

Lummi Island Ferry Advisory Committee (LIFAC) Meeting
July 8, 2020
Via Zoom

CALL TO ORDER

Rhayma Blake called the meeting to order at 6:05 pm.

ROLL CALL

Present: Charles Bailey, Rhayma Blake, Cris Colburn, Jim Dickenson, Patricia Dunn, Judy Olsen, Greg Rice

Also Attending:

WCPW: Rich Hudson - Senior Master, Roland Middleton,
Todd Donovan - WCC.

Also: Elizabeth Kilinowski

Moment of Silence

OPEN SESSION (Comments follow minutes when provided)

Mike Skehan's comment (following minutes) about adopting a clock face was discussed. Rich said this is being explored and will discuss with ferry crew for when the ferry moves back to a non-Covid schedule. Cris noted that this is a really good principle and is done in transit.

APPROVAL OF June 10, 2020 MINUTES:

Charles moved approval and Cris seconded approval. Motion passed unanimously.

OLD BUSINESS

Update on Operations-Rich Hudson, Senior Master

- Chip seal road project will continue over the next 2 weeks. Oil trucks have boarding priority.
- There is no extra crew (to expedite boarding) this summer.
- Covid schedule continues.
- Zipper sign was put on hold due to Covid issues (shop capacity). Anticipate placing after chip seal and new striping at Gooseberry Point.
- Dry dock at Foss is tentatively scheduled for September 12 thru October 3. A modified maintenance plan will save money and help ferry financial situation. An extra hand will be available to help passengers during dry dock.
- PW has a great new communications guru who will work with Rich to get word out on dry dock details.

Update on Replacement Ferry Project

- Elliott Bay Design Group has prepared conceptual design documents for the new ferry which PWD shared with LIFAC members in mid-June. Members submitted questions to Rich who provided a preliminary compilation of the questions and their answers (following these minutes). Jim and Charles also submitted written comments on the design documents (also following these minutes). Rich requested that members send any additional questions or comments to him by Wednesday, July 15. He will provide a final compilation with replies by Wednesday, July 22 and post this on the ferry website. Elliott Bay is expected to update the ferry conceptual design documents shortly after the Q&A compilation is released, and then proceed

with the full final design documents.

- A discussion of design elements followed, including electric propulsion system. Rich affirmed that the battery hybrid/carbon neutral goals are being incorporated into the design and that the new ferry will have components on board that will permit it to be converted into a full electric vessel if that continues to be the final carbon neutral propulsion solution.
- Rich asked Jim to break out his design memo into specific questions so he can address the particular issues.
- Roland discussed the BUILD grant. Senator Murray and Representative Del Bene have issued letters of support. Senator Cantwell is expected to issue a letter soon.
- Executive Sidhu, Director Hutchings, Roland, and a design engineer met with Congressman Larsen to discuss County transportation projects in his district. Although Lummi Island is now in a neighboring district, he has been very supportive of our community's efforts. The BUILD grant was discussed in detail as well as other transportation grants and programs Congress is discussing. The Executive and the Director clearly identified the new ferry as one of Whatcom County's highest priorities. Additional grant funding may be available with future stimulus packages. The BUILD grant application will be "reformatted" for any new programs. All agreed this is one of the best grant applications ever.
- The ferry website will be improved and a "New Ferry" page added. This will include the BUILD application and letters of support.
- Roland stated that the county is financially in one of its most difficult times ever. Employees are being furloughed now. Next year will see the biggest hit to the county budget. Executive Sidhu's office is working relentlessly in pursuit of any available federal funds.
- Rhayma asked about CRAB deadlines. Roland said that the working group will help the process move along.
- Charles introduced a resolution affirming a carbon neutral vessel (following these minutes). During the ensuing discussion Pat asked if there was any reason not approve the resolution. Rich replied that Public Works is committed to carbon neutral propulsion but they've "just scratched the surface" on how to achieve it and therefore the resolution is appropriate. Roland added the resolution is not only appropriate but necessary to "document and memorialize it and plaster it on the wall" to remind future PWD staff. Cris moved and Judy seconded a motion to adopt the resolution. The motion passed unanimously.
- Jim stated that having ferry maintenance done locally would be preferable. Rich is exploring options. Pat mentioned that government procurement rules generally preclude geographical discrimination.

