
Argo Argo Annual Hours	Aux	John Deere John Deere Gen Hour Factor	4045AFM85 4045AFM85 67%	EJDXN06.8148 EJDXN06.8148		162 3 162 3	2026	2028	3.22	0.39	10% 0.4 10% 0.4	Annual Hours	942 942 942 942 942 3,500 3,500 3,500 3 3	807	942 1,076 1,076 1,211 942 1,076 1,076 1,211 3,500 4,000 4,000 4,500	-		6,997 6,997	0.07		0.39	30% 0.00683 30% 0.00683	16 1 16 1 3,500 3,50	6 14 6 14 0 3,000 3	16 18 18 18 3,500 4,000 4,0	18 20 18 20 000 4,500	 	-	118 7,115 118 7,115
Argo DPF Argo DPF Argo DPF Argo DPF	Aux	MTU John Deere John Deere	12V4000M65L 12V4000M65L 4045 4045	Unknown Unknown unknown unknown	2029 2029 2029 2029	2,000 4+DPF 2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	0% 1.4 0% 1.4 0% 0.4 0% 0.4	5			2, 2, 	2,132 2,132 449 449	6,397 5,331 4,975 4,975 6,397 5,331 4,975 4,975 1,346 1,121 1,047 1,047 1,346 1,121 1,047 1,047	23,811 23,811 5,008 5,008		0.005 0.005 0.013 0.013	0.31 0.39	0% 0.00683 0% 0.00683 0% 0.00181 0% 0.00181	 	- - -	 		10 31 26 2 10 31 26 2 2 5 5 2 5 5	4 24 4 24 4 4 4 4	114 23,925 114 23,925 20 5,029 20 5,029
Argo DPF Hours Carina Carina		Gen Hour Factor MTU MTU	67% 12V4000M64 12V4000M64	FMDDN76.3MTK FMDDN76.3MTK EJDXN06.8148	2016 2016	1,950 3 1,950 3	2027 2027	2029 2029	3.69	0.31 0.31	10% 4.4 10% 4.4	Annual Hours 3 3	15,491 15,491 13 15,491 15,491 13 942 942		15,491 17,703 17,703 19,916 15,491 17,703 17,703 19,916	,500 - -	4,500 3,750 3,500 3,500 - - - - - - - -	115,073 115,073	3 0.05 3 0.05		0.31	30% 0.04664 30% 0.04664	- 163 16 163 16	- 3 140 3 140		87 210 87 210	1,500 4,500 3,750 3,50 - - - - - - - -	3,500	1,213 116,285 1,213 116,285
Carina Carina Carina Annual Hours	Aux	Gen Hour Factor	67%	EJDXN06.8148	2017	162 3	2027	2029 2029	3.22 3.22	0.39	10% 0.4 10% 0.4		942 942	807	942 1,076 1,076 1,211 942 1,076 1,076 1,211 3,500 4,000 4,000 4,500	-		6,997 6,997	7 0.07 7 0.07			30% 0.00683 30% 0.00683	16 1 16 1 3,500 3,50	6 14 6 14 0 3,000	16 18 16 18 3,500 4,000 4,000 4,0	18 20 18 20 000 4,500	 		118 7,115 118 7,115
Carina DPF Carina DPF Carina DPF Carina DPF	Main Main Aux Aux	MTU MTU John Deere	12V4000M65L 12V4000M65L 4045 4045	Unknown Unknown unknown unknown	2029 2029	2,000 4+DPF 2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	0% 1.4 0% 1.4 0% 0.4 0% 0.4	5				2,843 2,843 598 598	6,397 5,331 4,975 4,975 6,397 5,331 4,975 4,975 1,346 1,121 1,047 1,047 1,346 1,121 1,047 1,047	24,522 24,522 5,158 5,158	2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.005 0.005 0.013 0.013	0.31 0.39	0% 0.00683 0% 0.00683 0% 0.00181 0% 0.00181	 	- - - -	 		14 31 26 2 14 31 26 2 2 5 5 2 5 5	4 24 4 24 4 4 4 4	118 24,639 118 24,639 21 5,179 21 5.179
Carina DPF Hours Peralta Peralta	Main	John Deere Gen Hour Factor Cummins Cummins	67% QSK50 QSK50	7CEXM019.AAB 7CEXM019.AAB	2007	1,600 2 1,600 2	2024 2024	2026 2026	5.08 5.08	0.31 0.31	10% 5.0 10% 5.0	Annual Hours	17,498 17,498 17 17,498 17,498 17	7,498 1 ²	14,998 14,998	2,000 - -	4,500 3,750 3,500 3,500 - - - - - - - -	67,492 67.492	2 0.09		0.31	30% 0.06889 30% 0.06889	241 24 241 24	- 1 241 1 241	 207		2,000 4,500 3,750 3,50 	3,500	930 68,422 930 68.422
Peralta Peralta Peralta Peralta Annual Hours	Aux		4045TF275 4045TF275 67%	8ADEM06.8275 8ADEM06.8275	2008	87 2 87 2	2024	2026 2026	4.02	0.39	10% 0.2 10% 0.2	7	631 631 631 631	631	541	-		2,436 2,436	6 0.17 6 0.17		0.39	30% 0.00890 30% 0.00890	21 2 21 2 3,500 3,50	21 21 21 21 20 3,500 3	18 18 3,000			- - -	80 2,516 80 2,516
Peralta DPF Peralta DPF Peralta DPF	Main Main Aux Aux	MTU	12V4000M65L 12V4000M65L 4045	Unknown Unknown unknown	2029 2029	2,000 4+DPF 2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	0% 1.4 0% 0.4	2	<u> </u>	-	- 2,132 4,975 5,686 - 2,132 4,975 5,686 - 449 1,047 1,196 - 449 1,047 1,196			12,794 12,794 2,691	l l	0.005 0.005 0.013	0.31	0% 0.00683 0% 0.00683 0% 0.00181 0% 0.00181	 		- 10 - 10 - 2	24 27 24 27 4 5	 		62 12,855 62 12,855 11 2,702
Peralta DPF Peralta DPF Hours Bay Breeze	Main	Factor MTU	4045 67% 16V2000M70	7MDDM31.8MRR	2029	162 3+DPF 1,410 2	2024	2026	5.08	0.31	10% 4.4	Annual Hours	15,420 15,420 15 15,420 15,420 15		1,500 3,500 4,000	-		2,691 46,260	0.00		0.31	30% 0.06071	212 21	2 212	- 1,500 3,5 	4 5 500 4,000 	 	-	637 46,898 637 46,898
Bay Breeze Bay Breeze Bay Breeze		MTU John Deere John Deere	16V2000M70 4045TF270 4045TF270	7MDDM31.8MRR 8ADEM06.8275 8ADEM06.8275	2010 2008 2008	1,410 2 87 2 87 2	2025 2024 2024	2027 2026 2026	5.08 4.02 4.02	0.31 0.39 0.39	10% 4.4 10% 0.2 10% 0.2		15,420 15,420 15 631 631 631 631	631	 	- - -	 	46,260 1,894 1,894	0.09 0.17 0.17		0.39	30% 0.06071 30% 0.00890 30% 0.00890	212 21 21 2 21 2	2 212 1 21 1 21	 	- - 	 		637 46,898 62 1,957 62 1,957

