



NVRC FAST FERRY PASSENGER SERVICE

Date: July 27, 2023

Subject: **Steering Committee & Stakeholder Meeting #7 (hybrid meeting)**

AGENDA

- Introduction & Overview
- Market Assessment for New Route
- Low/No Emissions Vessels
- P3 Outreach/Investor Sounding
- Next Steps

INTRODUCTION

MEETING FORMAT

The meeting was held in a hybrid format. The meeting kicked off with introductions. Tim Payne noted that this will be the last steering committee/stakeholder meeting for this project. One more meeting will be held to present the project findings to NVRC in September.

MARKET ASSESSMENT

- DC River Circulator is a multi-point route that connects Georgetown to SW Waterfront to SE Waterfront and Anacostia River.
- The team used Streetlight data from April 2022 to estimate travel demand between the various walkshed areas; estimated demand by using origin-destination data from Streetlight (for auto, bike, walk).
 - Streetlight provides a representation of travel but not a record of what happens.
 - Keep in mind that some of these areas were still under development during April 2022 (Buzzard Point, Wharf Phase 2, etc.)
- One of the initial inputs was to determine the vessel travel time. DC has regulated speed limits, which in the shaded areas of the graphic is 6 mph or less.

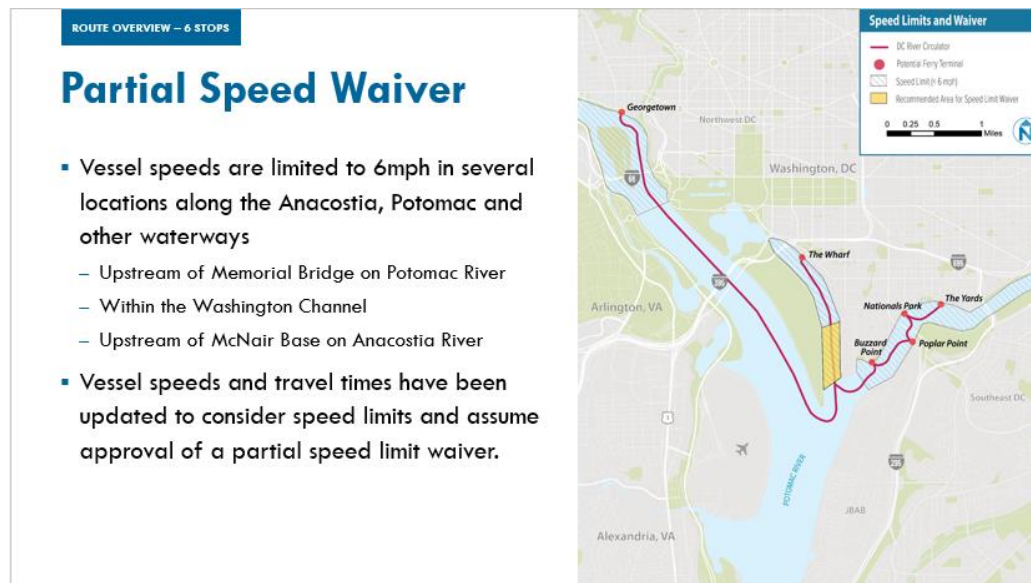


Figure 1 Map of Potomac and Anacostia River speed limits and location of proposed/assumed partial speed waiver

River Circulator: 6-stop scenario,

- Given these speed constraints, headways for one vessel would be about 3 hours.
- The basic assumption was made that the ferry would make a stop at each terminal for each run, but there could be variations where some stops are eliminated or that the route was an express between certain points.
- 211,000 estimated daily trips of people already traveling between the travelsheds
- The estimated number of riders on the route is an average annual number (and one could assume that that number is higher in the summer and lower in the winter).
- On an annualized basis, the financial analysis estimates that capital and operating costs would result in required subsidy of around \$9 million (assuming no grants for capital costs).
- Also need to consider that the amount of travel demand activity could increase in these areas as development continues and populations increase.

River Circulator: 4-stop scenario

- Second iteration of the route considered 4 terminal stops only; considers locations where docks exist today and only need improvement costs (and where the greatest demand is today)
- There are strong connections between walksheds today.
- One operating vessel could yield 2 hour headways

- The estimated ridership between the scenarios is similar because the two terminals eliminated didn't have high demand, based on current (April 2022) levels of activity.
- Costs compared to the 6 stop scenario are lower but somewhat similar. Somewhat lower capital costs, as well as lower operating costs because there are less terminals/docks to maintain, fuel cost savings, etc. But other costs like staff and purchase of vessels remain constant.