Public Awareness

- The island community was asked, via NextDoor and flyers at the Islander and Post Office, to write letters of support for the ferry project to our congressional delegation. Flyers will also be placed at the Noble Barn.
- Jim stated that there is confusion about how to buy ferry tickets as they cannot be purchased on the boat and the monthly on island ticket sale has been suspended. Rich said a buyer can call PW and they will lead them thru the process to buy online. Part of the website update will include an improved ticket purchase process.
- Tome will include tentative dry dock dates. It was noted that dry dock will start a week later than previous years.

Meeting adjourned at 7:20pm.

Attachments to Minutes

Comment from Mike Skehan, via email July 8, 2020 12:10am:

Clock-Face Scheduling has long been recognized as benefiting transport agencies around the world to enhance passenger efficiency. We currently have a schedule that does that and I would like to see LIFAC make a recommendation to the Public Works Ferry Division that we keep this concept when returning to an expanded schedule. Knowing the ferry always leaves the island on the hour, 7 days a week, makes more sense than switching it to leave Gooseberry on the hour, during the PM period, but just during the weekdays. That's confusing!

We're now used to it, so let's just leave it and not go back to the old way of doing things, because, well, *that's the way we used to do it.*

Google Clock-Face Scheduling to learn more.

I've not had great luck trying to use Zoom, so wanted this to be part of your discussion. Thanks for listening.

Mike Skehan, 2040 Granger, Lummi Island

Questions from Members and answers from Rich Hudson regarding new ferry design:

On Jul 6, 2020, at 11:17 AM, Rich Hudson <RHudson@co.whatcom.wa.us> wrote:

- Jim perceives the hull to be too shallow causing drag. (If we design the hull in anymore of a V we could risk scouring the bottom as well as impede engine room access) Jim is suggesting the new Cat C-32, 12 cylinder engine, may be needed to overcome drag. These engines could potentially have lower maintenance costs due to their capability to produce high horsepower at low RPMs.

EBDG is looking into the CAT Engine compatibility. WCPW will share that information.

WCPW will keep the current draft and width of the vessel as designed by EBDG.

- Jim is suggesting a shaft ally to protect the portion of the shaft which is currently exposed.

The skag is designed such that it reduces drag. The shaft will be protected by shaft alley and strut.

- Jim (Bill Fox through Jim) is requesting we compare the difference in deck height to waterline to that of the Whatcom Chief in order to get a feel for how wet the new ferry may be. (Deck height has limits, as the new ferry must interface with our current terminals)

The deck above the waterline is approximately 12" higher than the chief fully loaded. EBDG is looking at the effects of water over the deck and will get back to WCPW.

- Jim is suggesting we reconfigure the crew space, engine room access and storage locker as well as adding 3' in width in order to gain vehicle spaces.

The design of the vessel meets the Level of Service Resolution which is a 34 car vessel. The WCPW business requirements for operations and maintenance call for ample engine room access and crew spaces. The current design meets all of these criteria.

- Jim requests the width of the new dock. Wants the new dock to accept other vessels (specifically the Hiyu)

The terminal modifications are designed to optimize the size of the new vessel. These modifications are limited of the footprint of the terminal areas, including the tideland lease with Lummi Nation. The current designs meet all of these criteria.

- Charles is requesting a "road map" to carbon neutral, specifically electrification of the GP terminal.

This additional scope of work is not currently in the budget for KPFF. A specific plan to obtain carbon neutral is beyond the current scope of work and would require an amendment to the KPFF contract. WCPW does not have additional resources to take on this additional scope work. However, the current vessel design incorporates elements that will allow the vessel to reach the carbon neutral goal without major modification to the hull. Carbon neutrality is a goal for WCPW that we intend to carry forward in the future.