 CARB T4+DPF
 T4+DPF
 0-3,700kw
 C1<7L</th>
 1.30
 0.005

 CARB T3+DPF
 T3+DPF
 0.9<Disp>1.2L
 <35kw/L</td>
 3.22
 0.013

Day Brooms Approal House		Gen Hour	679/									Appropriate	2 500	2 500	3.500										3.500	2 500	2.500						
Bay Breeze Annual Hours Pyxis Pyxis	Main Main	Factor MTU MTU	67% 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2017 3	3,433 4	2027	2029	1.04	0.31	0% 2.44 0% 2.44	Annual Hours	6,100 6 100	4,880 4,880	4,880 4,880 7,32 4,880 4,880 7,32	20 7,320 3,66 20 7,320 3,66	60 -			39,041 39,041	0.03			30% 0.04927 30% 0.04927	123	99	99 99	148 148 148 148	74 -			788 788	39,829
Pyxis Pyxis	Aux Aux	John Deere John Deere	6068AFM85E 6068AFM85E	1 100/1100.0170	2017	3,433 4 245 3 245 3	2027 2027 2027	2029 2029	3.22 3.22	0.00	10% 0.61 10% 0.61		1,017 1,017	814 814	814 814 1,22 814 814 1,22	21 1,221 61 21 1,221 61	10 -			6,512 6,512	0.07 0.07		0.39	30% 0.01032 30% 0.01032	17 17	14 14	14 14 14 14	21 21 21 21	10 - 10 -			110 110	6,622 6,622
Pyxis Hours Pyxis+DPF	Main	Gen Hour Factor MTU	67% 16V4000M65L	MMDDN76.3MTS	2017 3	3,433 4+DPF			1.04	0.31	0% 2.44	Annual Hours	2,500	2,000	2,000 2,000 3,00	3,000 1,50	8,540	9,760 10,980	7.320 7.320	43,921	0.005	5	0.31	0% 0.01173	2,500	2,000 2	2,000 2,000 3	3,000 1,5	00 -	 47 5	3 35 35	211	44,132
Pyxis+DPF Pyxis+DPF	Main Aux	MTU John Deere	16V4000M65L 6068AFM85E	MMDDN76.3MTS HJDXN06.8148	2017 3 2017 :	3,433 4+DPF 245 3+DPF			1.04 3.22	0.39	0% 2.44 0% 0.68			-			8,540 1,583	1,809 2,035	7,320 7,320 1,357 1,357	43,921 8,140	0.005	0.013	0.39	0% 0.01173 0% 0.00274		-			41 6	47 55	3 35 35 8 5 5	211 33	44,132 8,172
Pyxis+DPF Pyxis+DPF Hours	Aux	John Deere Gen Hour Factor	6068AFM85E 67%	HJDXN06.8148	2017	245 3+DPF			3.22	0.39	0% 0.68	Annual Hours	-	-			1,583 3,500	1,809 2,035 4,000 4,500	1,357 1,357 3,000 3,000	8,140		0.013	0.39	0% 0.00274	-	-			3,500	4,000 4,500	0 3,000 3,000	33	8,172
Vela Vela	Main Main	MTU MTU John Deere	16V4000M65L 16V4000M65L 6068AFM85E	MMDDN76.3MTS MMDDN76.3MTS HJDXN06.8148	2018 3	3,433 4 3,433 4 245 3	2027 2027	2029 2029	1.04 1.04	0.31 0.31 0.39	0% 2.44 0% 2.44 10% 0.61		6,100 6,100	4,880 4,880	4,880 4,880 7,32 4,880 4,880 7,32 814 814 1,22	20 8,540 8,54 20 8,540 8,54 31 1,434 1,434	10 -			45,141 45,141	0.03 0.03		0.31	30% 0.04927 30% 0.04927	123 123	99 99	99 99 99 99	148 172 1 148 172 1 21 24	72 - 72 -			912 912	46,053 46,053
Vela Vela	Aux Aux	John Deere John Deere Gen Hour	6068AFM85E	HJDXN06.8148 HJDXN06.8148	2017	245 3	2027	2029	3.22	0.00	10% 0.61	Annual Haura	1,017	814	814 814 1,22	21 1,424 1,42 21 1,424 1,42 00 3,500 3,50	24 -			7,529	0.07		0.00	30% 0.01032 30% 0.01032	17	14 14 2.000 2	14 14 14	21 24 24 21 24	24 -			127	7,656
Vela Hours Vela+DPF Vela+DPF	Main	Factor MTU MTU	67% 16V4000M65L 16V4000M65L	MMDDN76.3MTS		3,433			1.04	0.31	0% 2.44 0% 2.44	Annual Hours	-	-	2,000 2,000 3,00	3,500 3,500	4,880	9,760 10,980	8,540 8,540 8,540 8,540	42,701	0.005 0.005		0.31	0% 0.01173	2,500	-	2,000 2,000 3	 	23	47 5	3 41 41	205	42,907
Vela+DPF Vela+DPF	Aux Aux	John Deere John Deere	6068AFM85E 6068AFM85E	MMDDN76.3MTS HJDXN06.8148 HJDXN06.8148	2017	245 3+DPF 245 3+DPF 245 3+DPF			3.22 3.22	0.39 0.39	0% 2.44 0% 0.68 0% 0.68		- - -	-	 		4,880 904 904	1,809 2,035 1,809 2,035	1,583 1,583 1,583 1,583	7,914 7,914	0.005	0.013	0.39	0% 0.00274 0% 0.00274		- - -		 	4	7 7	8 6 6 8 6 6	32 32	7,945 7,945
Vela+DPF Hours	Main	Gen Hour Factor	01 70	MMDDN76.3MTS	2018 3	2 422 4	2027	2020	1.04	0.21	0% 2.44	Annual Hours	7 320	4 890	6 100 4 880 7 32	20 9 540 7 33	2,000	4,000 4,500	3,500 3,500	AG 261	0.03		0.21	30% 0.04927	- 149	-		149 179 1	2,000	4,000 4,500	3,500 3,500	026	47 209
Lyra Lyra Lyra	Main Aux	MTU John Deere	16V4000M65L	MMDDN76.3MTS HJDXN06.8148	2018 3 2018 3 2017 :	3,433 4 245 3	2027 2027 2027	2029 2029 2029	1.04 1.04 3.22	0.31 0.39	0% 2.44 10% 0.61		7,320 7,320 1,221	4,880 814	6,100 4,880 7,32 6,100 4,880 7,32 1,017 814 1,22	20 8,540 7,32 20 8,540 7,32 21 1,424 1,22	20 -			46,361 46,361 7,733	0.03 0.03 0.07		0.31	30% 0.04927 30% 0.04927 30% 0.01032	148 148 21	99 14	123 99 17 14	148 172 1 21 24	48 - 21 -			936 936 131	47,298 47,298 7,863
Lyra Lyra Hours	Aux	John Deere Gen Hour Factor	6068AFM85E 67%	HJDXN06.8148	2017	245 3	2027	2029	3.22	0.39	10% 0.61	Annual Hours	1,221 3,000	2,000	1,017 814 1,22 2,500 2,000 3,00	21 1,424 1,22 00 3,500 3,00	21 -			7,733	0.07		0.39	30% 0.01032	3,000	2,000 2	17 14 2,500 2,000 3	21 24 ,000 3,500 3,0	21 -			131	7,863
Lyra+DPF Lyra+DPF	Main Main	MTU MTU	16V4000M65L 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2018 3	3,433 4+DPF 3,433 4+DPF			1.04 1.04	0.31 0.31	0% 2.44 0% 2.44			-			6,100 6,100	7,320 10,980 7,320 10,980	8,540 8,540 8,540 8,540	41,481 41,481	0.005 0.005	5	0.31 0.31	0% 0.01173 0% 0.01173	-	-			29 29	35 5 35 5	3 41 41 3 41 41	199 199	41,681 41,681
Lyra+DPF Lyra+DPF	Aux Aux	John Deere John Deere Gen Hour	6068AFM85E 6068AFM85E	HJDXN06.8148 HJDXN06.8148		245 3+DPF 245 3+DPF			3.22 3.22	0.39	0% 0.68 0% 0.68		-	-			1,131	1,357 2,035 1,357 2,035	1,583 1,583 1,583 1,583	7,687 7,687		0.013 0.013	0.39	0% 0.00274 0% 0.00274	-	-			5 5	5 5	8 6 6 8 6 6	31	7,718
Lyra+DPF Hours Intintoli	Main	Factor MTU	67% 16V4000M73L	AMDDN86.2MTR		3,433 2	2025	2027	5.08	0.31	10% 10.73	Annual Hours	32,181	32,181	32,181 32,181 21,45	54	2,500	3,000 4,500	3,500 3,500	150,177	0.09			30% 0.14781	443	443	443 443	296	2,500	3,000 4,500	3,500 3,500	2,069	152,246
Intintoli Intintoli Intintoli	Main Aux Aux	MTU John Deere John Deere	16V4000M73L 6068TF275 6068TF275	AMDDN86.2MTR HJDXN06.8148 HJDXN06.8148	2011	3,433 2 150 2	2024 2025 2025	2026 2027 2027	5.08 3.02 3.02	0.31 0.39 0.39	10% 10.73 10% 0.35 10% 0.35		32,181 701 701	32,181 3 701 701	32,181 32,181 21,45 701 701 46 701 701 46	54 57	-			150,177 3,272 3,272	0.09 0.11 0.11		0.39	30% 0.14781 30% 0.00993 30% 0.00993	20 20	20	443 443 20 20 20 20	296 13	-			2,069 93	152,246 3,364
Intintoli Hours	7.107	Gen Hour Factor	67%				2020	202.	5.62	0.00		Annual Hours	3,000	3,000	3,000 3,000 2,00	00				3,2	3.11				3,000	3,000	3,000 3,000 2		-				3,00.
Mare Island Mare Island Mare Island	Main Main Aux	MTU MTU John Deere	16V4000M73L 16V4000M73L 6068TF275	AMDDN86.2MTR AMDDN86.2MTR HJDXN06.8148	2009 3 2009 3	3,433 2 3,433 2 150 2	2024 2024 2025	2026 2026 2027	5.08 5.08 3.02	0.31 0.31 0.39	10% 10.73 10% 10.73 10% 0.35		32,181 32,181 701	· -, · · · ·	32,181 26,817 - 32,181 26,817 - 701 584 -		-			123,360 123,360 2,687	0.09 0.09 0.11		0.31	30% 0.14781 30% 0.14781 30% 0.00993	443 443 20	443 443	443 370 443 370 20 17		-			1,700 1,700 76	125,060 125,060 2,764
Mare Island Mare Island Hours	Aux	John Deere Gen Hour		HJDXN06.8148	2011	150 2	2025	2027	3.02	0.39	10% 0.35	Annual Hours	701	701	701 584 - 3,000 2,500 -		-			2,687	0.11		0.00	30% 0.00993	3,000	20	20 17		-			76	2,764
Dorado Dorado	Main Main	Factor MTU MTU	12V4000M65L 12V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2019 2 2019 2	2,575 4 2,575 4	2027 2027	2029 2029	1.04	0.31 0.31	0% 1.83 0% 1.83		5,491 5,491	4,576 4,576	4,576 5,491 7,32 4,576 5,491 7,32	21 5,948 8,23 21 5,948 8.23	36 - 36 -	 		41,638 41,638	0.03 0.03		0.31	30% 0.03696 30% 0.03696	111	92	92 111 92 111	148 120 1 148 120 1	57 - 57 -			832 832	42,469 42,469
Dorado Dorado	Aux Aux	John Deere John Deere	4045AFM85 4045AFM85	KJDXN06.8148 KJDXN06.8148	2019	148 3 148 3	2027 2027	2029 2029	3.22 3.22	0.39 0.39	10% 0.37 10% 0.37		738 738	615 615	615 738 98 615 738 98	799 1,10 33 799 1,10)6 -)6 -			5,593 5,593	0.07 0.07		0.39	30% 0.00624 30% 0.00624	12 12	10 10	10 12 10 12	17 14 17 14	18 - 18 -			94 94	5,687 5,687
Dorado Hours Dorado+DPF	Main	Gen Hour Factor MTU	67% 12V4000M65L	MMDDN76.3MTS	2019 2	2,575 4+DPF			1.04	0.31	0% 1.83	Annual Hours	3,000	2,500	2,500 3,000 4,00	3,250 4,50	5,491	8,236 8,236	7,321 7,321	36,605	0.005	5	0.31	0% 0.00880	3,000	2,500 2	2,500 3,000 4		50 - 26	40 4	 0 35 35	176	36,781
Dorado+DPF Dorado+DPF	_	MTU John Deere		MMDDN76.3MTS KJDXN06.8148	2019	2,575 4+DPF 148 3+DPF			1.04 3.22	0.31 0.39	0% 1.83 0% 0.41			-			5,491 819	8,236 8,236 1,229 1,229	7,321 7,321 1,093 1,093	36,605 5,463	0.005	0.0.0	0.00	0% 0.00880 0% 0.00165	-	-			26	40 40 5	0 35 35 5 4 4	176 22	36,781 5,485
Dorado+DPF Dorado+DPF Hours	Aux	John Deere Gen Hour Factor	4045AFM85 67%	KJDXN06.8148	2019	148 3+DPF			3.22	0.39	0.41	Annual Hours	-	-			3,000	4,500 4,500	4,000 4,000	5,463		0.013	0.39	0% 0.00165	-	-			3,000	4,500 4,500	0 4,000 4,000	22	5,485
Dephinus Dephinus	Main Main Aux	MTU MTU John Deere	12V4000M65L 12V4000M65L 4045AFM85	MMDDN76.3MTS MMDDN76.3MTS KJDXN06.8148	2022 2 2022 2	2,575 4 2,575 4	2029 2029 2028	2031 2031	1.04 1.04	0.31	0% 1.83 0% 1.83		-	4,576 4,576	4,576 5,491 7,32 4,576 5,491 7,32 615 738 08	21 5,948 8,23 21 5,948 8,23 32 700 1,10	86 8,236 86 8,236	8,236 - 8,236 -		52,619 52,619	0.03 0.03		0.31	30% 0.03696 30% 0.03696 30% 0.00624	-	92 92	92 111 92 111	148 120 1 148 120 1 17 14	57 166 57 166	166 - 166 -		1,053 1,053	53,672 53,672
Dephinus Dephinus Dephinus Dephinus	Aux	John Deere Gen Hour	4045AFM85 4045AFM85	KJDXN06.8148 KJDXN06.8148	2020	148 3	2028	2030	3.22	0.39	10% 0.37	Annual Hours	-	615	615 738 98 2,500 3,000 4,00	33 799 1,10 00 3,250 4,50	06 1,106	1,106 -		7,068	0.07			30% 0.00624	-	10	10 12	17 14 14 14 .,000 3,250 4,2	18 19	19 -		118	7,187
Dephinus+DPF Dephinus+DPF	Main Main	Factor MTU MTU	12V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2022 2	2,575 4+DPF 2,575 4+DPF			1.04	0.31	0% 1.83	Allitual Flours	-	-			-	- 3,660 - 3,660	7,321 7,321 7,321 7,321	18,302	0.005	5	0.31	0% 0.00880	-	-				- 1:	8 35 35	88	18,390
Dephinus+DPF Dephinus+DPF	Aux Aux	John Deere John Deere	4045AFM85 4045AFM85	KJDXN06.8148 KJDXN06.8148	2020	148 3+DPF 148 3+DPF			3.22 3.22	0.39 0.39	0% 0.41 0% 0.41		-	-			-	- 546 - 546	1,093 1,093 1,093 1,093	2,732 2,732	0.000	0.013	0.39	0% 0.00165 0% 0.00165	-	-				-	2 4 4 2 4 4	11 11	2,743 2,743
Dephinus+DPF Hours Hull 160 TBD Name	Main	Gen Hour Factor MAN	67% D2862LE489	D2862LE489	2023 1	1.450 4+DPF			1.04	0.31	0% 1.03	Annual Hours	_	_	1.546 2.577 3.09	92 3.607 4.63	38 4.638	2,000	4,000 4,000	23.189	0.005	5	0.31	0% 0.00495	-	-	7 12	 15 17	22 22	- 2,000	0 4,000 4,000	111	23.300
Hull 160 TBD Name Hull 160 TBD Name	Main Main	MAN MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489	2023 1	1,450 4+DPF 1,450 4+DPF			1.04 1.04	0.31 0.31	0% 1.03 0% 1.03			-	1,546 2,577 3,09 1,546 2,577 3,09	92 3,607 4,63 92 3,607 4,63	1,000	3,092 - 3,092 -		23,189 23,189	0.005 0.005	5	0.31	0% 0.00495 0% 0.00495	-	-	7 12 7 12	15 17 15 17	22 22 22 22	15 - 15 -		111 111	23,300
Hull 160 TBD Name Hull 160 TBD Name Hull 160 TBD Name		MAN John Deere John Deere		D2862LE489 KJDXN06.8148 KJDXN06.8148	2023	1,450	2029 2029	2031	1.04 3.22 3.22	0.31 0.39 0.39	0% 1.03 10% 0.37 10% 0.37		- - -	-	1,546 2,577 3,09 369 615 73 369 615 73	92 3,607 4,63 38 860 1,10 38 860 1,10	38 4,638 06 1,106 06 1,106	3,092 - 738 - 738 -		23,189 5,532 5.532	0.005 0.07 0.07	,	0.31 0.39 0.39	0% 0.00495 30% 0.00624 30% 0.00624		- - -	7 12 6 10 6 10	15 17 12 15 12 15	22 22 19 19 19 19	15 - 12 - 12 -		94 94	23,300 5,625 5.625
Hull 160 Hours		Gen Hour Factor	67% D2862LF48B	D2862LE48B		1.450			4.04	0.04	00/	Annual Hours			1,500 2,500 3,00	3,500 4,50	00 4,500	3,000	3.607	0.040	0.005				-	- 1	1,500 2,500 3	3,500 4,5	00 4,500	3,000 -		40	2.224
Hull 160+DPF TBD Name Hull 160+DPF TBD Name Hull 160+DPF TBD Name	Main Main Main	MAN MAN MAN	D2862LE48B D2862LE48B D2862LE48B	D2862LE48B D2862LE48B D2862LE48B	2031 1	1,450 4+DPF 1,450 4+DPF 1,450 4+DPF			1.04 1.04 1.04	0.31 0.31 0.31	0% 1.03 0% 1.03 0% 1.03		-				-	- 1,804 - 1,804 - 1,804	3,607 3,607 3,607 3,607 3,607 3,607	9,018 9,018 9,018	0.005 0.005 0.005	5	0.31 0.31 0.31	0% 0.00495 0% 0.00495 0% 0.00495		- - -		 	- -	- (9 17 17 9 17 17 9 17 17	43 43 43	9,061 9,061 9,061
Hull 160+DPF TBD Name Hull 160+DPF TBD Name	Main Aux	MAN John Deere	D2862LE48B 4045	D2862LE48B unknown	2031	1,450 4+DPF 148 3+DPF			1.04 3.22	0.31 0.39	0% 1.03 0% 0.41			-			-	- 1,804 - 478	3,607 3,607 956 956	9,018 2,390	0.005	0.013	0.31	0% 0.00495 0% 0.00165		-				- :	9 17 17 2 4 4	43 10	9,061 2,400
Hull 160+DPF TBD Name Hull 160+DPF Hours	Aux	John Deere Gen Hour Factor	4045 67%	unknown	2031	148 3+DPF			3.22	0.39	0% 0.41	Annual Hours	-	-			-	1,750	3,500 3,500	2,390		0.013	0.39	0% 0.00165	-	-			-	- 1,75	0 3,500 3,500	10	2,400
Hull 161 TBD Name Hull 161 TBD Name	Main Main Main	MAN MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489 D2862LE489	2024 1	1,450 4+DPF 1,450 4+DPF 1,450 4+DPF			1.04	0.31 0.31	0% 1.03 0% 1.03		-	-	515 3,092 3,09 515 3,092 3,09 545 3,092 3,09	92 3,607 4,63 92 3,607 4,63	38 4,638 38 4,638 38 4,638	3,092 - 3,092 -		22,674 22,674	0.005 0.005	5	0.31 0.31	0% 0.00495 0% 0.00495	-	-	2 15 2 15	15 17 15 17	22 22 22 22 23 22	15 - 15 -		109 109	22,783 22,783
Hull 161 TBD Name Hull 161 TBD Name Hull 161 TBD Name	Main Aux	MAN MAN John Deere	D2862LE489 D2862LE489 4045AFM85	D2862LE489 D2862LE489 KJDXN06.8148	2024 1	1,450 4+DPF 1,450 4+DPF 148 3	2029	2031	1.04 1.04 3.22	0.31 0.39	0% 1.03 0% 1.03 10% 0.37		-	-	515 3,092 3,09 515 3,092 3,09 123 738 73	92 3,607 4,63 92 3,607 4,63 38 860 1,10	38 4,638 06 1,106	3,092 - 3,092 - 738 -		22,674 22,674 5,409	0.005	5	0.31	0% 0.00495 0% 0.00495 30% 0.00624		- - -	2 15 2 15 2 12	15 17 15 17 12 15	22 22 22 22 19 19	15 - 15 -		109	22,783 22,783 5,500
Hull 161 TBD Name Hull 161 Hours	Aux	John Deere Gen Hour Factor	4045AFM85 67%	KJDXN06.8148	2024	148 3	2029	2031	3.22	0.39	10% 0.37	Annual Hours	-	-	123 738 73 500 3,000 3,00	38 860 1,10 00 3,500 4,50	06 1,106 00 4,500	738 -		5,409	0.07		0.39	30% 0.00624	-	-	2 12 500 3,000 3	12 15 ,000 3,500 4,5	19 19 00 4,500	3,000 -		91	5,500
Hull 161+DPF TBD Name Hull 161+DPF TBD Name	Main Main	MAN MAN	D2862LE48B D2862LE48B	D2862LE48B D2862LE48B	2024 1	1,450 4+DPF 1,450 4+DPF			1.04	0.31 0.31	0% 1.03 0% 1.03		-	-			-	- 1,804 - 1,804	3,607 3,607 3,607 3,607	9,018 9,018	0.005 0.005	5	0.31	0% 0.00495 0% 0.00495	-	-			-	- (9 17 17 9 17 17	43 43	9,061 9,061
Hull 161+DPF TBD Name Hull 161+DPF TBD Name Hull 161+DPF TBD Name	Main Main Aux	MAN MAN John Deere	D2862LE48B D2862LE48B 4045	D2862LE48B D2862LE48B unknown	2024 1	1,450 4+DPF 1,450 4+DPF 148 3+DPF			1.04 1.04 3.22	0.31 0.31 0.39	0% 1.03 0% 1.03 0% 0.41							- 1,804 - 1,804 - 478	3,607 3,607 3,607 3,607 956 956	9,018 9,018 2,390	0.005	0.013	0.31 0.31 0.39	0% 0.00495 0% 0.00495 0% 0.00165				 	-	- !	9 17 17 9 17 2 4 4 4	43 43 10	9,061 9,061 2,400
Hull 161+DPF TBD Name Hull 161+DPF Hours	Aux	John Deere Gen Hour	4045 67%	unknown	2020	148 3+DPF			3.22	0.39	0% 0.41	Annual Hours	-	-			-	- 478 - 1,750	956 956 3,500 3.500	2,390		0.013	0.39	0% 0.00165	-	-			-	- 1.75	2 4 4 4 0 3,500 3,500	10	2,400
149PAX ZEAT #1 TBD Name 149PAX ZEAT #1TBD Name	Main Main	Factor TBD TBD	TDB TDB	TBD TBD	2025	670 ZEAT 670 ZEAT				0.31 0.31		0.0895 0.0895	-	-	- 134 26 - 134 26	269 313 3 269 313 3	13 358 13 358	403 313 403 313	313 313 313 313	2,730 2,730			0.31		-	-		 	-			-	2,730 2,730
149PAX ZEAT #1TBD Name 149PAX ZEAT #1 Hours	Aux	TBD Gen Hour Factor	TBD 100%	TBD	2025	20 ZEAT				0.39		0.0034 Annual Hours	-	-	- 5 1,500 3.00	10 12 00 3,500 3.50	12 13 00 4,000	15 12 4,500 3,500	12 12 3,500 3,500	103			0.39		-	-	1,500 3	 ,000 3,500 3.5	00 4,000	4,500 3,50	0 3,500 3,500	-	103
149PAX ZEAT #2 TBD Name 149PAX ZEAT #2 TBD Name	Main Main	TBD TBD	TDB TDB	TBD TBD	2025 2025	670 ZEAT 670 ZEAT				0.31 0.31		0.0895 0.0895	-	-	- 90 26 - 90 26	269 313 3 269 313 3	13 358 13 358	403 313 403 313	313 313 313 313	2,686 2,686			0.31		-	-		 	-			-	2,686 2,686
149PAX ZEAT #2 TBD Name 149PAX ZEAT #2 Hours	Aux	TBD Gen Hour Factor	TBD 100%	TBD	2025	20 ZEAT				0.39		0.0034 Annual Hours	-	-	1,000 3,00	10 12 00 3,500 3,500	12 13 00 4,000	15 12 4,500 3,500	12 12 3,500 3,500	101			0.39		-	-	1,000 3		00 4,000	4,500 3,500	3,500 3,500	-	101
149PAX ZEAT #3 TBD Name 149PAX ZEAT #3 TBD Name	Main Main	TBD TBD	TDB TDB	TBD TBD	2026 2026	670 ZEAT 670 ZEAT 20 ZEAT				0.31 0.31		0.0895 0.0895	-	-	- 0 22 - 0 22	224 313 3 224 313 3	13 358 13 358	358 313 358 313	313 313 313 313	2,507 2,507			0.31 0.31		-	-		 	-			-	2,507 2,507
149PAX ZEAT #3 TBD Name 149PAX ZEAT #3 Hours	Aux	TBD Gen Hour Factor	TBD 100%	TBD	2026	20 ZEAT				0.39		0.0034 Annual Hours	-	-	- 0 2,50	8 12 00 3,500 3,50	12 13 00 4,000	13 12 4,000 3,500	12 12 3,500 3,500	94			0.39		-	-	2		00 4,000	4,000 3,500		-	94
400PAX DPF #1 TBD Name 400PAX DPF #1 TBD Name	Main Main	MTU MTU	12V4000M65L 12V4000M65L	Unknown Unknown	2029 2	2,000 4+DPF 2,000 4+DPF			1.04	0.31	0% 1.42 0% 1.42		-	-		3,554 4,97 3,554 4,97	75 4,975	4,975 4,975	4,975 4,975	33,406 33,406	0.005 0.005	5	0.31	0% 0.00683 0% 0.00683	-	_		- 17 - 17	24 24 24 24	24 24 24 24	4 24 24 4 24 24	161 161	33,567 33,567
400PAX DPF #1 TBD Name 400PAX DPF #1 TBD Name	Aux Aux	John Deere John Deere Gen Hour	4045 4045	unknown unknown	2029	162 3+DPF 162 3+DPF			3.22	0.00	0% 0.45 0% 0.45			-		748 1,04	17 1,047	1,047 1,047	1,047 1,047	7,027 7,027				0% 0.00181 0% 0.00181				- 3 - 3	4 4 4	4 4	4 4 4 4	28	7,055 7,055
400PAX DPF #1 Hours 400PAX DPF #2 TBD Name	Main	Factor MTU	67% 12V4000M65L	Unknown	2029 2	2,000 4+DPF 2,000 4+DPF			1.04	0.0.	0% 1.42	Annual Hours	-			- 4,26	65 4,975	4,975 4,975	3,500 3,500 4,975 4,975 4,075 4,075	29,142	0.005			0% 0.00683	+				00 3,500 21 24	3,500 3,500 24 24	0 3,500 4 24 24 24	140	29,282
400PAX DPF #2 TBD Name 400PAX DPF #2 TBD Name 400PAX DPF #2 TBD Name	Main Aux Aux	MTU John Deere John Deere	12V4000M65L 4045 4045	Unknown unknown unknown	2029 2 2029 2029	2,000 4+DPF 162 3+DPF 162 3+DPF			1.04 3.22 3.22	0.39	0% 1.42 0% 0.45 0% 0.45		- - -		 	- 4,26 - 89 - 89	95 4,975 97 1,047 97 1,047	4,975 4,975 1,047 1,047 1,047 1,047	4,975 4,975 1,047 1,047 1,047 1.047	29,142 6,133 6.133	0.005	0.013	0.39	0% 0.00683 0% 0.00181 0% 0.00181		-	 	 	24 4 4 4 4	24 24 4 4	4 24 24 4 4 4 4 4 4	140 25 25	29,282 6,157 6.157
400PAX DPF #2 Hours		Gen Hour Factor	67%								5.10	Annual Hours				3,00			3,500 3,500	2,130				3.33131	-	-		3,0	00 3,500	3,500 3,500	0 3,500 3,500		-, - •
Total Emissions (lbs)													413,579 31,000	410,496 40	09,548 387,394 322,47 31,000 33,500 38,00 17,000 17,000 17,00	73 316,498 285,12	25 226,518	236,389 237,515 2 55,000 55,000	35,288 235,288 55,000 <i>FF</i> 000	3,716,109					5,957	5,897 5	5,827 5,331 4	.,289 4,117 3,6	28 1,900	1,418 1,10	5 1,095 1,095 0 55,000 55,000 0 17,000 17,000	41,658	3,708,490
Central Bay Hour Usage North Bay Hour Usage Total Vessel Hour Usage													· · · · · · · · · · · · · · · · · · ·			50 52,000 55,00 50 17,000 17,00 50 69,000 72,00			1 / ()()() 1 / ()()()								1,000 33,500 38 7,000 17,000 17 3,000 50,500 55		00 55,000 00 17,000 00 72,000	55,000 55,000 17,000 17,000 72,000 72,000			
										•						·		•							•								