- Pat is requesting phone charging capability in crew and passenger spaces. Yes we can do this, the language is found in the current language of the Outline Spec. in section 322 (see the underlined spec language) EBDG will make some modifications to the spec.

322 Receptacles

Provide electrical receptacles in the pilot house, crew space, engine room, and elsewhere as directed by Whatcom County. There shall be two double-gang electrical receptacles in the crew space.

- Pat is asking if the deck crew will be able to operate the deck lights remotely. WCPW has asked EBDG to add this to the Outline Specification.

- Pat is wanting internet capability (which we currently enjoy on board the Whatcom Chief)

WCPW intends that the internet capability remain the same or better than what is currently available on the Whatcom Chief for ticket sales and official county use.

- Rhayma is wanting to know who and how to track support letters at the congressional level. (Roland?)

Original support letters are attached to the BUILD grant. Additional support letters will be added to the build grant website (a link will be found on the ferry page). We believe that there are enough support letters at this time; however, thank you letters to the congressional delegation would be much appreciated.

That about sums it up!

Sent from my iPhone

Resolution proposed by Charles Bailey and adopted by LIFAC:

[Draft Resolution for July 2020 LIFAC meeting]

Whereas the Whatcom County Council Resolution #2017-012 dated 2/21/2017 called for the new Lummi Island ferry to have a carbon neutral propulsion system; and, Whereas the Lummi Island Ferry Advisory Committee (LIFAC) approved a resolution on February 12, 2020, recommending “a diesel battery hybrid (DBH) ferry designed to upgrade to full all electric propulsion by 2035 or sooner” unless better carbon neutral options become available, The Lummi Island Ferry Advisory Committee now hereby thanks the Whatcom County Public Works Department (PWD) for its vigorous actions to secure the required funding for the new vessel and for providing the Elliott Bay Design Group draft specifications. Once funding is in hand and the project can begin, LIFAC recommends that PWD allocate planning resources and create a time line with milestones for upgrading the vessel to a carbon neutral propulsion system.

To LIFAC from Jim Dickenson:

**James M. Dickinson
2094 West Shore Drive
Lummi Island, WA 98262
(360) 296-3940**

6/28/2020

Proposed Lummi Island 2020 Ferry Design Concerns/Issues/Questions

1. Hull

Aa. Inefficient Hull?, to much drag?, Engine size?; It appears that one of the designers criteria for the Vessel's hull was to keep a low draft profile. In reality this is not necessary as the water depth at a -3 tide is 12 feet, as measured by a reliable local person, at the outside of the apron on the Lummi Island side. It is deeper on the mainland side due to the greater repose angle of the beach. The result if this "low draft" effort, appears to be excessive hull drag, evidenced by 750 Hp needed to propel it to 10 Knts, in single (push) engine mode. In contrast the 1962 Whatcom Chief actual use is 220Hp, and the 34 car " Dreadnaught" (1967) HIYU, uses 345Hp. Both of the "old" boats are shorter, than the proposed vessel, and it is well known that longer vessels take less energy than shorter boats at a given speed and will, at the same Hp, actually go faster. Therefore the new hull is less efficient.

Solution, better designed deeper hull, with larger, more efficient propeller.

Ab. The power rating of the proposed Catterpillar C18, six cylinder, Tier 3, is 600Hp @1800rpm. With the proposed hull design the single "push" engine requirement will be 125% of its output power at 10Knts. This will greatly shorten the engines life, with much more often rebuilds/replacement. The core engine of the C18 only differs from the existing Whatcom Chief 3406 250Hp engines, with a slightly bigger bore for a bit more displacement. The increase in power of the Ci8 is due to much higher turbo boost, or forcing more fuel/air mixture into the cylinders. As the base engine is nearly the same, the engines will not last nearly as long at the higher horse power out put with usual use. This increased wear factor also applies to any other similar sized six cylinder engines. While some relief on initiating the particular run may come from the proposed battery assist, or augmentation by the pull engine, it will result in higher fuel use and resultant higher carbon emissions than a larger diesel engine, due to operating the second engine and the battery charging losses of the electrical section,

Solution; The best engine solution is to install the larger C32 tier 3 800 HP V12 engine, which has four times the longevity of the C18, or even better, the new C32 800Hp @ 1200 rpm which will more than double the longevity of the 1800rpm engine, which would result in 6 times the engine tenure, minimum, v/s the proposed 6 cylinders. The vessels needs the larger engines.

B. No Rudder and Propeller protection; Outside end of the propeller shaft is attached via a vertical strut, and rudder is solely attached on its upper end. Keel structure ends about 19 feet from the outside of the rudder, about 14 feet from the propeller. Unlike other work vessels, (Whatcom Chief, HIYU, Christine Anderson, STII, etc) the Ferry Design

design has no lower support or protection from grounding for these items. Almost all other vessels, have a metal lower support, know as a Keel Shoe which is supported by end strut(s) connecting to the hull to help support and keep groundings from damaging these parts. this longer vessel will be less responsive in high winds and cross-tides than the Whatcom Chief, and under those conditions more likely to ground than it. Even so, in its tenure, the Whatcom Chief, has grounded around 10 times, with a least 2 requiring a trip to the shipyard. As the proposed vessel has controllable pitch propellers and hollow shafts, the damage could be extremely expensive with long delay times in getting the replacement parts. This is a similar to the WSF KDT Ferries that run at Keystone/Port Townsend. They have grounded at least four times, 2 caused extensive damage. One event cost over 2 million dollars to repair, with 2 months of time and revenue lost in the middle of the High Season. Shaft and propeller parts had to be gotten from Norway.

Solution; Extend keel structure to right behind the propeller, like Whatcom Chief, HIYU, install keel shoe and support struts.

C. Center of Hull extends to end of loading apron. This puts the water shear of the center of the vessel, in forward direction, on the same vertical plane as the hull, which will then splash up and over the apron onto the loaded vehicles. This is a problem of the old Whatcom Chief ,it sprays cars very well to the point of some wags calling it the "Submarine". This also causes lower chassis corrosion to the customers vehicles, rusting bumper /supports, brake lines, etal.

Solution; Shorten center of hull about 2 feet, leave deck apron as designed which would have the deck projection above end of hull. This will help to control the up spraying and protects vehicles.

2. Deck and Superstructure.

D. Deck and Superstructure

a. No provision for future expansion. It appears one of the driving reasons for the size of the deck platform was driven by the width of the local repair Dry-Docks, which resulted in the designers settling on a 54 feet width and four lineal car lanes to achieve the 34 car goal. There appears to be already enough deck space (width) on the right side of the proposed vessel, for a 5th lane, however, it is covered with auxiliary structures. The narrowest possible Dry-Dock in the local area is Lake Union Dry-Dock, in Seattle, with an entrance door of 59 feet and then 62 feet width inside. Therefore the proposed vessel's width could be expanded about 3-4 feet to 57-58 feet wide and will still fit there, and all other applicable facilities which are wider. At the proposed 180 feet long and 54 feet wide, the vessel is at just about maximum length for usable handling on the route during inclement weather conditions. Further extending the hull would make it extremely unwieldy especially in times of larger tides and wind. To make the vessel wider, after construction, is excessively expensive and therefore the vessel, as it is envisioned, is at maximum car load, and would have to be replaced with a larger vessel when growth occurs. Using the value of today's dollars, projected pricing of a 50 car vessel would be about 18 million. To extend the boat by 3 car lengths from a 5 lane 34-35 car base to a 50 car vessel, will be about 3 million dollars

at today's prices, for a projected total of 18 million, rather than 33 million to build this boat and replace it again with a larger one.. With the current local real estate trends and near complete home sales in the County, the need to replace or upsize the vessel appears to be in 10 to 15 years, well within the life/age expandability of the vessel.

Solutions: Sa. Shorten the vessel by one car length, add 3-4 feet width.

Sc. Relocate Crew space and Restroom, stacks, vents, locker, etc to open up additional 6 (right) car lengths meeting 34 +- car goal..

Sd1. (Opt 1) Stacks, vents and right stairways, may be relocated through passenger space, similar to Texas Port Aransas Ferries.