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WETA ACE Plan - Baseline High Calculations

eGRID	Elec	Nox	lbs/hp-hr	0.000388	0.000
Hydrodon			•	H2 uses eGrid at load/.3 efficiency	34 for
g/kw-hr to g/bhp/hr	0.7457				

Table 17: Compliance Dates for Tier 2, Tier 3, or Tier 4 Engines on Ferries (Except Short-Run Ferries), Pilot Vessels, All Tug/Towboats, and Push Boats

Engine Model Year and Vessel Category	Compliance Date
2009 and earlier (Except Pilot Vessels)	12/31/2024
2012 and Earlier Pilot Vessels	12/31/2025
2010 – 2012 All Other Vessels*	12/31/2025
<u>2013 – 2015**</u>	<u>12/31/2026</u>
<u>2016 – 2019**</u>	12/31/2027
<u>2020 – 2021**</u>	12/31/2028
2022 and later**	12/31/2029

*Ferries (Except Short-Run Ferries), All Tug/Towboats, and Push Boats. **All vessels listed in the title of this table, including ferries (except short-run), pilot, all tug/towboats, and push boats. [Note: For example, for a 2020 model year diesel engine on a tugboat operating in Regulated California Waters, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(12)(C) by December 31, 2028.]

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Vessel	Type	M Model	Engine Family	Voar	нр ЕРА	Compliance	e baseline	ISOR Appendix H Table H-5	CARB LF ISOR	NOx R99	Ox NOx eGrid	2023	Emissions	years, Vessel in seprate	lines dependant on e	emissions configuration	n 24 2032 20		NOx Emissions 2023 thru 2034,	- W	PM CARB Tier 3+ DPF ISOR	PM R99 PM Reduction Emissions	2023 NOx in lbs		ons years, Vessel in seprate li			2032 2033	PM Emissions 2034 2023 thru 2034,	Total
Gemini	Main MAN		D2862LE489	2021 1	1,450 4	2028	2yr ext	g/bhp-hr 1.04	Appendix H Table H-9 0.31	s II	ssions Emissions Ibs/hr N	3,092 3,607	3,607 2,	061 2,061	4,380 4,122	4,122 3,6	507 2,577 2	2,577 2,577	2023 tillu 2034, lbs	g/bhp-hr 0.03	g/bhp-hr appendix H Table H-9	30% 0.02081	NOx in lbs	73 73 70 70 70	42 42	88 83	83 73	52 52 52 52	2034 2023 tiliu 2034, lbs	thru 2034, lbs
Gemini Gemini Gemini	Main MAN Aux John Do Aux John Do Gen H	eere 4045TF275 eere 4045TF275	D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 2007 2007	1,450 4 87 2 87 2	2028 2024 2024	2026 2026	1.04 4.02 4.02	0.31 0.39 0.39	1070	.03	541 631 541 631	631 631	361 361 361 361	4,380 4,122 767 722 767 722 4,380 4,122 767 722 4,380 4,322	4,122 3,6 722 6 722 6	607 2,577 2 631 451 631 451	2,577 2,577 451 451 451 451	6,721 6,721	0.03 0.17 0.17	0.31	30% 0.02081 30% 0.00890 30% 0.00890	18 18	21 21 21 21 21 21 21 21 21 21 21 21 21 2	12 12 12 12	25 24 25 24	24 21 24 21	15 15 15 15 15 15 15 15 15 15 15 15 15 1	15 221 15 221	39,166 1 6,942 1 6,942
Pisces Pisces	Main MAN Main MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489	2021 1	1,450 4 1,450 4	2028	2030	1.04	0.31	0%	.03	3,000 3,500 3,092 3,607 3,092 3,607	3,500 2, 3,607 2, 3,607 2,	000 2,000 061 2,061 061 2,061	4,250 4,000 4,380 4,122 4,380 4,122	4,000 3,5 4,122 3,6 4,122 3,6	500 2,500 2,500 2 607 2,577 2,577 2 507 2,577 2 2	2,500 2,500 2,577 2,577 2,577 2,577	38,390 38,390	0.03 0.03	0.31 0.31	30% 0.02081 30% 0.02081	62 62	73 73 73 73 73 73 73 73 73 73 73 73 73 7	42 42 42 42	88 83 88 83	4,000 3,500 83 73 83 73	52 52 52 52	52 775 52 775	39,166 39,166
Pisces Pisces Pisces Annual Hours	Aux John Do Aux John Do Gen H Facto	eere 4045TF275 our 67%	7ADEM06.8275 7ADEM06.8275	2008	87 2 87 2	2024	2026 2026	4.02 4.02	0.39	1070	.27 .27 Annual Hours	541 631 541 631 3,000 3,500	631 631 0 3,500 2,	361 361 361 361 000 2,000	767 722 767 722 4,250 4,000	722 6 722 6 4,000 3,5	531 451 531 451 500 2,500 2	451 451 451 451 2,500 2,500	6,721	0.17 0.17	0.39	30% 0.00890 30% 0.00890	3,000	21 21 21 21 3,500 3,500	12 12 12 12 12 2,000 2,000 4	25 24 25 24 4,250 4,000	24 21 24 21 4,000 3,500	15 15 15 15 15 2,500 2,500	15 221 15 221 2,500	6,942
Scorpio Scorpio	Main MAN Main MAN Aux John Do Aux John Do	D2862LE489 eere 4045TF275	D2862LE489 D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 1 2021 1 2008	1,450 4 1,450 4 87 2	2028 2028 2024	2030 2030 2026	1.04 1.04 4.02	0.31 0.31 0.39	0% 0% 10%	.03 .03 .27	3,607 3,092 3,607 3,092 631 541	3,607 2, 3,607 2, 631	319 2,061 319 2,061 406 361	4,122 4,380 4,122 4,380 722 767 733 767	4,122 3,6 4,122 3,6 722 6	607 2,577 607 2,577 631 451	2,577 2,577 2,577 2,577 451 451	38,648 38,648 6,766	0.03 0.03 0.17	0.31 0.31 0.39	30% 0.02081 30% 0.02081 30% 0.00890 30% 0.00890	73 73 21	62 73 62 73 18 21	47 42 47 42 13 12	83 88 83 88 24 25	83 73 83 73 24 21	52 52 52 52 15 15	52 780 52 780 15 223	39,428 39,428 3 6,988
Scorpio Scorpio Annual Hours Taurus	Aux John Do Gen H Facto Main MAN	our 67% or D2862LE489	D2862LE489	2021 1	1,450 4	2028	2030	1.04	0.31	0%	Annual Hours .03	3,500 3,000 3,607 3,092	3,500 2, 3,607 2,	250 2,000 319 2,061	4,000 4,250 4,122 4,380	4,000 3,5 4,122 3,6	500 2,500 607 2,577 2	2,500 2,500 2,577 2,577	38,648	0.03	0.39	30% 0.02081	3,500	3,000 3,500 62 73	2,250 2,000 4 47 42	83 88	4,000 3,500 83 73	2,500 2,500 52 52	2,500 52 780	39,428
Taurus Taurus Taurus	Main MAN Aux John Do Aux John Do Gen H	eere 4045TF275 eere 4045TF275	D2862LE489 7ADEM06.8275 7ADEM06.8275	2021 1 2009 2009	1,450 4 87 2 87 2	2028 2024 2024	2030 2026 2026	1.04 4.02 4.02	0.31 0.39 0.39	0% 10% (10%)	.03 .27 .27	3,607 3,092 631 541 631 541	3,607 2, 631 631	319 2,061 406 361 406 361	4,122 4,380 722 767 722 767	4,122 3,6 722 6 722 6	607 2,577 2 631 451 631 451	2,577 2,577 451 451 451 451	38,648 6,766 6,766	0.03 0.17 0.17	0.31 0.39 0.39	30% 0.02081 30% 0.00890 30% 0.00890	73 21 21	62 73 18 21 18 21	47 42 13 12 13 12	83 88 24 25 24 25	83 73 24 21 24 21	52 52 15 15 15 15	52 780 15 223 15 223	39,428 3 6,988 3 6,988
Taurus Annual Hours Hydrus Hydrus	Main MTU Main MTU	or 07 % J 12V4000M64 J 12V4000M64	FMDDN76.3MTK	2015 1	1,950 3 1,950 3	2026 2026	2028	3.69 3.69	0.31	10%	Annual Hours .43 .43	3,500 3,000 16,597 16,597 16,597 16,597	15,491 13,	250 2,000 278 8,852 278 8,852	4,000 4,250 	, = = = = = = = = = = = = = = = = = = =			70,814 70,814	0.05 0.05	0.31 0.31	30% 0.04664 30% 0.04664	3,500 175 175	3,000 3,500 175 163 175 163	2,250 2,000 4 140 93 140 93	 	4,000 3,500 	2,500 2,500 	- 746 - 746	5 71,560 5 71,560
Hydrus Hydrus Annual Hours	Aux John Do Aux John Do Gen H Facto	eere 4045AFM85 our 67%	EJDXN06.8148 EJDXN06.8148	2014	162 3	2026	2028	3.22	0.39	10%	.40 .40 Annual Hours	1,009 1,009 1,009 1,009 3,750 3,750	942	807 538 807 538 000 2,000					4,306	0.07	0.39	30% 0.00683 30% 0.00683	3,750	17 16 17 16 3,750 3,500	14 9 14 9 3,000 2,000			 	- 73 - 73	3 4,378 3 4,378
Hydrus ZEAT Hydrus ZEAT Hydrus ZEAT	Main TBD Main TBD Aux TBD Gen H	TDB TDB TBD	TBD TBD TBD	2030 1 2030 1 2030	1,676 ZEAT 1,676 ZEAT 175 ZEAT				0.31 0.31 0.39		.00 0.2239 .00 0.2239 .00 0.0294	 		 	- 896 - 896 - 118	1,000 1,0	008 1,008 1 008 1,008 1 132 132	1,008 1,008 1,008 1,008 132 132	5,934 5,934 780		0.31 0.31 0.39	0.00000 0.00000 0.00000		 	 	 	 	 	 	5,934 5,934 780
Hydrus ZEAT Hours Cetus Cetus	Factor Main MTU Main MTU	or 67% J 12V4000M64 J 12V4000M64	FMDDN76.3MTK FMDDN76.3MTK	2015 1 2015 1	1,950 3 1,950 3	2026 2026	2028 2028	3.69 3.69	0.31	10%	Annual Hours .43 .43	16,597 16,597 16,597 16,597	- 15,491 13, 15,491 13,	278 15,491 1 278 15,491 1	- 4,000 5,491 - 5,491 -	4,500 4,5 	500 4,500 4 	 	92,943 92,943	0.05	0.31	30% 0.04664 30% 0.04664	175 175	175 163 175 163	140 163 140 163	- 4,000 163 - 163 -	4,500 4,500 	4,500 4,500 	- 980 - 980	93,923 93,923
Cetus Cetus Cetus Annual Hours	Aux John Do Aux John Do Gen H Facto	eere 4045AFM85 our 67%	EJDXN06.8148 EJDXN06.8148	2016	162 3 162 3	2027	2029	3.22	0.39	10%	.40 .40 Annual Hours	1,009 1,009 1,009 1,009 3,750 3,750	012	807 942 807 942 000 3,500	942 - 942 - 3,500 -			 	5,651 5,651	0.07		30% 0.00683 30% 0.00683	3,750	17 16 17 16 3,750 3,500	14 16 14 16 3,000 3,500	16 - 16 - 3,500 -	 	 	- 96 - 96	5,747 5 5,747
Cetus ZEAT Cetus ZEAT Cetus ZEAT	Main TBD Main TBD Aux TBD Gen H	TDB TDB TBD	TBD TBD TBD	2030 1 2030 1 2030	1,676 ZEAT 1,676 ZEAT 175 ZEAT				0.31 0.31 0.39		0.2239 0.2239 0.0294	 			 	952 1,0 952 1,0 125 1	008 1,008 1 008 1,008 1 132 132	1,008 1,008 1,008 1,008 132 132	4,983 4,983 655		0.31 0.31 0.39	0.00000 0.00000 0.00000		 		 	 	 	 	4,983 4,983 655
Cetus ZEAT Hours Argo Argo	Factor Main MTU Main MTU	or 67% J 12V4000M64 J 12V4000M64	FMDDN76.3MTK FMDDN76.3MTK	2016 1 2016 1	1,950 3 1,950 3	2027 2027	2029 2029	3.69 3.69	0.31 0.31	10%	Annual Hours .43 .43	16,597 16,597 16,597	<u> </u>	270 15,491 1	5,491 8,852 5,491 8,852	4,250 4,5 	500 4,500 4 	4,500 4,500 	101,795 101,795	0.05 0.05	0.31 0.31	30% 0.04664 30% 0.04664	- 175 175	175 163 175 163	140 163 140 163	163 93 163 93	4,250 4,500 	4,500 4,500 	- 1,073 - 1,073	3 102,868 3 102,868
Argo Argo Argo Annual Hours	Aux John Do Aux John Do Gen H	eere 4045AFM85 our 67%	EJDXN06.8148 EJDXN06.8148	2014 2016	162 3 162 3	2026 2027	2028 2029	3.22 3.22	0.39	10%	.40 .40 Annual Hours	1,009 1,009 1,009 1,009 3,750 3,750	942 942 3,500 3,	807 942 807 942 000 3,500	942 538 942 538 3,500 2,000	 	 	 	6,189 6,189	0.07 0.07	0.39	30% 0.00683 30% 0.00683	17 17 3,750	17 16 17 16 3,750 3,500	14 16 14 16 3,000 3,500	16 9 16 9 3,500 2,000			- 105 - 105 -	6,294 6,294
Argo ZEAT Argo ZEAT Argo ZEAT	Main TBD Main TBD Aux TBD	TDB TDB TDB TBD	TBD TBD TBD	2030 1 2030 1 2030	1,676 ZEAT 1,676 ZEAT 175 ZEAT				0.31 0.31 0.39		0.2239 0.2239 0.0294	 		 	 	- 8 - 8 - 1	396 1,008 1 396 1,008 1 118 132	1,008 1,008 1,008 1,008 132 132	3,919 3,919 515		0.31 0.31 0.39	0.00000 0.00000 0.00000		 	 	 	 	 	 	3,919 3,919 515
Argo ZEAT Hours Carina Carina	Gen H Facto Main MTL Main MTL	or 87.78	FMDDN76.3MTK FMDDN76.3MTK	2016 1 2016 1	1,950 3 1,950 3	2027	2029	3.69 3.69	0.31	10%	Annual Hours .43 .43	16,597 16,597 16,597 16,597 16,597	- 15,491 15, 15,491 15.			- 4,0 8,852 - 8,852 -	000 4,500 4	4,500 4,500	117,286 117,286	0.05 0.05	0.31 0.31	30% 0.04664 30% 0.04664	- 175 175	175 163 175 163	163 140 163 140	163 163 163	- 4,000 93 - 93 -	4,500 4,500 	- 1,236 - 1,236	5 118,522 5 118,522
Carina Carina Carina	Aux John Do Aux John Do Gen H	our 67%	FMDDN76.3MTK EJDXN06.8148 EJDXN06.8148	2017 2017	162 3 162 3	2027	2029 2029	3.22 3.22	0.39	10%	.40 .40 Annual Hours	1,009 1,009 1,009 1,009 3,750 3,750	942 942 942 3,500 3,	942 807 942 807 500 3,000	942 942 942 942 942 942 3,500 3,500	538 - 538 - 2,000 -	 		7,131 7,131	0.07 0.07	0.39 0.39	30% 0.00683 30% 0.00683	17 17 3,750	17 16 17 16 3,750 3,500	16 14 16 14 3,500 3,000 3	16 16 16 16 3,500 3,500	9 - 9 - 2,000 -	 	- 121 - 121	7,252 7,252
Carina ZEAT Carina ZEAT Carina ZEAT	Main TBD Main TBD Aux TBD	TDB TDB TDB TBD	TBD TBD TBD	2030 1 2030 1 2030	1,676 ZEAT 1,676 ZEAT 175 ZEAT				0.31 0.31 0.39		0.2239 0.2239 0.0294	 		 	 	 	- 896 1 - 896 1 - 118	1,008 1,008 1,008 1,008 132 132	2,911 2,911 382		0.31 0.31 0.39	0.00000 0.00000 0.00000		 	 	 	 	 	 	2,911 2,911 382