Sd2. (Opt 2)) Stacks, vents and right stairways, may be directly connected to inside thin right side bridge support, , leaving enough lane width for Car passage. Bicycles, Motorcycles, and narrow Cars may be parked by stacks, vents, stairs etc, as long as car door ingress/egress is not impeded.

Se. Relocate Crew Lounge and Head to lengthened Pilot House Bridge left support structure.

Sf. Passenger space may be lengthened, if needed.

Sg. The later addition of three car lengths will result in an expanded 50 car vessel, as needed in the future, at far less cost than having to later build a larger replacement Ferry.

Sf. Ballasting as needed can be done by placing the Hybrid Batteries as needed.

Sg. The above design modifications are intended to complimentary to the "New Ferry" design.

3. Landings:

La. The docking slips need to be made wide enough to land any of the "smaller" Ferries in Puget Sound for possible emergency/replacement service. The widest of this fleet are the Pierce County Ferrys Steilicomm II at 68 feet wide and Christine Anderson at 66 feet. The smallest of the WSF Vessels are the 3 KDT class 64 car vessels (Port Townsend) at 65 feet and the privately owned former WSF HIYU at 62 feet wide. The provision for the WSF 64 car boats would only be for emergencies in the case of a very large flood event where the Lummi Reservation is cut off and the Ferries have to carry both Lummi Islanders and those on the mainland. At 68 feet, the ability to land even the widest of these vessels would not negatively affect either of the existing or proposed new vessel, the widened slips would not be that wide, no more than 5-6 feet of open space per side, and the narrower boats can easily land there.

Lb. The landing wing-walls need to be structured so they can land the State Ferry Bow Structure. The "new" vessel deck plans looks reasonably close to the State design, .

Lc. Lummi Island Side.

Many of the existing docking dolphins already need to be replaced. The old wooden dolphins and one of the breakwaters, need total replacement now. These can be relocated to accommodate a wider vessel at no additional cost. The two existing "Donut" floater dolphins need to be moved outward, or perhaps the "donut"

removed and replaced with a simple wear sleeve. The wing walls need to be augmented to absorb the inertia of the new much heavier vessel, which will about the same weight as the Former WSF HIYU.

Ld. Gooseberry Point Side. The existing dolphins need to be relocated to accommodate the new and other wider vessels. The four outer structures need to be moved outward and re-driven, they are new enough to not need the materials replaced. Again, the wing walls need to be augmented to absorb the inertia of the new and other much heavier vessels,

Conclusion: We need to take time and discussion to make sure the New Ferry and its Landings are well thought out and vetted, otherwise, we will likely get something that is inappropriate, or problematic. A good example of this is the hastily acquired Washington State Ferries KDT, Port Townsend vessels built 2010-2013. They do nothing well for the route. They do not carry enough cars, burn twice the fuel of their similar sized predecessors, don't handle well, have unprotected rudders and propellers (see above) and take much more maintenance than they ought to. We do not want to make a similar mistake, our boat has to be an excellent choice.

Further, as growth appears to be here, with more coming, we need to have expansion capability for the vessel without having to shortly replace it at more than double the cost, within a few years. To build a un-expandable vessel, and have to replace it, will be political suicide for the island. We need a path toward the future. If there is no need to expand the vessel in the future, it can remain as built and continue to serve without being expanded, As you can see from the above suggestions, are not extreme change, but are of, general adjustments, that will either make no impact or enhance the vessels utility.

My intent is to do the best job of acquiring the most efficient and cost effective Ferry for the Citizens of Lummi Island and greater Whatcom County.

I have included two of my previous documents for your review, "**Lummi Island Ferries projected fuel use**" and **Local Dry-Dock Document**.

I am available for further comment at audidancer@hotmail.com and (360) 296-3940

Sincerely,

James M. "Jim" Dickinson

**Comments on Elliot Bay Design Group's set of draft specifications
for the new Lummi Island Ferry
Charles Bailey
July 6, 2020**

My comments are shown in italics beneath the relevant sections of the draft specifications. They focus on ensuring the specifications are clear, complete and comprehensive so that the boat that gets built can function as an all-electric vessel without the need for expensive backtracking and retrofitting.