Carina ZEAT Hours Peralta	Gen H Facto Main Cumm Main Cumm	or QSK50	7CEXM019.AAB		1,600 2	2024	2026	5.08	0.31	10%	Annual Hours	7,499 7,499	7,499 7,		7,499 4,999 7,400 4,000		- 4,000	4,500 4,500	49,994	0.09	0.31	30% 0.06889	103	103 103	103 103 103 103 103 103 103 103 103 103	103 69		4,000 4,500	- 689 - 689	50,683
Peralta Peralta Peralta Peralta Peralta Peralta	Main Cumm Aux John Do Aux John Do Gen H	eere 4045TF275 eere 4045TF275	7CEXM019.AAB 8ADEM06.8275 8ADEM06.8275	2008	87 2 87 2	2024 2024 2024	2026 2026 2026	4.02 4.02	0.39	10% (10% (10% (10% (10% (10% (10% (10% (.27 .27 Annual Hours	271 271 271 271 271 271	271 271 271	271 271 271 271 500 1 500	7,499 4,999 271 180 271 180 1,500 1,000				1,804 1,804	0.09 0.17 0.17	0.39	30% 0.00889 30% 0.00890 30% 0.00890	9 9	9 9 9	9 9 9	9 6			- 59 - 59	9 50,683 9 1,864 9 1,864
Bay Breeze Bay Breeze	Main MTL Main MTL Aux John De	J 16V2000M70 J 16V2000M70	7MDDM31.8MRR 7MDDM31.8MRR 8ADEM06.8275	2007 1 2010 1	1,410 2 1,410 2 87 2	2024 2025 2024	2026 2027 2026	5.08 5.08 4.02	0.31 0.31	100/	.41 .41	6,609 6,609 6,609 6,609	7,400	 					17,623 17,623	0.09 0.09 0.17	0.31 0.31 0.39	30% 0.06071 30% 0.06071 30% 0.00890	91 91	91 61 91 61		 			- 243 - 243	3 17,866 3 17,866
Bay Breeze Bay Breeze Annual Hours	Aux John Do Gen H	eere 4045TF270 our 67%	8ADEM06.8275	2008	87 2	2024	2026	4.02	0.39	10%	.27 Annual Hours	271 271 271 271 1,500 1,500	180						722	0.17	0.39	30% 0.00890	1,500	9 6 1,500 1,000					- 24	745
Pyxis Pyxis Pyxis Pyxis	Main MTU Main MTU Aux John Do Aux John Do	eere 6068AFM85E	MMDDN76.3MTS MMDDN76.3MTS HJDXN06.8148 HJDXN06.8148	2017 3 2017 3 2017 2017	3,433 4 3,433 4 245 3 245 3	2027 2027 2027 2027	2029 2029 2029 2029	1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	0% 2 0% 2 10% 0	.44 .61 .61	8,540 4,880 8,540 4,880 1,424 814 1,424 814		100 6,710 100 6,710 017 1,119 017 1,119	6,710 7,320 6,710 7,320 1,119 1,221 1,119 1,221	7,320 7,3 7,320 7,3 1,221 1,2 1,221 1,2	320 7,320 320 7,320 7 7 221 1,221 1 1,221	7,320 7,320 7,320 7,320 1,221 1,221 1,221 1,221	81,742 81,742 13,634 13,634	0.01	0.31 0.31 0.39 0.39	30% 0.04927 30% 0.04927 30% 0.01032 30% 0.01032	172 172 24 24	99 99 99 99 14 14 14 14	123 135 123 135 17 19 17 19	135 148 135 148 19 21 19 21	148 148 148 148 21 21 21 21	148 148 148 148 21 21 21 21	148 1,651 148 1,651 21 231 21 231	83,393 83,393 1 13,864 1 13,864
Pyxis Hours Vela	Gen H Facto Main MTU	our 67% or 16V4000M65L	MMDDN76.3MTS	2018 3	3,433 4	2027	2029	1.04	0.31	0%	Annual Hours	3,500 2,000 8,540 6,100	2,000 2, 0 4,880 6,	500 2,750 100 6,710	2,750 3,000 7,320 7,320	3,000 3,0 7,320 7,3	3,000 3,000 3 320 7,320 7	3,000 3,000 7,320 7,320	83,572	0.03	0.31	30% 0.04927	3,500	2,000 2,000 123 99	2,500 2,750 2 123 135	2,750 3,000 148 148	3,000 3,000 148 148	3,000 3,000 148 148	3,000 148 1,688	85,260
Vela Vela Vela Vela Vela	Main MTL Aux John Do Aux John Do Gen H	eere 6068AFM85E eere 6068AFM85E our 67%	MMDDN76.3MTS HJDXN06.8148 HJDXN06.8148	2018 3 2017 2017	245 3 245 3	2027 2027 2027	2029 2029 2029	1.04 3.22 3.22	0.31	1070	.61 .61 Annual Hours	1,424 1,017 1,424 1,017	814 1, 814 1,	100 6,710 017 1,119 017 1,119	7,320 7,320 1,221 1,221 1,221 1,221	7,320 7,3 1,221 1,2 1,221 1,2	7,320 7,320 7 221 1,221 1 221 1,221 1	7,320 7,320 1,221 1,221 1,221 1,221	13,939 13,939	0.03 0.07 0.07	0.31	30% 0.04927 30% 0.01032 30% 0.01032	24	17 14 17 14	123 135 17 19 17 19	21 21 21 21 21 21 21 21 21 21 21 21 21 2	21 21 21 21 21 21	21 21 21 21 21 21 21 21 21 21 21 21 21 2	148 1,688 21 236 21 236	85,260 6 14,175 6 14,175
Lyra Lyra Lyra	Main MTU Main MTU Aux John De	J 16V4000M65L J 16V4000M65L	MMDDN76.3MTS MMDDN76.3MTS HJDXN06.8148	2018 3 2018 3	3,433 4 3,433 4 245 3	2027 2027 2027	2029 2029 2029	1.04 1.04 3.22	0.31 0.31 0.39	0% : 0% : 10% :	.44 .44	7,320 6,100 7,320 6,100 1,221 1,017	-,	100 6,710 100 6,710 017 1 119	7,320 7,320 7,320 7,320 1,221 1,221	7,320 7,3 7,320 7,3	320 7,320 7 320 7,320 7 321 1,221 1	7,320 7,320 7,320 7,320 1,221 1,221	84,792 84,792 14 143	0.03 0.03 0.07	0.31 0.31 0.39	30% 0.04927 30% 0.04927 30% 0.01032	148 148	123 148 123 148 17 21	123 135 123 135 17 19	148 148 148 148 21 21	148 148 148 148 21 21	148 148 148 148 21 21	148 1,712 148 1,712 21 239	2 86,505 2 86,505 3 14,382
Lyra Hours	Aux John Do Gen H Facto	eere 6068AFM85E our 67%	HJDXN06.8148	2017	245 3	2027	2029	3.22	0.39	10%	.61 Annual Hours	1,221 1,017 1,221 1,017 3,000 2,500	1,221 1, 3,000 2,	017 1,119 500 2,750	1,221 1,221 1,221 3,000 3,000	1,221 1,2 1,221 1,2 3,000 3,0	221 1,221 1 2000 3,000 3	1,221 1,221 1,221 3,000 3,000	14,143	0.07	0.39	30% 0.01032	3,000	17 21 2,500 3,000	17 19 2,500 2,750 3	21 21 3,000 3,000	21 21 3,000 3,000	21 21 3,000 3,000	21 239 3,000	9 14,382
Intintoli Intintoli Intintoli Intintoli	Main MTU Main MTU Aux John Do Aux John Do	eere 6068TF275	AMDDN86.2MTR AMDDN86.2MTR HJDXN06.8148 HJDXN06.8148	2010 3 2009 3 2011 2011	3,433 2 3,433 2 150 2 150 2	2025 2024 2025 2025	2027 2026 2027 2027	5.08 5.08 3.02 3.02	0.31 0.31 0.39 0.39	10% 1 10% 1 10% 0	0.73 0.73 .35 .35	21,454 21,454 21,454 21,454 467 467 467 467	10,727 5, 10,727 5, 234 234	363 2,682 363 2,682 117 58 117 58	 	 		 	61,680 61,680 1,344 1,344	0.00	0.31 0.31 0.39 0.39	30% 0.14781 30% 0.14781 30% 0.00993 30% 0.00993	296 296 13	296 148 296 148 13 7 13 7	74 37 74 37 3 2 3 2	 	 	 	- 850 - 850 - 38	62,530 62,530 3 1,382 3 1,382
Intintoli Hours Mare Island	Gen H Facto Main MTU	our or 67%	AMDDN86.2MTR	2009 3	3,433 2	2024	2026	5.08	0.31	10% 1	Annual Hours	2,000 2,000 21,454 10,727	1,000	500 250 727 5,363	2,682 -				61,680	0.09	0.31	30% 0.14781	2,000	2,000 1,000 148 148 148 148	500 250 148 74	37 -			- 850	62,530
Mare Island Mare Island Mare Island	Main MTU Aux John Do Aux John Do Gen H	eere 6068TF275 eere 6068TF275 our	HJDXN06.8148	2010	150 2 150 2	2024 2025 2025	2027	3.02 3.02	0.31	10% 1 10% (.35 .35	21,454 10,727 467 234 467 234	10,727 10,	727 5,363 234 117 234 117	58 - 58 -		- - - -		1,344 1,344	0.09 0.11 0.11	0.31	30% 0.14781 30% 0.00993 30% 0.00993	13	7 7 7 7 7 1 000 1	7 3 7 3 7 3 7 3 7 3 7 3 7 3 7 3 7 3 7 3	2 -	 	 	- 850 - 38 - 38	3 1,382 3 1,382
Mare Island Hours Dorado Dorado	Main MTU Main MTU	J 12V4000M65L J 12V4000M65L	MMDDN76.3MTS MMDDN76.3MTS	2019 2 2019 2	2,575 4 2,575 4	2027 2027	2029 2029 2029	1.04 1.04	0.31	0%	.83 .83	5,491 6,406 5,491 6,406	6,406 4,	576 5,491 576 5,491	7,321 5,491 7,321 5,491	1	033 4,576 4 033 4,576 4	4,118 4,118 4,118 4,118 553 553	64,516 64,516	0.03 0.03	0.31	30% 0.03696 30% 0.03696	2,000 111 111	129 129 129 129	92 111 92 111	148 111 148 111	111 102 111 102	92 83 92 83	83 1,303 83 1,303	65,818 65,818
Dorado Dorado Dorado Hours	Aux John Do Aux John Do Gen H Facto	eere 4045AFM85 our or 67%	KJDXN06.8148 KJDXN06.8148	2019	148 3	2027	2029	3.22	0.39		.37 .37 Annual Hours	738 860 3,000 3,500	860 3,500 2,	615 738 615 738 500 3,000	983 738 983 738 4,000 3,000	738 6 738 6 3,000 2,7	676 615 676 615 750 2,500 2	553 553 553 553 2,250 2,250	8,666 8,666	0.07	0.39	30% 0.00624 30% 0.00624	12 12 3,000	15 15 15 15 3,500 3,500	10 12 10 12 2,500 3,000 4	17 12 17 12 1,000 3,000	12 11 12 11 3,000 2,750	10 9 10 9 2,500 2,250	9 147 9 147 2,250	8,813 7 8,813
Dephinus Dephinus Dephinus Dephinus	Main MTL Main MTL Aux John Do Aux John Do	J 12V4000M65L eere 4045AFM85	MMDDN76.3MTS MMDDN76.3MTS KJDXN06.8148 KJDXN06.8148	2022 2 2022 2 2020 2 2020	2,575 4 2,575 4 148 3 148 3	2029 2029 2028 2028	2031 2031 2030 2030	1.04 1.04 3.22 3.22	0.31 0.31 0.39 0.39	10%	.83 .83 .37	- 6,406 - 6,406 - 860 - 860	-, -	576 5,491 576 5,491 615 738 615 738	7,321 5,491 7,321 5,491 983 738 983 738	5,033 5,0 5,033 5,0 676 6	033 4,576 4 033 4,576 4 076 615	4,118 4,118 4,118 4,118 553 553 553 553	57,652 57,652 7,744 7,744	0.00	0.31 0.31 0.39 0.39	30% 0.03696 30% 0.03696 30% 0.00624 30% 0.00624		129 111 129 111 15 12 15 12	92 111 92 111 10 12 10 12	148 111 148 111 17 12 17 12	102 102 102 102 11 11 11 11	92 83 92 83 10 9	83 1,164 83 1,164 9 131 9 131	58,816 58,816 7,875
Dephinus Hours Hull 160 TBD Name	Gen H Facto Main MAN	our 67% or D2862LE489	D2862LE489	2020	1,450 4+DPF	2029	2031	1.04	0.31	0%	Annual Hours	- 3,500		500 3,000 122 4,122	4,000 3,000 4,122 4,122	2,750 2,7 4,122 4,1	750 2,500 2 122 4,122 4	2,250 2,250 4,122 4,122	38,648 38,648	0.005	0.31	0% 0.00495	-	3,500 3,000 - 7	2,500 3,000 4 20 20	17 12 1,000 3,000 20 20	2,750 2,750 20 20	2,500 2,250 20 20	2,250 20 186	38,834
Hull 160 TBD Name Hull 160 TBD Name Hull 160 TBD Name Hull 160 TBD Name	Main MAN Main MAN Main MAN Aux John Do	D2862LE489 D2862LE489	D2862LE489 D2862LE489 D2862LE489 KJDXN06.8148	2023 1 2023 1 2023 1 2023 1	1,450 4+DPF 1,450 4+DPF 1,450 4+DPF 148 3	2029 2029 2029 2029	2031 2031 2031 2031	1.04 1.04 1.04 3.22	0.31 0.31 0.31 0.39	0% 0% 0% 10%	.03 .03 .03 .37	 	1,546 4, 1,546 4, 1,546 4, 369	122 4,122 122 4,122 122 4,122 122 4,122 983 983	4,122 4,122 4,122 4,122 4,122 4,122 983 983	4,122 4,1 4,122 4,1 4,122 4,1 983 9	122 4,122 122 4,122 122 4,122 122 4,122 1283 983	4,122 4,122 4,122 4,122 4,122 4,122 983 983	38,648 38,648 38,648 9,219	0.005 0.005 0.005	0.31 0.31 0.31 0.39	0% 0.00495 0% 0.00495 0% 0.00495 30% 0.00624	- - - -	- 7 - 7 - 7 - 6	20 20 20 20 20 20 17 17	20 20 20 20 20 20 17 17	20 20 20 20 20 20 17 17	20 20 20 20 20 20 17 17	20 186 20 186 20 186 17 156	38,834 38,834 38,834 39,375
Hull 160 TBD Name Hull 160 Hours	Aux John Do Gen H Facto	our 67%	KJDXN00.6146	2023	148 3	2029	2031	3.22	0.39		.37 Annual Hours		369 1,500 4,	983 983 000 4,000	983 983 4,000 4,000	983 9	983 983 000 4,000 4	983 983 4,000 4,000	9,219	0.07	0.39	30% 0.00624	-	- 6 - 1,500	17 17 4,000 4,000 4	17 17 1,000 4,000	17 17 4,000 4,000	17 17 4,000 4,000	17 156 4,000	9,375
Hull 161 TBD Name Hull 161 TBD Name Hull 161 TBD Name Hull 161 TBD Name	Main MAN Main MAN Main MAN Main MAN	D2862LE489 D2862LE489	D2862LE489 D2862LE489 D2862LE489 D2862LE489	2024 1 2024 1 2024 1 2024 1	1,450	2029 2029 2029 2029	2031 2031 2031 2031	1.04 1.04 1.04 1.04	0.31 0.31 0.31 0.31	0% 0% 0% 0%	.03 .03 .03	 	515 4, 515 4, 515 4, 515 4,	122 4,122 122 4,122 122 4,122 122 4,122 122 4,122	4,122 4,122 4,122 4,122 4,122 4,122 4,122 4,122	4,122 4,1 4,122 4,1 4,122 4,1 4,122 4,1 4,122 4.1	122 4,122 122 4,122 122 4,122 122 4,122 122 4,122	4,122 4,122 4,122 4,122 4,122 4,122 4,122 4,122	37,617 37,617 37,617 37,617	0.005 0.005	0.31 0.31 0.31 0.31	0% 0.00495 0% 0.00495 0% 0.00495 0% 0.00495	- - -	- 2 - 2 - 2 - 2	20 20 20 20 20 20 20 20 20 20	20 20 20 20 20 20 20 20	20 20 20 20 20 20 20 20	20 20 20 20 20 20 20 20	20 181 20 181 20 181 20 181	37,798 37,798 37,798 37,798
Hull 161 TBD Name Hull 161 TBD Name	Aux John Do	eere 4045AFM85	KJDXN06.8148 KJDXN06.8148	2024 2024	148 3 148 3	2029	2031 2031	3.22 3.22	0.39	10% 10%	.37		123 123	983 983 983 983	983 983 983 983	983 9 983 9	983 983 983 983	983 983 983 983	8,974 8,974	0.07 0.07	0.39 0.39	30% 0.00624 30% 0.00624	-	- 2 - 2	17 17 17 17 17 17 17 17 17 17 17 17 17 1	17 17 17 17	17 17 17 17	17 17 17 17	17 152 17 152	2 9,125 2 9,125