Outline Specifications Document

Page 1- 011 PRINCIPAL CHARACTERISTICS AND GENERAL DESCRIPTION

Length overall (molded)	184'-0"
Length on design load waterline	180'-6"
Breadth (molded) over guard	54'-0"
Breadth (molded) at DLWL	49'-0"
Depth (molded) amidships at side	13'-3"
Draft (molded) at DLWL	7'-6"
Lightship Weight, Estimated	485 LT
Service Life Margin	6% of lightship
Gross Tonnage, Estimated	Under 100 GT
Diesel Engines HP	2 x 715 HP
Propulsion Electric Motors	2 x 500 KW (?)
Generators (ship service)	2 x 99 KW @ 0.8 pf, 60 HZ
Fuel Oil Capacity (95%)	6,500 Gallons
Battery Capacity (watts/volts/chemistry)	?? (hours runtime at cruise power)
Automobile Capacity	34 Cars or 27 cars and 2 trucks Cars: 5,000 lb. and 8'-6" x 19'-6" each Trucks: 105,000 lb. and 10' x 65' each
Total Person Capacity (Passengers + Crew)	150 Passengers + 3 Crew
Trial Speed, Estimated	11.5 knots
Service Speed, Full Load @ 85% MCR	10 knots
Endurance- diesel fuel	14 Days + 15% Reserve
Endurance- battery power	???

CB: The table should include the propulsion electric motors and batteries, without which hybrid (and later full all-electric propulsion) will not be possible.

Page 1- second paragraph

“Together with the propulsion electrical system (see Group 300) the vessel will operate as a diesel mechanical / battery hybrid. Propulsion power will be provided by either the marine diesel engines, the propulsion electric motors, or both in combination. A power management system will be provided to monitor and coordinate power distribution between all generators and consumers in all propulsion modes. (see Section 302). Total power to the propulsion train will not exceed that of the main engines in any propulsion mode.”

CB: This paragraph leaves the reader with the impression the new ferry is to be designed and operated primarily as a diesel-powered boat. The text should be revised to make it clear that the propulsion system needs to be designed so that the ferry can operate primarily and routinely as an all-electric vessel both in cross-channel transit and in terminal docking. The diesel engines serve as back up. While shore-powered all-electric operation will come at a later stage, the new ferry needs to be designed with this goal firmly in mind to avoid backtracking later. This is the key to ensuring the vessel can eventually operate as an all-electric ferry.

Page 8- GROUP 200 - MAIN PROPULSION

233 Propulsion Engines , paragraphs 1-3

“Two (2) marine diesel engines with a continuous rating of 700 to 750 bhp shall be installed. The engines shall be four-cycle turbocharged/after cooled engines meeting the EPA Tier 3 emissions standards. Provide all necessary documentation to demonstrate compliance with MARPOL Annex VI and EPA emissions requirements.”

241 Reduction Gears, paragraphs 1-2

“Reduction gears shall be non-reversing with single reduction. The gears will be provided by the CPP manufacturer with built in servo controls for the CPP. Gears shall be remote mounted from the engine and aligned on their foundations using adjustable stainless steel chocks, Rotachock or equal.”

“Each gear will have a clutched main input, and a clutched power take off/power take in (PTO/PTI). The main engine will drive the propulsion train via the main input. The propulsion electric motor will be connected to the PTO/PTI.”

CB: The Group 200-Main Propulsion section mentions propulsion electric motors in the introduction but only goes into the details (see above) the diesel engines and the reduction gears. The electric motors are mentioned again only in connection with the reduction gears. This section should be revised to highlight that the design will accommodate eventual use of the electric motors as the main propulsion system.

CB- Since the electric motors will become the main propulsion system, EBDG should add the manufacturer, model and size of the reduction gears to verify the gearbox is capable of operating standalone in all electric mode. EBDG should confirm that connecting the electric motors at right angle to the propulsion train (through the reduction gear PT)/PTI) is better than putting them directly in line with the drive train. These are key points for designing the new ferry to minimize the need to switch out the reduction gears in future.