Hydrogen

g/kw-hr to g/bhp/hr

Hull 161 Hours		Gen Hour Factor	67%					Annual Hours			500	4,000 4	4,000	4,000	4,000 4,0	000 4,000	4,000 4,000						500	4,000 4	,000 4,00	4,000	4,000	4,000	4,000 4,	000 4,000		
149PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2025	670	ZEAT 0.31	0.0895			-	269	358 358	403	403 4	403 403	403 403	1	3,402	0.31			-	-		-	-	-	-		-	3,402
149PAX ZEAT #1TBD Name	Main	TBD	TDB	TBD	2025	670	ZEAT 0.31	0.0895			-	269	358 358	403	403 4	403 403	403 403	3	3,402	0.31			-	-		-	-	-	-		-	3,402
149PAX ZEAT #1TBD Name	Aux	TBD	TBD	TBD	2025	20	ZEAT 0.39	0.0034			-	10	13 13	15	15	15 15	15 15	5	128	0.39			-	-		-	-	-	-		-	128
149PAX ZEAT #1 Hours		Gen Hour Factor	100%					Annual Hours			-	3,000 4	4,000	4,500	4,500 4,5	500 4,500	4,500 4,500						-	3,000 4	,000 4,00	4,500	4,500	4,500	4,500 4,	500 4,500		
149PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2025	670	ZEAT 0.31	0.0895			-	269	358 358	403	403 4	403 403	403 403	3	3,402	0.31			-	-		-	-	-	-		-	3,402
149PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2025	670	ZEAT 0.31	0.0895			-	269	358 358	403	403 4	403 403	403 403	3	3,402	0.31			-	-		-	-	-	-		-	3,402
149PAX ZEAT #2 TBD Name	Aux	TBD	TBD	TBD	2025	20	ZEAT 0.39	0.0034			-	10	13 13	15	15	15 15	15 15	5	128	0.39			-	-		-	-	-	-		-	128
149PAX ZEAT #2 Hours		Gen Hour Factor	100%					Annual Hours			-	3,000 4	4,000	4,500	4,500 4,5	500 4,500	4,500 4,500						-	3,000 4	,000 4,00	4,500	4,500	4,500	4,500 4,	500 4,500		
149PAX ZEAT #3 TBD Name	Main	TBD	TDB	TBD	2026	670	ZEAT 0.31	0.0895			-	-	224 358	403	403 4	403 403	403 403	3	2,999	0.31			-	-		-	-	-	-		-	2,999
149PAX ZEAT #3 TBD Name	Main	TBD	TDB	TBD	2026	670	ZEAT 0.31	0.0895			-	-	224 358	403	403 4	403 403	403 403	3	2,999	0.31			-	-		-	-	-	-		-	2,999
149PAX ZEAT #3 TBD Name	Aux	TBD	TBD	TBD	2026	20	ZEAT 0.39	0.0034			-	-	8 13	15	15	15 15	15 15	;	113	0.39			-	-		-	-	-	-		-	113
149PAX ZEAT #3 Hours		Gen Hour Factor	100%					Annual Hours			-	- 2	4,000	4,500	4,500 4,5	500 4,500	4,500 4,500						-	- 2	,500 4,00	4,500	4,500	4,500	4,500 4,	500 4,500		
400PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2028	1,676	ZEAT 0.31	0.2239			-	-	- 784	1,008	1,008 1,0	008 1,008	1,008 1,008	3	6,830	0.31			-	-		-	-	-	-		-	6,830
400PAX ZEAT #1 TBD Name	Main	TBD	TDB	TBD	2028	1,676	ZEAT 0.31	0.2239			-	-	- 784	1,008	1,008 1,0	008 1,008	1,008 1,008	}	6,830	0.31			-	-		-	-	-	-		-	6,830
400PAX ZEAT #1 TBD Name	Aux	TBD	TBD	TBD	2028	175	ZEAT 0.39	0.0294			-	-	- 103	132	132 1	132 132	132 132		897	0.39			-	-		-	-	-	-		-	897
400PAX ZEAT #1 Hours		Gen Hour Factor	100%					Annual Hours			-	-	- 3,500	4,500	4,500 4,5	500 4,500	4,500 4,500						-	-	- 3,50	4,500	4,500	4,500	4,500 4,	500 4,500		
400PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2029	1,676	ZEAT 0.31	0.2239			-	-		896	1,008 1,0	008 1,008	1,008 1,008	3	5,934	0.31		- -	-	-		-	-	-	-		-	5,934
400PAX ZEAT #2 TBD Name	Main	TBD	TDB	TBD	2029	1,676	ZEAT 0.31	0.2239			-	-		896	1,008 1,0	008 1,008	1,008 1,008	3	5,934	0.31			-	-		-	-	-	-		-	5,934
400PAX ZEAT #2 TBD Name	Aux	TBD	TBD	TBD	2029	175	ZEAT 0.39	0.0294			-	-		118	132 1	132 132	132 132	2	780	0.39			-	-		-	-	-	-		-	780
400PAX ZEAT #2 Hours		Gen Hour Factor	100%					Annual Hours			-	-		4,000	4,500 4,5	500 4,500	4,500 4,500						-	-		4,000	4,500	4,500	4,500 4,	500 4,500		
Total Emissions (lbs)									358	8,717 336,32	22 309,999 2	287,858 274	,755 283,392	223,471 18	30,503 157,8	869 148,253	146,415 146,415	2,8	353,970		5,2	261 4,944	4,535	3,901 3	,758 4,12	25 3,32	5 2,769	2,437	2,182 2,	141 2,141	41,517	2,895,487
Central Bay Hour Usage									3	1,000 31,00	30,500	33,500 38	52,000	55,000 5	55,000 55,0	55,000	55,000 55,000 17,000 17,000 72,000 72,000	<u> </u>			31,0	31,000	30,500	33,500 38	,000 52,00	55,00	55,000	55,000	55,000 55, 17,000 17, 72,000 72,	55,000		
North Bay Hour Usage									17	7,000 17,00	17,500	17,000 17	,000 17,000	17,000 1	70,000 17,0	17,000	17,000 17,000				17,0	17,000	17,500	17,000 17	,000 17,00	17,00	17,000	17,000	17,000 17,	000 17,000		
Total Vessel Hour Usage									48	8,000 48,00	00 48,000 3	50,500 55	,000 69,000	72,000 7	72,000 72,0	000 72,000	72,000 72,000				48,0	100 48,000	48,000	50,500 55	,000 69,00	10 72,00	72,000	72,000	72,000 72,	000 72,000		
CARB T4+DPF	T4+DPF	0-3,700kw	C1<7L	1.30	0.005																											
CARB T3+DPF	T3+DPF	0.9 <disp>1.2L</disp>	<35kw/L	3.22	0.013																											
eGRID	Elec		lbs/hp-hr	0.000388	0.000																											
			-		•																											

<u>Table 17: Compliance Dates for Tier 2, Tier 3, or Tier 4 Engines on Ferries (Except Short-Run Ferries), Pilot Vessels, All Tug/Towboats, and Push Boats</u>

50kW-hr of electricity/kg of H2, 55% eff 1 kg of H2 uses eGrid at load/.34 for gets you 18.5kw-hr in fuel cell, 34% overall eff efficiency

Engine Model Year and Vessel <u>Category</u>	Compliance Date
2009 and earlier (Except Pilot Vessels)	12/31/2024
2012 and Earlier Pilot Vessels	<u>12/31/2025</u>
2010 – 2012 All Other Vessels*	<u>12/31/2025</u>
<u>2013 – 2015**</u>	<u>12/31/2026</u>
<u>2016 – 2019**</u>	12/31/2027
<u>2020 – 2021**</u>	12/31/2028
2022 and later**	<u>12/31/2029</u>

*Ferries (Except Short-Run Ferries), All Tug/Towboats, and Push Boats. **All vessels listed in the title of this table, including ferries (except short-run), pilot, all tug/towboats, and push boats. [Note: For example, for a 2020 model year diesel engine on a tugboat operating in Regulated California Waters, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(12)(C) by December 31, 2028.]

		Ve	essel Data			
Harbor Craft Name	Home Port	Vessel Type	CARB UVI	USCG Doc Number	Call Sign Number	MMSI Nbr
BAY BREEZE	Alameda, CA	Ferry	CARB00016	1020550	WDE3988	366971280
INTINTOLI	Alameda, CA	Ferry	CARB00009	1050665	WCX2709	366989360
MARE ISLAND	Alameda, CA	Ferry	CARB00010	1053103	WDC2198	366989380
PERALTA	Alameda, CA	Ferry	CARB00007	1118810	WDB9847	366983830
GEMINI	Alameda, CA	Ferry	CARB00013	1213097	WDE6488	367380880
PISCES	Alameda, CA	Ferry	CARB00008	1213095	WDE7319	367391830
SCORPIO	Alameda, CA	Ferry	CARB00014	1215086	WDF2159	367425520
TAURUS	Alameda, CA	Ferry	CARB00015	1215087	WDF3127	367436230
HYDRUS	Alameda, CA	Ferry	CARB00012	1275311	WDJ3145	367765240
CETUS	Alameda, CA	Ferry	CARB00017	1277145	WDJ5269	367786010
ARGO	Alameda, CA	Ferry	CARB00018	1282716	WDJ8605	368018070
CARINA	Alameda, CA	Ferry	CARB00019	1290482	WDK5289	368063440
PYXIS	Mare Island, CA	Ferry	CARB00020	1286883	WDK4292	368053730
VELA	Mare Island, CA	Ferry	CARB00021	1286882	WDK7865	368088590
LYRA	Mare Island, CA	Ferry	CARB00022	1286881	WDK7866	368088610
DORADO	Mare Island, CA	Ferry	CARB00023	1324772	WDM8995	368248520
DELPHINUS	Mare Island, CA	Ferry	CARB02634	1331494	WDP3038	368341690
Hull 160	Mare Island, CA	Ferry	TBD	TBD	TBD	TBD
Hull 161	Mare Island, CA	Ferry	TBD	TBD	TBD	TBD
149 PAX Hull 1	Alameda, CA	Short Run Ferry	TBD	TBD	TBD	TBD
149 PAX Hull 2	Alameda, CA	Short Run Ferry	TBD	TBD	TBD	TBD
149 PAX Hull 3	Alameda, CA	Short Run Ferry	TBD	TBD	TBD	TBD
400 PAX Hull 1	Alameda, CA	Ferry	TBD	TBD	TBD	TBD
400 PAX Hull 2	Alameda, CA	Ferry	TBD	TBD	TBD	TBD
HYDRUS ZEAT	Alameda, CA	Ferry	CARB00012	1275311	WDJ3145	367765240
CETUS ZEAT	Alameda, CA	Ferry	CARB00017	1277145	WDJ5269	367786010
ARGO ZEAT	Alameda, CA	Ferry	CARB00018	1282716	WDJ8605	368018070
CARINA ZEAT	Alameda, CA	Ferry	CARB00019	1290482	WDK5289	368063440

Main Engines EDA Mardal EPA														
Harbor Craft Name	Model Number	OEM	ВНР	Cylinders	EPA Marine Tier	Port Engine SN	EPA Model Year	Family Nbr	Stbd Engine SN	EPA Model Year	Family Nbr			
BAY BREEZE	16V2000M70	MTU	1410	16	2	5362004477	2007	8MDDM31.8MRR	536109491	2010	AMDDM31.8MRR			
INTINTOLI	16V4000M73L	MTU	3433	16	2	527107963	2010	AMDDN86.2MTR	527107026	2009	9MDDN86.2MTR			
MARE ISLAND	16V4000M73L	MTU	3433	16	2	527107023	2009	9MDDN86.2MTR	527107025	2009	9MDDN86.2MTR			
PERALTA	QSK50	Cummins	1600	16	2	33170825	2007	7CEXM019.AAB	33170793	2007	7CEXM019.AAB			
GEMINI	D2826LE489	MAN	1430	12	4	710 6048 804 6068	2021	MMNBN24.2CO4	710 6048 812 6068	2021	MMNBN24.2CO4			
PISCES	D2826LE489	MAN	1430	12	4	710 6065 806 6068	2021	MMNBN24.2CO4	710 6065 812 6068	2021	MMNBN24.2CO4			
SCORPIO	D2826LE489	MAN	1430	12	4	710 6064 816 6068	2021	MMNBN24.2CO4	710 6064 818 6068	2021	MMNBN24.2CO4			
TAURUS	D2826LE489	MAN	1430	12	4	710 6066 804 6068	2021	MMNBN24.2CO4	710 6066 812 6068	2021	MMNBN24.2CO4			
HYDRUS	12V4000M64+	MTU	1950	12	3	547100432	2015	FMDDN76.3MTK	547100433	2015	FMDDN76.3MTK			
CETUS	12V4000M64+	MTU	1950	12	3	547100442	2015	FMDDN76.3MTK	547100441	2015	FMDDN76.3MTK			
ARGO	12V4000M64	MTU	1875	12	3	547100458	2016	GMDDN57.2MTK	547100457	2016	GMDDN57.2MTK			
CARINA	12V4000M64	MTU	1875	12	3	547100460	2016	GMDDN57.2MTK	547100459	2016	GMDDN57.2MTK			
PYXIS	16V4000M65L	MTU	3433	16	4	595100004	2023	PMDDN76.3MTS	595100006	2023	PMDDN76.3MTS			
VELA	16V4000M65L	MTU	3433	16	4	595100014	2023	PMDDN76.3MTS	595100012	2023	PMDDN76.3MTS			
LYRA	16V4000M65L	MTU	3433	16	4	595100011	2023	PMDDN76.3MTS	595100009	2023	PMDDN76.3MTS			
DORADO	12V4000M65L	MTU	2575	12	4	594100034	2021	MMDDN76.3MTS	594100033	2021	MMDDN76.3MTS			
DELPHINUS	12V4000M65L	MTU	2575	12	4	594320016	2021	NMDDN76.3MTS	594320015	2021	NMDDN76.3MTS			
Hull 160	D2862LE48B	MAN	1430	12	4+DPF	TBD	TBD	TBD	TBD	TBD	TBD			
Hull 161	D2862LE48B	MAN	1430	12	4+DPF	TBD	TBD	TBD	TBD	TBD	TBD			
149 PAX Hull 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
149 PAX Hull 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
149 PAX Hull 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
400 PAX Hull 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
400 PAX Hull 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
HYDRUS ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
CETUS ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
ARGO ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
CARINA ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Generators / Auxiliary Engines EPA EPA														
Harbor Craft Name	Model Number	ОЕМ	ВНР	Cylinders	EPA Marine Tier	Port Gen SN	EPA Model Year	Family Nbr	Stbd Gen SN	EPA Model Year	Family Nbr			
BAY BREEZE	4045TF270	John Deere	99	4	2	PE4045T743682	2008	8ADEM06.8275	PE4045T743681	2008	8ADEM06.8275			
INTINTOLI	6068TF275	John Deere	150	6	2	PE6068T814448	2011	BADEN06.8275	PE6068T814451	2011	BADEN06.8275			
MARE ISLAND	6068TF275	John Deere	150	6	2	PE6068T825725	2011	BADEN06.8275	PE6068T808710	2010	AADEN06.8275			
PERALTA	4045TF275	John Deere	87	4	2	PE4045T704610	2008	8ADEM06.8275	PE4045L946634	2008	8ADEM06.8275			
GEMINI	4045TF275	John Deere	87	4	2	PE4045T663621	2007	7ADEM06.8275	PE4045T663624	2007	7ADEM06.8275			
PISCES	4045TF275	John Deere	87	4	2	PE4045T704610	2008	8ADEM06.8275	PE4045T711388	2008	8ADEM06.8275			
SCORPIO	4045TF275	John Deere	87	4	2	PE4045T727372	2008	8ADEM06.8275	PE4045T722673	2008	8ADEM06.8275			
TAURUS	4045TF275	John Deere	87	4	2	PE4045T760282	2009	9ADEN06.8275	PE4045T760283	2009	9ADEN06.8275			
HYDRUS	4045AFM85	John Deere	162	4	3	PE4045L946624	2014	EJDXN06.8148	PE4045L946634	2014	EJDXN06.8148			
CETUS	4045AFM85	John Deere	162	4	3	PE4045L997224	2016	GJDXN06.8148	PE4045L997223	2016	GJDXN06.8148			
ARGO	4045AFM85	John Deere	162	4	3	4045L946654	2014	EJDXN06.8148	4045L995765	2016	GJDXN06.8148			
CARINA	4045AFM85	John Deere	162	4	3	PE4045N007650	2017	HJDXN06.8148	PE4045N007637	2017	HJDXN06.8148			
PYXIS	6068AFM85E	John Deere	245	6	3	PE6068N004186	2017	HJDXN06.8148	PE6068N004254	2017	HJDXN06.8148			
VELA	6068AFM85E	John Deere	245	6	3	PE6068N004187	2017	HJDXN06.8148	PE6068N004253	2017	HJDXN06.8148			
LYRA	6068AFM85E	John Deere	245	6	3	PE6068N004311	2017	HJDXN06.8148	PE6068N004352	2017	HJDXN06.8148			
DORADO	4045AFM85	John Deere	133	4	3	PE4045N024185	2019	KJDXN06.8148	PE4045N024184	2019	KJDXN06.8148			
DELPHINUS	4045AFM85	John Deere	133	4	3	PE4045N037566	2022	NJDXN06.8147	PE4045N037567	2022	NJDXN06.8147			
Hull 160	4045AFM85	John Deere	133	4	3	TBD	TBD	TBD	TBD	TBD	TBD			
Hull 161	4045AFM85	John Deere	133	4	3	TBD	TBD	TBD	TBD	TBD	TBD			
149 PAX Hull 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
149 PAX Hull 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
149 PAX Hull 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
400 PAX Hull 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
400 PAX Hull 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
HYDRUS ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
CETUS ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
ARGO ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
CARINA ZEAT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Appendix 5 WETA ACE Plan - Terminal to DAC Details

WETA Terminals	Address	In DAC	2 Mi Range to DAC	Range to DAC	Associated DAC Census Tract
Alameda Main Street	2990 Main Street Alameda CA 94501	Yes	Yes	0.00 mi	6001428700
Harbor Bay Terminal	215 Adelphian Way Alameda CA 94502	No	Yes	1.00 mi	6001403000
Oakland Terminal	Jack London Square 10 Clay St Oakland Ca 94607	No	Yes	0.46 mi	6001409000
Mission Bay / Oracle Park Terminal	24 Willie Mays Plaza San Francisco CA 94107	No	Yes	0.72 mi	6075017801
Richmond Terminal	1453 Harbor Way South Richmond CA 94804	Yes	Yes	0.00 mi	6013380000
San Francisco Ferry Building	1 Ferry Building San Francisco CA 94105	No	Yes	0.88 mi	6075017801
South San Francisco Terminal	911 Marina Blvd. South San Fancisco CA 94080	Yes	Yes	0.00 mi	6081602300
Seaplane Lagoon Terminal	1701 Ferry Point Road, Alameda, CA 94501	Yes	Yes	0.00 mi	6001428700
San Francisco Pier 41 Terminal	Pier 41 San Francisco, CA 94133	No	Yes	1.61 mi	6075012301
Mare Island Terminal & Maintenance Facility	1050 Nimitz Ave Vallejo CA 94592	Yes	Yes	0.00 mi	6095250801
Vallejo Terminal	289 Mare Island Way Vallejo CA 94590	Yes	Yes	0.00 mi	6095250900
Central Bay Operations & Maintenance Facility	670 West Hornet Ave, Alameda CA 94501	Yes	Yes	0.00 mi	6001428700
Treasure Island	2 Ave of the Palms, Treasure Island Rd, San Francisco, CA 94130	Yes	Yes	0.00 mi	6075017902
Berkeley	Seawall Dr and University Ave, Berkeley CA 94710	No	Yes	0.64 mi	6001422000

^{**}Used CalEPA for DAC https://calepa.ca.gov/EnvJustice/GHGInvest/



MEMORANDUM

TO: Executive Officer

Commercial Harbor Craft Regulations

California Air Resources Board

FROM: Tim Hanners, Director of Project Delivery & Engineering

Water Emergency Transportation Authority (WETA)

SUBJECT: WETA Alternative Control of Emissions (ACE) Base Plan Fleetwide Compliance

Extensions Analysis

1. Per CCR Title 17, section 93118.5 (f) (1) (A), a submitter may be granted up to 2 years of compliance extensions for continued vessel operations within the base plan, beyond the Nominal Compliance Baseline, by submitting documentation in accordance with applicable extensions (e)(12)(E) 2.-4.

- 2. Email communications from CARB staff dated 10 September 2024 provided instruction that, in addition to extensions (e)(12)(E) 2.-4., extension (e)(12)(E) 5. may be applied for vessel operations within the base plan.
- 3. Accordingly, and in conjunction with guidance from CARB staff, WETA has developed its Base Plans with a 2-year extension assumption for every non-Zero Emission Alternative Technology vessel. Current operating engine identifying information and the associated compliance extensions that WETA is requesting are detailed in Attachment A. Justification for the two types of extensions requested are as follows:
 - a. For engines rated greater than 600kW that are EPA Tier 4 compliant, and engines rated lass than 600kW that are EPA Tier 3 compliant, WETA is requesting a 2-year compliance date extension under Feasibility Extension E2 No Certified Engines or DPFs Available. As displayed in Attachment B.2 there are no level 3 CARB Verified Diesel Emission Control Strategies (VDECS). Template application packages for these extensions are included in Attachment B.
 - b. The auxiliary engines on the Gemini vessel will utilize Extension E5 eligibility iv., "for multiple engines on a single vessel with different compliance dates" in 2024 and 2025. The auxiliary engines on the Pisces vessel will utilize Extension E5 eligibility iv. in 2025. Template application packages for these extensions are included in Attachment C.

c. For all other engines WETA is requesting two each 1-year extensions under Scheduling Extension E5. As detailed in Attachment A, eligibility iii applies with multiple engines on multiple vessels with the same compliance date. Template application packages for these extensions are included in Attachment D.

Enclosures:

Attachment A – WETA ACE Base Plan Extension Applicability

Attachment B – Feasibility Extension E2 Package

Attachment C – Scheduling Extension E5 iv Package

Attachment D – Scheduling Extension E5 iii Package

									1st Ext	2nd Ext		
Vessel	Engine	OEM	Model	Engine Family	Model	HP	EPA	Comp.	Comp.	Comp.	Requested	Extension Criteria
V 65561	Type	OLIVI	Wiodei	Linginie i anniny	Year		Tier	Year			Extension	Extension ontena
									Year	Year		
Gemini	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Gemini	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Gemini	Aux	John Deere	4045TF275	7ADEM06.8275	2007	87	2	2024	2025	2026	E5 iv.	Multiple engines on a single vessel with different compliance date
Gemini	Aux	John Deere	4045TF275	7ADEM06.8275	2007	87	2	2024	2025	2026	E5 iv.	Multiple engines on a single vessel with different compliance date
Pisces	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Pisces	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Pisces	Aux	John Deere	4045TF275	7ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii./E5 iv.	Multiple engines on multiple vessels w/ the same compliance date ('24)
1 10000	Aux	JOHN Deele	404011 270	TABLINIOU.UZTO	2000	07		2024	2020	2020	LS III./ LS IV.	Multiple engines on a single vessel w/ different compliance date ('25)
Pisces	Aux	John Deere	4045TF275	7ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii./E5 iv.	Multiple engines on multiple vessels w/ the same compliance date ('24)
risces	Aux	John Deere	404511 275	7ADLW00.0273	2000	01		2024	2023	2020	E3 III./E3 IV.	Multiple engines on a single vessel w/ different compliance date ('25)
Scorpio	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Scorpio	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Scorpio	Aux	John Deere	4045TF275	7ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Scorpio	Aux	John Deere	4045TF275	7ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Taurus	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Taurus	Main	MAN	D2862LE489	D2862LE489	2021	1,450	4	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Taurus	Aux	John Deere	4045TF275	7ADEM06.8275	2009	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Taurus	Aux	John Deere	4045TF275	7ADEM06.8275	2009	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Hydrus	Main	MTU	12V4000M64	FMDDN76.3MTK	2015	1,950	3	2026	2027	2028	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Hydrus	Main	MTU	12V4000M64	FMDDN76.3MTK	2015	1,950	3	2026	2027	2028	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Hydrus	Aux	John Deere	4045AFM85	EJDXN06.8148	2014	162	3	2026	2028	-	E2	There are no Level 3 VDECS commercially available
Hydrus	Aux	John Deere	4045AFM85	EJDXN06.8148	2014	162	3	2026	2028	-	E2	There are no Level 3 VDECS commercially available
Cetus	Main	MTU	12V4000M64	FMDDN76.3MTK	2015	1,950	3	2026	2027	2028	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Cetus	Main	MTU	12V4000M64	FMDDN76.3MTK	2015	1,950	3	2026	2027	2028	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Cetus	Aux	John Deere John Deere	4045AFM85	EJDXN06.8148	2016	162	3	2027	2029	-	E2 E2	There are no Level 3 VDECS commercially available There are no Level 3 VDECS commercially available
Cetus	Aux Main	MTU	4045AFM85 12V4000M64	EJDXN06.8148 FMDDN76.3MTK	2016 2016	162 1,950	3	2027 2027	2029 2028	2029	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Argo	Main	MTU	12V4000M64	FMDDN76.3MTK	2016	1,950	3	2027	2028	2029	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Argo Argo	Aux	John Deere	4045AFM85	EJDXN06.8148	2010	162	3	2027	2028	- 2029	E2	There are no Level 3 VDECS commercially available
Argo	Aux	John Deere	4045AFM85	EJDXN06.8148	2014	162	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Carina	Main	MTU	12V4000M64	FMDDN76.3MTK	2016	1,950	3	2027	2028	2029	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Carina	Main	MTU	12V4000M64	FMDDN76.3MTK	2016	1,950	3	2027	2028	2029	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Carina	Aux	John Deere	4045AFM85	EJDXN06.8148	2017	162	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Carina	Aux	John Deere	4045AFM85	EJDXN06.8148	2017	162	3	2027	2029	_	E2	There are no Level 3 VDECS commercially available
Peralta	Main	Cummins	QSK50	7CEXM019.AAB	2007	1,600	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Peralta	Main	Cummins	QSK50	7CEXM019.AAB	2007	1,600	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Peralta	Aux	John Deere	4045TF275	8ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Peralta	Aux	John Deere	4045TF275	8ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Bay Breeze	Main	MTU	16V2000M70	7MDDM31.8MRR	2007	1,410	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Bay Breeze	Main	MTU	16V2000M70	7MDDM31.8MRR	2010	1,410	2	2025	2026	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Bay Breeze	Aux	John Deere	4045TF270	8ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Bay Breeze	Aux	John Deere	4045TF270	8ADEM06.8275	2008	87	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Pyxis	Main	MTU	16V4000M65L	MMDDN76.3MTS	2017	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Pyxis	Main	MTU	16V4000M65L	MMDDN76.3MTS	2017	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Pyxis	Aux	John Deere	6068AFM85E	HJDXN06.8148	2017	245	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Pyxis	Aux	John Deere	6068AFM85E	HJDXN06.8148	2017	245	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Vela	Main	MTU	16V4000M65L	MMDDN76.3MTS	2018	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Vela	Main	MTU	16V4000M65L	MMDDN76.3MTS	2018	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Vela	Aux	John Deere	6068AFM85E	HJDXN06.8148	2017	245	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Vela	Aux	John Deere	6068AFM85E	HJDXN06.8148	2017	245	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Lyra	Main	MTU	16V4000M65L	MMDDN76.3MTS	2018	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Lyra	Main	MTU	16V4000M65L	MMDDN76.3MTS	2018	3,433	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Lyra	Aux	John Deere	6068AFM85E	HJDXN06.8148 HJDXN06.8148	2017 2017	245	3	2027 2027	2029 2029	-	E2 E2	There are no Level 3 VDECS commercially available There are no Level 3 VDECS commercially available
Lyra Intintoli	Aux Main	John Deere MTU	6068AFM85E 16V4000M73L	AMDDN86.2MTR	2017	245 3,433	3	2027	2029	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Intintoli	Main	MTU	16V4000M73L	AMDDN86.2MTR	2010	3,433	2	2025	2025	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date Multiple engines on multiple vessels with the same compliance date
Intintoli	Aux	John Deere	6068TF275	HJDXN06.8148	2009	150	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Intintoli	Aux	John Deere	6068TF275	HJDXN06.8148	2011	150	2	2025	2026	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date
manton	Λux	John Deele	00001F2/3	110DAN00.0140	2011	100		2020	2020	2021	LU III.	manaple engines on manaple vessels with the same compilative date

Mare Island	Main	MTU	16V4000M73L	AMDDN86.2MTR	2009	3,433	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Mare Island	Main	MTU	16V4000M73L	AMDDN86.2MTR	2009	3,433	2	2024	2025	2026	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Mare Island	Aux	John Deere	6068TF275	HJDXN06.8148	2010	150	2	2025	2026	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Mare Island	Aux	John Deere	6068TF275	HJDXN06.8148	2011	150	2	2025	2026	2027	E5 iii.	Multiple engines on multiple vessels with the same compliance date
Dorado	Main	MTU	12V4000M65L	MMDDN76.3MTS	2019	2,575	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Dorado	Main	MTU	12V4000M65L	MMDDN76.3MTS	2019	2,575	4	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Dorado	Aux	John Deere	4045AFM85	KJDXN06.8148	2019	148	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Dorado	Aux	John Deere	4045AFM85	KJDXN06.8148	2019	148	3	2027	2029	-	E2	There are no Level 3 VDECS commercially available
Delphinus	Main	MTU	12V4000M65L	MMDDN76.3MTS	2022	2,575	4	2029	2031	-	E2	There are no Level 3 VDECS commercially available
Delphinus	Main	MTU	12V4000M65L	MMDDN76.3MTS	2022	2,575	4	2029	2031	-	E2	There are no Level 3 VDECS commercially available
Delphinus	Aux	John Deere	4045AFM85	KJDXN06.8148	2020	148	3	2028	2030	-	E2	There are no Level 3 VDECS commercially available
Delphinus	Aux	John Deere	4045AFM85	KJDXN06.8148	2020	148	3	2028	2030	-	E2	There are no Level 3 VDECS commercially available

Application Template for Compliance Extension E2 to the Commercial Harbor Craft Regulation: Technology Availability

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov no later than 9 months and no earlier than 12 months before the compliance date.

Company Information

(1)	Company name:	San Francisco Bay Ferry
	Contact name:	Tim Hanners
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Gemini	M/V Pisces	M/V Scorpio	M/V Taurus
(5)	Unique vessel identifier(s) (UVI):	CARB00013	CARB00008	CARB00014	CARB00015
	Vessel category:	Ferry	Ferry	Ferry	Ferry
	Current compliance date(s):	Propulsion: 12/31/28	Propulsion: 12/31/28	Propulsion: 12/31/28	Propulsion: 12/31/28
(6)	Requested extension period start:	Propulsion: 12/31/28	Propulsion: 12/31/28	Propulsion: 12/31/28	Propulsion: 12/31/28
(7)	Requested extension period end dates (2-year limit):	Propulsion: 12/31/30	Propulsion: 12/31/30	Propulsion: 12/31/30	Propulsion: 12/31/30

Attachments

Complete the following for each engine:

(8) ✓ Attachment A: Please attach an evaluation of all current U.S. EPA certified engines meeting applicable performance standards. Label this ATTACHMENT A.
 See the U.S. EPA Tier 4 marine certified database for a list of certified engines.

 (9) ✓ Attachment B: Please attach an evaluation of all current CARB-verified DPFs. Label this ATTACHMENT B.
 See CARB's list of verified diesel emission control strategies for a list of verified DPF.
 (10) ✓ Attachment C: Please attach an engineering analysis indicating that no combination of certified engines could be used in lieu of engines of the original horsepower rating to perform the work of the original vessel design. This analysis must consider all

✓ Attachment C: Please attach an engineering analysis indicating that no combination of certified engines could be used in lieu of engines of the original horsepower rating to perform the work of the original vessel design. This analysis must consider all engines within an applicable range of power ratings, power densities, and other vessel powertrain modifications, including engine controls, azimuth drives and propeller configurations. Label this ATTACHMENT C.

Application Template for Compliance Extension E2 to the Commercial Harbor Craft Regulation: Technology Availability

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	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Hydrus	M/V Cetus	M/V Argo	M/V Carina
(5)	Unique vessel identifier(s) (UVI): CARBO0012		CARB00017	CARB00018	CARB00019
	Vessel category:	Ferry	Ferry	Ferry	Ferry
	Current compliance date(s):	Propulsion: 12/31/26 Auxiliary: 12/31/26	Propulsion: 12/31/26 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/26	Propulsion: 12/31/27 Auxiliary: 12/31/27
(6)	Requested extension period start:	Propulsion: 12/31/26 Auxiliary: 12/31/26	Propulsion: 12/31/26 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/26	Propulsion: 12/31/27 Auxiliary: 12/31/27
(7)	Requested extension period end dates (2-year limit):	Propulsion: 12/31/28 Auxiliary: 12/31/28	Propulsion: 12/31/28 Auxiliary: 12/31/29	Propulsion: 12/31/29 Auxiliary: 12/31/28	Propulsion: 12/31/29 Auxiliary: 12/31/29

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Application Template for Compliance Extension E2 to the Commercial Harbor Craft Regulation: Technology Availability

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	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Pyxis	M/V Vela	M/V Lyra
(5)	Unique vessel identifier(s) (UVI):	CARB00020	CARB00021	CARB00022
	Vessel category:	Ferry	Ferry	Ferry
	Current compliance date(s):	Propulsion: 12/31/27 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/27
(6)	Requested extension period start:	Propulsion: 12/31/27 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/27	Propulsion: 12/31/27 Auxiliary: 12/31/27
(7)	Requested extension period end dates (2-year limit):	Propulsion: 12/31/29 Auxiliary: 12/31/29	Propulsion: 12/31/29 Auxiliary: 12/31/29	Propulsion: 12/31/29 Auxiliary: 12/31/29

Attachments

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 See the U.S. EPA Tier 4 marine certified database for a list of certified engines.
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Application Template for Compliance Extension E2 to the Commercial Harbor Craft Regulation: Technology Availability

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	City, state and zip code:	San Francisco, CA 94111						
	Telephone number:	415.291.3377						
	Company email address:	hanners@watertransit.org						

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Dorado	M/V Delphinus
(5)	Unique vessel identifier(s) (UVI):	CARB00023	CARB02634
	Vessel category:	Ferry	Ferry
	Current compliance date(s):	Propulsion: 12/31/27 Auxiliary: 12/31/27	Propulsion: 12/31/29 Auxiliary: 12/31/28
(6)	Requested extension period start:	' '	Propulsion: 12/31/29 Auxiliary: 12/31/28
(7)	Requested extension period end dates (2-year limit):	Propulsion: 12/31/29 Auxiliary: 12/31/29	Propulsion: 12/31/31 Auxiliary: 12/31/30

Attachments

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(9) ✓ Attachment B: Please attach an evaluation of all current CARB-verified DPFs. Label this **ATTACHMENT B**.

See CARB's list of verified diesel emission control strategies for a list of verified DPF.

(10) ✓ Attachment C: Please attach an engineering analysis indicating that no combination of certified engines could be used in lieu of engines of the original horsepower rating to perform the work of the original vessel design. This analysis must consider all engines within an applicable range of power ratings, power densities, and other vessel powertrain modifications, including engine controls, azimuth drives and propeller configurations. Label this ATTACHMENT C.