Page 12- Group 300 Electrical- General, 4th paragraph

“When connected, the shore power connection shall provide power for battery charging and dock side ship’s service loads. Shore power connections shall be located on the Lummi Island end. Shore power available is 480V, 3-phase, 60-100A.”

CB: Charging the ferry from a shore connection is at the heart of its ability to operate as a zero or near zero carbon-emitting form of public transport. The specifications should therefore also stipulate (a) the size/capacity of the battery bank(s) on board and/or on shore, (b) the optimal discharge/charge cycle for the vessel, (c))the time required to fully recharge the batteries from fully discharged while connected to the shore source and (d) the voltage requirements for fast charging between runs..

CB- More detail and specifications on shore power are needed to ensure all buss wiring is ducted within the vessel and sized to carry full KW loading under full electric powder during sustained operations.. Charging ports should be designed into the vessel for amidships charge stations at either Lummi Island or Gooseberry docks and sized for primary voltages and currents which might be expected from a shoreside battery bank, like PSE’s Glacier battery vaults.

Page 12- 301 Propulsion System Integrator, 1st paragraph

“A single vendor shall be responsible for final design and integration of the hybrid propulsion system. The propulsion system integrator (PSI) shall be responsible for supply of the main propulsion switchboard, propulsion electric motors and variable frequency drives, power management system, propulsion controls, and ships alarm and monitoring system.”

Congratulations to the County. One vendor--this is very good news! But reading further highlights the continuing thread in this draft that the new ferry is being conceived as primarily a diesel-driven boat...

Pages 12-13 302 Power Management System, 3rd paragraph

“...The vessel shall have at least the following modes:

- _EV (electric vessel) mode: All propulsion and ship service loads are supplied from batteries. Diesel main engines are clutched out, and operation is avoided until minimum battery state of charge or peak propulsion loads require their start-up [emphasis added]. Ship service generators are off.
- _Hybrid Mode: The diesel main engines provide main propulsion power. When propulsion load is light enough to do so, excess engine power is used to charge the batteries and power ship service loads.
- _Conventional propulsion mode: All ship service loads are supplied by one of two ship service generators, independent of the propulsion electrical system. The propulsion electrical system is inactive, and all propulsion power is supplied by the diesel main engines.

CB: The first bullet point suggests that the diesel engines are expected to be run routinely even while the vessel is in all-electric operation. This should be clarified as a transitional procedure until such time as shore power charging, batteries and battery management software permit secure all-electric operation with the diesels as emergency back up only. For the third bullet point, to be consistent change “Conventional propulsion mode” to “Diesel engine mode.”

Speed and Powering Assessment Document

3.1.4 Propulsion System

“While the vessel is anticipated to have a diesel battery hybrid system [3], the propulsion system efficiencies and resulting power demands were based on the vessel operating with the propulsion system in diesel mechanical mode....The total engine brake power per end is assumed to be 750 hp, though more power may be available if the vessel is operating in hybrid mode.”

4. Conclusions

“The plot indicates that in these ideal conditions, the vessel can achieve about 11.7 knots and 12.1 knots with a single engine at 90% and 100% maximum continuous rating (MCR), respectively. This assumes the vessel is operating in diesel-mechanical mode. When operating in hybrid mode, it is possible to achieve a greater speed at the same engine output with input from the electric motors (peak shaving). When operating in ideal weather conditions and in diesel-mechanical mode the vessel can achieve the cruising speed of 10 knots at approximately 48% MCR. “

CB: Since the new ferry is eventually to become an all-electric, all the time, vessel, it seems prudent to run these tests in electric vessel mode as well.

Terminal Profiles and Deck Arrangements Document

CB: The Inboard Profile (Sheet 1) shows only two diesel engines. The Hold (Sheet 2) shows two diesel engines and two reduction gears. Both drawings should show all three components- electric motors, diesel engines and reduction gears and their spatial relationship to each other.