Date Published: February 15, 2024

California Air Resources Board (CARB) Listing of Certified Tier 4 Marine Engines and Marinized Tier 4 Final Non-Road Engines

This list reflects information compiled by CARB staff to provide commercial harbor craft owners/operators a list of Certified Tier 4 Marine Engines and Marinized Tier 4 Final Non-Road Engines. It does not constitute an endorsement of the listed engines and is intended as a resource only. This list is regularly updated by CARB staff. Manufacturers with Tier 4 engines not listed may contact HarborCraft@arb.ca.gov to request being added.

Table 1. EPA Certified Tier 4 Marine Engines¹

Manufacturer	Model	U.S. EPA Category	Pow er Ran ge (kW)	Engine Weight (kg)	Engine Specifications Links	Date Added to List ²
Yanmar	6AYEM -GTWS	1	670- 749	2,418 (engine only)	Specifications Sheet	10/11/2023
Mitsubishi	S12-R	1	940	5,350 (engine only)	Specifications Sheet *Note: only the S12-R is Tier 4*	10/11/2023
Cummins	QSK38	1	746- 1,11 9	5,270	Specifications Sheet	10/11/2023
Cummins	QSK60	1	1,49 1- 2,01 3	10,154	Specifications Sheet	10/11/2023
Caterpillar	3512E	1	1,00 0- 1,90 1	8,193	Specifications Sheet	10/11/2023

¹ Annual Certification Data for Vehicles, Engines, and Equipment | US EPA

²2/15/24 Edit - added a column for the date each engine was added to this list of tier 4 engines.

List of Tier 4 Marine Engines and Marinized Tier 4 Final Non-Road Engines As of February 15, 2024 Page 2

Caterpillar	3516E	1	1,86 5- 2,52 5	9,620	Specifications Sheet	10/11/2023
Caterpillar	C32	1	746- 1081	3,248	Specifications Sheet	10/11/2023
Caterpillar	C280-8	2	2,46 0- 2530	19,000	Specifications Sheet	10/11/2023
Caterpillar	C280- 12	2	3,70 0- 4,06 0	26,035	Specifications Sheet	10/11/2023
MTU	12V- 4000M 05	1	1,11 9- 1,93 2	8,000 (engine only)	Specifications Sheet	10/11/2023
MTU	16V- 4000M 05	1	1,84 0- 2,57 6	9,300 (engine only)	Specifications Sheet	10/11/2023
MTU	20V- 4000M 05	1	2,30 0- 3,22 0	11,600 (engine only)	Specifications Sheet	10/11/2023
MAN Diesel	D2862 Series	1	749	2,270	Specifications Sheet	10/11/2023
Baudouin	6M- 26.3	1	441- 599	2,185	Specifications Sheet	10/11/2023

List of Tier 4 Marine Engines and Marinized Tier 4 Final Non-Road Engines As of February 15, 2024 Page 3

Baudouin	12M- 26.3	1	883- 1214	3,615	Specifications Sheet	10/11/2023
GE	6L250 MDC	2	1,70 0- 1,90 0	19,944	Specifications Sheet	10/11/2023
GE	8L250 MDC	2	2,25 0- 2,50 0	23,356	Specifications Sheet	10/11/2023
GE	12V250 MDC	2	3,15 0- 3,50 0	27,080	Specifications Sheet	10/11/2023
GE	16V250 MDC	2	4,20 0- 4,70 0	35,788	Specifications Sheet	10/11/2023
EMD 710 Series	8E 23	2	1,25 0	14,742	Specifications Sheet	10/11/2023
EMD 710 Series	12E 23	2	-	19,414	Specifications Sheet	10/11/2023
EMD 710 Series	12E 23B	2	-	23,133	Specifications Sheet	10/11/2023
EMD 710 Series	16E 23	2	-	22,589	Specifications Sheet	10/11/2023
EMD 710 Series	20E 23	2	3,72 9	25,719	Specifications Sheet	10/11/2023

List of Tier 4 Marine Engines and Marinized Tier 4 Final Non-Road Engines As of February 15, 2024 Page 4

 Table 2. Marinized EPA Certified Tier 4 Final Non-Road Engines

Manufacturer	Model	U.S. EPA Category	Power Range (kW)	Engine Weight (kg)	Engine Specifications Links	Date Added to List
M&H Engineering	M&H John Deere 4045MD	1	55- 130	570	Specifications Sheet	10/11/2023
M&H Engineering	M&H John Deere 6068MD	1	169- 224	750	Specifications Sheet	10/11/2023
M&H Engineering	M&H John Deere 6090MD	1	205- 317	1,056	Specifications Sheet	10/11/2023

Verification Procedure: Currently Verified

CONTACT

Medium and Heavy-Duty Vehicle Hotline

Email 8666DIESEL@arb.ca.gov

Phone (866) 634-3735 / (866) 6DIESEL

The following information is provided as a summary of verified diesel emission control strategies. Additional requirements specific to engine compatibility are provided in the Executive Order. The factors outlined in the Executive Order are legal requirements of each verification; therefore, these conditions must be met before determining if a particular device is applicable to the end-users type of engine. CARB recommends that you contact the manufacturer, or their authorized distributor, prior to making any purchasing decision.

Cleaire products have not been available for sale or lease since it ceased operations on January 18, 2013. ESW CleanTech Incorporated (ESW CleanTech) acquired the Cleaire product line on April 18, 2013, and will provide new sales of product under its ownership as well as support for existing Cleaire customers. Vehicles that have the Cleaire devices already installed in a verified configuration will continue to meet applicable in-use fleet rule requirements. Refer to Cleaire Information for additional information.

More information on the Verification of Diesel Emission Control Strategies can be found here: Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines | California Air Resources Board

Formerly verified devices can be found here: Level 3 | Level 2 | Level 1

PM		Technology	PM	NOx	
Level	Product Name	Type	Reduction	Reduction	Applicability

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
Level 3	Baumot	DOC+DPF	85%	N/A	Baumot AG, Diesel Particulate Filter System BAB-US for 375 to 500 horsepower, on-road vehicles not equipped with exhaust gas recirculation
	Carrier ClearSky DPF (formerly IMPCO)	DOC+DPF	85%	N/A	Carrier and ComfortPro auxiliary power units powered by select Kubota Z482 diesel engines with model years between 2009 and 2017.
	Carrier EES	DOC+DPF	85%	N/A	Carrier Transicold X4-Series and Vector 8500 /8600MT TRUs and UG/RG TRU gensets with Tier 4f engines rated at <25 hp
	Carrier Legacy EES	DOC+DPF	85%	N/A	Carrier Transicold TRU models X2-Series, XT-Series, XTC-series, Genesis TM900, Genesis TM1000, Ultra XL (with and without standby), Vector 6500, and 6600MT equipped with model years 2004 through 2012 Kubota engines.

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	Catalytic Exhaust Products Ltd. Dieselytic SXS-SC DPF	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps with Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 g/bhp-hr or less diesel PM
	CDTi Purifilter TM EGR	DPF	85%	N/A	2002-2010 model year; on-road; CARB diesel; biodiesel.*
	CDTi Purifilter TM H (High Load)	DPF	85%	N/A	1993-2006 CA certified engines; Specific 1994-2006 Federally certified engines; on- road; CARB diesel; biodiesel.*
	CDTi Purifilter TM Plus	DPF	85%	N/A	1993 and 2010 on-road; CARB diesel; biodiesel.*
	CDTi Purifilter TM Plus M	DPF	85%	N/A	1993 - 2010 on-road; CARB diesel; biodiesel.*
	Clariant Corporation EnviCat®- DPF	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps; CARB diesel; biodiesel.*

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	Cummins Pacific eMission DPF	DPF	85%		Stationary emergency standby generators with a PM emission rate of 0.15 g/bhp-hr or less and between 23 to 78 liter displacements.
	DCL International Inc.	DPF	85%	N/A	1996-2011 model year, off-road; CARB diesel; biodiesel.*
	DCL International Inc. TITAN TM	DPF	85%	N/A	1994-2004 model year, on-road; CARB diesel; biodiesel.*
	(formerly Roadwarrior TM)				
	DCL International Inc.	DPF	85%	N/A	Stationary prime and emergency standby generators, pumps, and compressors; Tier 1, 2, or 3 off-road engines certified to < 0.15 g/bhp-hr PM; CARB diesel; biodiesel.*
	Diesel Emission Technologies UltraTrap TM	DPF	85%	N/A	1994-2006 on-road;CARB diesel; biodiesel.*

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	Donaldson LNF	DPF	85%	N/A	1993-2006 model year on-road; CARB diesel; biodiesel. CARB diesel; biodiesel.*
	Donaldson LXF	DPF	85%	N/A	2002-2006 model year on-road; CARB diesel; biodiesel.*
	Donaldson SEF	DPF	85%	N/A	1991-2006 model year on-road; CARB diesel; biodiesel.*
	Engine Control System Purifilter TM L (Low Load)	DPF	85%	N/A	1994-2004 on-road;CARB diesel; biodiesel.*
	Engine Control System Combifilter	DPF	85%	N/A	2007 or older off-road; CARB diesel; biodiesel.*
	ESW CleanTech Horizon	DPF	85%	N/A	Most four-stroke on-road engines through 2006; CARB diesel; biodiesel.*
	ESW CleanTech LongMile-S	DPF	85%	N/A	1993 - 2010 model year on-road applications; CARB diesel; biodiesel.*

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	ESW CleanTech Longview	Lean NOx Catalyst and DPF	85%	25%	1993-2006 model year on-road; CARB diesel; biodiesel.*
	ESW CleanTech Phoenix	DPF	85%	N/A	Most 1996 - 2014 off-road; CARB diesel; biodiesel.*
	ESW CleanTech Skyline	DPF	85%	N/A	Most off-road; CARB diesel; biodiesel.*
	ESW CleanTech Vista	DPF	85%	N/A	1993-2010 model year on-road; CARB diesel; biodiesel.*
	ESW Technologies ThermaCat TM	DPF	85%	N/A	1996-2010; off-road; 1993-2006 on-road; CARB diesel; biodiesel.*
	ESW Technologies ThermaCat TM e	DPF	85%	N/A	1994-2009; on-road; with EGR; CARB diesel; biodiesel.*
	Global Emissions Systems, Inc. (GESi) 6000DPF	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps with Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 g/bhp-hr or less diesel PM

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	GT Exhaust's GTE Purity TM DPF	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps with Tier 1, Tier 2, Tier 3, Tier 4i with a rated horse power between 50 and 75 or over 750, or Tier 4 Alt 20% NO _x and PM nonroad or stationary engines meeting 0.2 g/bhp-hr or less diesel PM
	HUG Engineering, Inc Mobiclean R	DPF	85%	N/A	Most 1991 - 2006 on-road; CARB diesel; biodiesel. *
	HUG Engineering USA combiKat®	DPF	85%	N/A	Stationary emergency and prime generators with a PM emission rate of 0.2 g/bhp-hr or less.
	HUSS FS-MK Off-Road	DPF	85%	N/A	Most off-road through 2011 MY; CARB diesel; biodiesel. *
	HUSS FS-MK On-Road	DPF	85%	N/A	Most on-road diesel engines through 2006 MY and most off-road through 2010 MY; CARB diesel; biodiesel. *

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	HUSS MK 35 and MK 50 for TRU	DPF	85%	N/A	Verified for 1998 and newer TRU's. CARB diesel; biodiesel. *
	Johnson Matthey AdvCCRT TM	DPF	85%	N/A	Specifc 2002-2006; on-road; CARB diesel; biodiesel.*
	Johnson Matthey CRT® reformulated	DPF	85%	N/A	1993 - 2006; on-road; CARB diesel; biodiesel.*
	Johnson Matthey CRT®	DPF	85%	N/A.	Stationary emergency/standby generators; conditionally verified for stationary prime generators. CARB diesel; biodiesel.*
	Johnson Matthey EGRT TM	EGR/DPF	85%	40%	2000 International DT-466, 2000 Cummins ISM 2001 Cummins ISB, 1998-2002 Cummins ISC, 2001 Cummins ISL, 2001 MY DDC - 50, and 2001 DDC - 60. on-road; CARB diesel.
	MIRATECH Corporation CombiKat®	DPF	85%	N/A	Stationary emergency and prime generators with a PM emission rate of 0.2 g/bhp-hr or less.

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	MIRATECH® LTR TM DOC/DPF System	DPF	85%	N/A	Update: Effective December 12, 2023, CARB issued an official notice to Miratech Corporation (Miratech), to Cease and Desist marketing, selling, or installing ALL Miratech LTR DOC/DPF systems (LTR systems) as "CARB-Verified". Although the governing CARB Executive Order (EO) DE-14-005-07 previously covered the LTR systems for engines (model years 1996 through 2021), for engine families listed in the EO attachment, that verification is not currently up to date. This notice will remain in effect until Miratech demonstrates to CARB's satisfaction that its LTR systems fully comply with the requirements specified in the In-Use Compliance Requirements of the Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Verification Procedures) (Cal. Code Regs., tit. 13, §

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
					2709). Miratech has stated that it plans to seek and complete remedial measures needed to reinstate compliance. CARB staff will work with Miratech in this regard under the process set forth in the Verification Procedures.
					Stationary emergency standby generators with a PM emission rate of 0.22 g/bhp-hr or less.
	Nett Technologies. NETT GreenTRAP TM DPF	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps with Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 g/bhp-hr or less diesel PM
	Nett BlueMAX TM NOVA 300e System	DPF SCR	85%	85%	Stationary prime generators with a PM emission rate of 0.2 g/bhp-hr or less.
	New World Engineering, LLC EADPF	DPF	85%	N/A	Thermo King single temp TRUs, 2005 to present Yanmar diesel engines <25 hp

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	RYPOS, Inc. ActiveDPF/C3+ TM	DPF	85%	N/A	Verified for both diesel-electric and diesel-hydraulic rubber tired gantry (RTG) cranes; CARB diesel; biodiesel.*
	RYPOS DPF/ULETRU TM	DPF	85%	N/A	2003 and newer Carrier and ThermoKing TRU's and Pin-on TRU Gensets.
	RYPOS DPF/ULETRU TM	DPF	85%	N/A	2003 and newer Thermo King Multi-Temp TRU's.
	Rypos, Inc. HDPF/C TM	Hybrid DPF	85%	N/A	1996-2007 stationary emergency standby generators and pumps with a PM emission rate of 0.2 g/bhp-hr or less and certified to Tier 1, Tier 2, or Tier 3 off-road diesel engine standards; CARB diesel; biodiesel.*
	Safety Power Inc., FOx® System	DPF	85%	N/A	Stationary prime and emergency standby generators and pumps; CARB diesel; biodiesel.*
	Thermo King eDPF	DPF	85%	N/A	2006-2016 Thermo King auxilary power units; CARB diesel.

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	Universal Emissions Technologies GreenShield® DPF	DPF	85%	N/A	Stationary prime and emergency standby power generators and pumps with Tier 1, Tier 2, or Tier 3 certified off-road engines.

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
Level 2	Engine Control System AZ Purimuffler TM /Purifier TM	DOC + Alt Fuel	50%	20%	1996-2002 off-road; PuriNOx
	Lubrizol PuriNOx TM	Emulsified Fuel	50%	15%	1988-2003 on-road.
	Proventia FTF TM	FTF	50%	N/A	Most Thermo King trailer TRUs using 1985 through 2003 model year engines; CARB diesel; biodiesel.*
	Proventia Bobtail FTF TM	FTF	50%	N/A	Select Thermo King truck TRUs using 1987 to 2004 model year engines or Carrier Transicold truck TRUs using 1994 to 2004 model year engines. CARB diesel; biodiesel*
	Rypos ADPF	DPF	50%	N/A	1996-2008 stationary engines (certified to Tier 1, 2, or 3 off-road PM emission level); CARB diesel; biodiesel*; no EGR, DOC or pre-existing DPF.

PM Level	Product Name	Technology Type	PM Reduction	NOx Reduction	Applicability
	Rypos, Inc. DPF/LETRU TM	DPF	50%	N/A	Applicability: Most trailer TRUs using 2003 and older model year engines; ULSD CARB diesel (less than 15 ppm sulfur).
	Rypos, Inc. ADPF	DPF	50%	N/A	Marine Harbor Craft
	Rypos ActiveDPF/C TM	DPF	50%	N/A	Both diesel-electric and diesel-hydraulic rubber tired gantry (RTG) cranes; CARB diesel; biodiesel.*
Level 1	Viscon California, LLC	Fuel Additive	25%	N/A	1985-1995 off-road; CARB diesel.
	Vycon REGEN System	Energy Storage System	25%	30%	Pre-1996 model year or Tier 1, 2, or 3 certified off-road diesel engines on rubber-tired gantry cranes; biodiesel. *

^{*} These systems have been verified for use with biodiesel blends. Refer to the executive order for the specific product for information on these requirements.

(800) 242-4450 | helpline@arb.ca.gov 1001 | Street, Sacramento, CA 95814 P.O. Box 2815, Sacramento, CA 95812



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Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov prior to the compliance date. We recommend submitting early so that CARB staff can work with you to resolve any issues before your deadline.

Company Information

(1)	Company name:	San Francisco Bay Ferry			
	Contact name:	Tim Hanners			
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero			
	City, state and zip code:	San Francisco, CA 94111			
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero			
	City, state and zip code:	San Francisco, CA 94111			
	Telephone number:	415.291.3377			
	Company email address:	hanners@watertransit.org			

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Gemini			
(5)	Unique vessel identifier(s) (UVI):	CARB00013			
	Vessel category:	Ferry			
(6)	Current compliance date(s):	Auxiliary: 12/31/24			
(7)	Requested extension start dates (1-year limit):	Δυνίματν: 12/31/2 <i>4</i>			
(8)	Requested extension end dates (1-year limit):	Δυχιματν: 12/31/25			

Application Criteria

To apply for this extension, you mus	t be able to identify one	of the following criteria.
--------------------------------------	---------------------------	----------------------------

- A. Equipment manufacturer delays or installation difficulties;
- **B**. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:	D

	FOR CRITERIA A:	
(9)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(10)	equipment necessary to co prior to the compliance dat	each documentation that the applicant ordered the new replacement engine or other mply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months the set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or new equipment would satisfy this requirement. Label this ATTACHMENT A .
(11)	it was ordered due to manuf	ch evidence that the new engine or equipment has not been received or installed since facturing delays, delays encountered by the engine or equipment installer, or delays of d to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B .
	✓ If not included in the p	revious attachments, provide a copy of the purchase order or contract for the new equipment.

(13)

FOR CRITERIA B: Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this ATTACHMENT A.

✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation

from shipyard. Label this **ATTACHMENT B**.

	FOR CRITERIA C:	
(14)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	
(16) (17)	subsection (e)(12), (e)(13 engines on a vessel have t	tach evidence that the fleet consists of 2 or more regulated in-use vessels subject to), or (e)(10) that are owned by the same person. Include evidence that two or more ne same compliance date as two or more engines on another vessel, or if each single or more vessels have the same compliance date. Label this ATTACHMENT A .

FOR CRITERIA D:		
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service. Identify in-use engine(s) that the applicant chooses	All requested engines are required to minimize fleet downtime.
	to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to be dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov prior to the compliance date. We recommend submitting early so that CARB staff can work with you to resolve any issues before your deadline.

Company Information

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	Contact name:	Tim Hanners
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	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

Extension Application

(4)	Vessel name(s):	M/V Gemini	M/V Pisces
(5)	Unique vessel identifier(s) (UVI):	CARB00013	CARB00008
	Vessel category:	Ferry	Ferry
(6)	Current compliance date(s):	Auxiliary: 12/31/25	Auxiliary: 12/31/25
(7)	Requested extension start dates (1-year limit):	Auxiliary: 12/31/25	Auxiliary: 12/31/25
(8)	Requested extension end dates (1-year limit):	Auxiliary: 12/31/26	Auxiliary: 12/31/26

Application Criteria

To apply	, for this	sextension	vou must	he able to	identify	one of t	he following	criteria
i o appiy	, 101 1111	CALCIISIOII,	you mast	DC abic to	idcitti	Olic Olic	inc ronowing	CITCLIII.

- A. Equipment manufacturer delays or installation difficulties;
- **B**. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:	D

	FOR CRITERIA A:		
(9)	Identify in-use engine(s) that the applicant chooses to receive the extension:		
(10)	✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A .		
(11)	✓ Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine of equipment can operate. Label this ATTACHMENT B .		
	✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.		

FOR CRITERIA B: (12) ✓ Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this ATTACHMENT A. (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation

from shipyard. Label this **ATTACHMENT B**.

	FOR CRITERIA C:			
(14)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:			
(16) (17)	subsection (e)(12), (e)(13 engines on a vessel have the	tach evidence that the fleet consists of 2 or more regulated in-use vessels subject to), or (e)(10) that are owned by the same person. Include evidence that two or more ne same compliance date as two or more engines on another vessel, or if each single r more vessels have the same compliance date. Label this ATTACHMENT A .		

	FOR CRITERIA D:				
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service. Identify in-use engine(s)	All requested engines are required to minimize fleet downtime.			
	that the applicant chooses to receive the extension:				
(20)		ch evidence that two or more engines on a single regulated in-use vessel are subject to ce dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .			

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

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	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Pisces	M/V Scorpio	M/V Taurus
(5)	Unique vessel identifier(s) (UVI):	CARB00008	CARB00014	CARB00015
	Vessel category:	Ferry	Ferry	Ferry
(6)	Current compliance date(s):	Auxiliary: 12/31/24	Auxiliary: 12/31/24	Auxiliary: 12/31/24
(7)	Requested extension start dates (1-year limit):	Διιχiliary: 12/31/24	Auxiliary: 12/31/24	Auxiliary: 12/31/24
(8)	Requested extension end dates (1-year limit):	Δuviliary: 17/31/75	Auxiliary: 12/31/25	Auxiliary: 12/31/25

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- Identify in-use engine(s)
 (9) that the applicant chooses to receive the extension:
- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.
(16) (17)	subsection (e)(12), (e)(13), or engines on a vessel have the s	h evidence that the fleet consists of 2 or more regulated in-use vessels subject to (e)(10) that are owned by the same person. Include evidence that two or more ame compliance date as two or more engines on another vessel, or if each single ore vessels have the same compliance date. Label this ATTACHMENT A .

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.	
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to the dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

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	Telephone number:	415.291.3377	
	Company email address:	hanners@watertransit.org	

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Scorpio	M/V Taurus	
(5)	Unique vessel identifier(s) (UVI): CARBO0014		CARB00015	
	Vessel category:	Ferry	Ferry	
(6)	Current compliance date(s):	Auxiliary: 12/31/25	Auxiliary: 12/31/25	
(7)	Requested extension start dates (1-year limit):	Auxiliary: 12/31/25	Auxiliary: 12/31/25	
(8)	Requested extension end dates (1-year limit):	Auxiliary: 12/31/26	Auxiliary: 12/31/26	

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- (9) Identify in-use engine(s) that the applicant chooses to receive the extension:
- (10) Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.
(16) (17)	subsection (e)(12), (e)(13), or engines on a vessel have the s	h evidence that the fleet consists of 2 or more regulated in-use vessels subject to (e)(10) that are owned by the same person. Include evidence that two or more ame compliance date as two or more engines on another vessel, or if each single ore vessels have the same compliance date. Label this ATTACHMENT A .

	FOR CRITERIA D:				
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the				
(19)	vessel is out of service. Identify in-use engine(s) that the applicant chooses to receive the extension:				
(20)		ch evidence that two or more engines on a single regulated in-use vessel are subject to ce dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .			

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	City, state and zip code:	San Francisco, CA 94111	
Telephone number:		415.291.3377	
Company email address:		hanners@watertransit.org	

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Hydrus	M/V Cetus	M/V Argo	M/V Carina
(5)	Unique vessel identifier(s) (UVI):	CARB00012	CARB00017	CARB00018	CARB00019
	Vessel category:	Ferry	Ferry	Ferry	Ferry
(6)	Current compliance date(s):	Propulsion: 12/31/26	Propulsion: 12/31/26	Propulsion: 12/31/27	Propulsion: 12/31/27
(7)	Requested extension start dates (1-year limit):	Propulsion: 12/31/26	Propulsion: 12/31/26	Propulsion: 12/31/27	Propulsion: 12/31/27
(8)	Requested extension end dates (1-year limit):	Propulsion: 12/31/27	Propulsion: 12/31/27	Propulsion: 12/31/28	Propulsion: 12/31/28

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

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FOR CRITERIA A:

- Identify in-use engine(s)
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- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.		
(16) (17)	✓ Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12) (e)(13) or (e)(10) that are owned by the same person, include evidence that two or more			

	FOR CRITERIA D:				
(18)	For engines meeting these				
	criteria, extensions can				
	only be applied to the				
	minimum number of				
	engines necessary to				
	minimize the time the				
	vessel is out of service.				
(19)	Identify in-use engine(s)				
	that the applicant chooses				
	to receive the extension:				
(20)		ch evidence that two or more engines on a single regulated in-use vessel are subject to ce dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .			

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	City, state and zip code:	San Francisco, CA 94111		
Telephone number:		415.291.3377		
Company email address:		hanners@watertransit.org		

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Hydrus	M/V Cetus	M/V Argo	M/V Carina
(5)	Unique vessel identifier(s) (UVI):	CARB00012	CARB00017	CARB00018	CARB00019
	Vessel category:	Ferry	Ferry	Ferry	Ferry
(6)	Current compliance date(s):	Propulsion: 12/31/27	Propulsion: 12/31/27	Propulsion: 12/31/28	Propulsion: 12/31/28
(7)	Requested extension start dates (1-year limit):	Propulsion: 12/31/27	Propulsion: 12/31/27	Propulsion: 12/31/28	Propulsion: 12/31/28
(8)	Requested extension end dates (1-year limit):	Propulsion: 12/31/28	Propulsion: 12/31/28	Propulsion: 12/31/29	Propulsion: 12/31/29

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- (9) Identify in-use engine(s) that the applicant chooses to receive the extension:
- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
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 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
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(16) (17)	✓ Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12), (e)(13), or (e)(10) that are owned by the same person. Include evidence that two or more engines on a vessel have the same compliance date as two or more engines on another vessel, or if each single engine on three or more vessels have the same compliance date. Label this ATTACHMENT A .	

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can	
	only be applied to the	
	minimum number of	
	engines necessary to	
	minimize the time the	
	vessel is out of service.	
(19)	Identify in-use engine(s)	
	that the applicant chooses	
	to receive the extension:	
(20)		ch evidence that two or more engines on a single regulated in-use vessel are subject to ce dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

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(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Peralta
(5)	Unique vessel identifier(s) (UVI):	CARBOOO7
	Vessel category:	Ferry
(6)	Current compliance date(s):	Propulsion: 12/31/24 Auxiliary 12/31/24
(7)	Requested extension start dates (1-year limit):	Pronulsion: 12/31/24 Auxiliary 12/31/24
(8)	Requested extension end dates (1-year limit):	Pronulsion: 12/31/25 Auxiliary 12/31/25

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- (9) Identify in-use engine(s) that the applicant chooses to receive the extension:
- (10) Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

that the applicant chooses to receive the extension:	
✓ Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12), (e)(13), or (e)(10) that are owned by the same person. Include evidence that two or more engines on a vessel have the same compliance date as two or more engines on another vessel, or if each single	
	subsection (e)(12), (e)(13

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.	
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to be dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov prior to the compliance date. We recommend submitting early so that CARB staff can work with you to resolve any issues before your deadline.

Company Information

(1)	Company name:	San Francisco Bay Ferry
	Contact name:	Tim Hanners
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Peralta
(5)	Unique vessel identifier(s) (UVI):	CARROOO7
	Vessel category:	Ferry
(6)	Current compliance date(s):	Propulsion: 12/31/25 Auxiliary 12/31/25
(7)	Requested extension start dates (1-year limit):	Propulsion: 12/31/25 Auxiliary 12/31/25
(8)	Requested extension end dates (1-year limit):	Propulsion: 12/31/26 Auxiliary 12/31/26

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

C

FOR CRITERIA A:

- (9) Identify in-use engine(s) that the applicant chooses to receive the extension:
- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

that the applicant chooses to receive the extension:	
✓ Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12), (e)(13), or (e)(10) that are owned by the same person. Include evidence that two or more engines on a vessel have the same compliance date as two or more engines on another vessel, or if each single	
	subsection (e)(12), (e)(13

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.	
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to the dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov prior to the compliance date. We recommend submitting early so that CARB staff can work with you to resolve any issues before your deadline.

Company Information

(1)	Company name:	San Francisco Bay Ferry
	Contact name:	Tim Hanners
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Bay Breeze
(5)	Unique vessel identifier(s) (UVI):	CARBO0016
	Vessel category:	Ferry
(6)	Current compliance date(s):	Pronulsion: 12/31/24 Auxiliary 12/31/24
(7)	Requested extension start dates (1-year limit):	Propulsion: 12/31/24 Auxiliary 12/31/24
(8)	Requested extension end dates (1-year limit):	Propulsion: 12/31/25 Auxiliary 12/31/25

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- (9) Identify in-use engine(s) that the applicant chooses to receive the extension:
- (10) Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.
(16) (17)	subsection (e)(12), (e)(13), or engines on a vessel have the s	h evidence that the fleet consists of 2 or more regulated in-use vessels subject to (e)(10) that are owned by the same person. Include evidence that two or more ame compliance date as two or more engines on another vessel, or if each single ore vessels have the same compliance date. Label this ATTACHMENT A .

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.	
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to be dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

Submit your application by e-mail to harborcraft@arb.ca.gov prior to the compliance date. We recommend submitting early so that CARB staff can work with you to resolve any issues before your deadline.

Company Information

(1)	Company name:	San Francisco Bay Ferry
	Contact name:	Tim Hanners
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Bay Breeze
(5)	Unique vessel identifier(s) (UVI):	CARBO0016
	Vessel category:	Ferry
(6)	Current compliance date(s):	Propulsion: 12/31/25 Auxiliary 12/31/25
(7)	Requested extension start dates (1-year limit):	Pronulsion: 12/31/25 Auxiliary 12/31/25
(8)	Requested extension end dates (1-year limit):	Pronulsion: 12/31/26 Auxiliary 12/31/26

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- Identify in-use engine(s)
 (9) that the applicant chooses to receive the extension:
- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.
(16) (17)	subsection (e)(12), (e)(13) engines on a vessel have the	tach evidence that the fleet consists of 2 or more regulated in-use vessels subject to poor (e)(10) that are owned by the same person. Include evidence that two or more same compliance date as two or more engines on another vessel, or if each single or more vessels have the same compliance date. Label this ATTACHMENT A .

		FOR CRITERIA D:
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.	
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:	
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to be dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

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Company Information

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(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero
	City, state and zip code:	San Francisco, CA 94111
	Telephone number:	415.291.3377
	Company email address:	hanners@watertransit.org

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Intintoli	M/V Mare Island
(5)	Unique vessel identifier(s) (UVI):	CARB00009	CARB00022
	Vessel category:	Ferry	Ferry
(6)	Current compliance date(s):	Prop: 12/31/24 Auxiliary: 12/31/25	Prop: 12/31/24 Auxiliary: 12/31/25
(7)	Requested extension start dates (1-year limit):	Prop: 12/31/24 Auxiliary: 12/31/25	Prop: 12/31/24 Auxiliary: 12/31/25
(8)	Requested extension end dates (1-year limit):	Prop: 12/31/25 Auxiliary: 12/31/26	Prop: 12/31/25 Auxiliary: 12/31/26

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- Identify in-use engine(s)
 (9) that the applicant chooses to receive the extension:
- (10) Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

that the applicant chooses to receive the extension:	
✓ Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12), (e)(13), or (e)(10) that are owned by the same person. Include evidence that two or more engines on a vessel have the same compliance date as two or more engines on another vessel, or if each single	
	subsection (e)(12), (e)(13

	FOR CRITERIA D:		
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.		
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:		
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to see dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .	

Application Template for Compliance Extension E5 to the Commercial Harbor Craft Regulation: Scheduling

Complete all indicated fields to be considered for this extension.

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Company Information

(1)	Company name:	San Francisco Bay Ferry	
	Contact name:	Tim Hanners	
(2)	Physical address:	Pier 9, Suite 111, The Embarcadero	
	City, state and zip code:	San Francisco, CA 94111	
(3)	Mailing address:	Pier 9, Suite 111, The Embarcadero	
	City, state and zip code:	San Francisco, CA 94111	
	Telephone number:	415.291.3377	
	Company email address:	hanners@watertransit.org	

For CARB Use Only:

Date received:	
Application number:	

(4)	Vessel name(s):	M/V Intintoli	M/V Mare Island
(5)	Unique vessel identifier(s) (UVI):	CARB00009	CARB00022
	Vessel category:	Ferry	Ferry
(6)	Current compliance date(s):	Prop: 12/31/25 Auxiliary: 12/31/26	Prop: 12/31/25 Auxiliary: 12/31/26
(7)	Requested extension start dates (1-year limit):	Prop: 12/31/25 Auxiliary: 12/31/26	Prop: 12/31/25 Auxiliary: 12/31/26
(8)	Requested extension end dates (1-year limit):	Prop: 12/31/26 Auxiliary: 12/31/27	Prop: 12/31/26 Auxiliary: 12/31/27

To apply for this extension, you must be able to identify one of the following criteria.

- A. Equipment manufacturer delays or installation difficulties;
- B. New build vessel delays due to shipyard capacity;
- C. Multiple engines on multiple vessels with the same compliance dates; or
- **D**. Multiple engines on a single vessel with different compliance dates.

Reason for extension:

С

FOR CRITERIA A:

- Identify in-use engine(s)
 (9) that the applicant chooses to receive the extension:
- ✓ Attachment A: Please attach documentation that the applicant ordered the new replacement engine or other equipment necessary to comply with the requirements of subsection (e)(12), (e)(13) or (e)(10) at least 6 months prior to the compliance date set forth in subsection (e)(12)(D), (e)(13) or (e)(10). A copy of the purchase order or contract for the new equipment would satisfy this requirement. Label this ATTACHMENT A.
- (11) Attachment B: Please attach evidence that the new engine or equipment has not been received or installed since it was ordered due to manufacturing delays, delays encountered by the engine or equipment installer, or delays of inspections that are required to be conducted by local, state, or federal government agencies before the engine or equipment can operate. Label this ATTACHMENT B.
 - ✓ If not included in the previous attachments, provide a copy of the purchase order or contract for the new equipment.

FOR CRITERIA B:

- (12) Attachment A: Please attach a copy of the contract or agreement with the shipyard that the applicant entered into contract 12 months prior to their compliance dates. Label this **ATTACHMENT A**.
- (13) ✓ Attachment B: Please attach a letter demonstrating the reasons for the delay with supplemental documentation from shipyard. Label this ATTACHMENT B.

(14) (15)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize fleet downtime. Identify in-use engine(s) that the applicant chooses to receive the extension:	All requested engines are required to minimize fleet downtime.
(16) (17)	Attachment A: Please attach evidence that the fleet consists of 2 or more regulated in-use vessels subject to subsection (e)(12), (e)(13), or (e)(10) that are owned by the same person, include evidence that two or more	

	FOR CRITERIA D:		
(18)	For engines meeting these criteria, extensions can only be applied to the minimum number of engines necessary to minimize the time the vessel is out of service.		
(19)	Identify in-use engine(s) that the applicant chooses to receive the extension:		
(20)		th evidence that two or more engines on a single regulated in-use vessel are subject to see dates in subsection (e)(12), (e)(13), or (e)(10). Label this ATTACHMENT A .	