General Takeaways

- Tim Payne summarized the two scenarios explored by stating that with these findings, one could visualize how if these operating plans (such as operation hours and seasonality, number of stops on every trip, fare price, etc.) was modified or tweaked to optimize the demand side and the supply side, then there would be a lower cost subsidy required for operations.
- Someone from the audience asked if the team was coordinating with Hornblower or discussing other partnerships, because it wouldn't make sense to duplicate the River Circulator service while other private operators are doing similar routes. Tim responded that some level of partnership would certainly be required – providing this service could look like expanding an existing service or replacing it with a new and more comprehensive service like the one proposed here. Development of that partnership will be a future task beyond this effort.
- Estimated cruise speed: 20 knot (23 mph). Average speed is less than that considering speed restriction zones. This is a much lower speed than the other long distance routes considered. This is due to the fact that the travel times are far less dependent on maintaining higher vessel speeds. With the shorter distances of these routes, the speed plays a much smaller role in travel time. It is also more compatible with looking at potential application of Lo-No Emission vessels.

Questions

- In the case of the four existing terminals: Georgetown, The Wharf, Nationals Park, and The Yards, the team had to assume some capital costs to provide improvements to the existing terminals like lighting, railing/safety improvements, The other two terminal stops (Buzzard Point and Poplar Point) would require completely new infrastructure for terminals.
- It was clarified that the team has not dismissed the other routes studied earlier in the project (such as the routes between JBAB and Woodbridge or JBAB to Charles County. Rather, the River Circulator is additional route that was studied, and the team is presenting their findings today. In the final report all three sets of routes will be included as options or potential components.
- Somone asked if NEPA would be required for construction and implementation. Tim Payne responded that yes this would be required and although he

acknowledged that it could be beneficial to try to facilitate execution of a study such as this, since NEPA approvals are so specific, they would require a detailed overall plan and scope of work prior to starting on a process.

FINANCIAL ANALYSIS

- The cost model was developed with an assumption of diesel power, given that that’s the most readily available technology for propulsion, given the vessel size and speed.
- Capital cost model assumed purchase of 4 vessels at \$28M with a life of 25 years.
- The model assumed 350 days of usage per year = 100,000 gallons per vessel per year.
- When looking at 4 vessel scenario, operating costs per vessel is multiplied by four.
- For the 4 stop scenario: up front capital expenses are \$39M (4 vessels and terminal upgrades).
- Farebox recovery on an average basis, over 25 years of the project is about 22%. Over 25 years, that equates to about \$6.6 M per year (majority of those costs is from operating expenses, while capital expenses is \$25M total). The model does not assume any grants for capital, or operating. However, those might be needed.
- Table at the bottom shows the number of riders needed in order to recover all operating expenses... (e.g., would need 2.3 million annual riders at \$5 fare to achieve 100% farebox recovery.
 - Tim emphasized that the current estimated ferry ridership is a relatively small amount of the travel between locations. But, by optimizing the service and operations, a ferry service can recover a larger percentage of the costs from the farebox.

Annual Ridership Required at Recovery of OPEX (4-Stop)	\$2.00 Fare	\$5.00 Fare
50%	2,869,605	1,147,842
75%	4,304,407	1,721,763
100%	5,739,209	2,295,684

Figure 2 Table of estimated annual ridership required for 50%, 75%, and 100% farebox recovery

LO/NO EMISSIONS VESSELS

- Barnabas Hong presented the team’s work on a white paper which provided an analysis of low/no emissions vessels and considerations for the ferry service. The lo and no emissions topic is advancing in the ferry industry very quickly in research and advancement.

- In the context of this project, there are many considerations to make when determining which technology is the best fit, the key one is maturity of the technology for water vessels. The two most mature low or no emissions technologies are hydrogen propulsion and electrification.
 - In practice, electrification is different for water operation, etc. (water resistance, weather), travel through water uses far more energy than travel on land.
 - There are also options to use diesel as backup to electric or to consider other hybrid models
- Electric propulsion is very route dependent (depends on power requirements, route length, speed of vessel, size of vessel and weight)
- Electrification also relies on a significant investment of charging infrastructure, and there is a reliance of charging during dwell times which will change the route operations times.
- Implications with infrastructure when using electrified vessels include type of infrastructure: fuel cells on shore or on board as well as the balance of how much weight you want on the vessel compared to how much power you want on the boat to power the route. Electrification technology is best for slower, or shorter routes. But new technology is exploring lighter weight fuel cells and more applicability for faster vessels. But none of that is available, or even predictable, today.
- Hydrogen is a newer technology and it has an increased performance by weight of vessel, but it doesn't have as mature of a distribution network, i.e. the fuel is not commonly available in motor fuel quantities) and has not been tested as extensively for marine applications. This is beginning to happen now, but the future is not clear.
- For this project: there are fairly high speed requirements and longer distances required for some of the longer routes, like Woodbridge to JBAB, so an application with electrification is limited. Even for the shorter River Circulator routes one would need longer dwell times for vessels to maintain a state of charge. In turn this creates a challenge for attaining competitive travel times by ferry unless those dwell times are off service and additional vessels are utilized. There would also be a need for infrastructure at different points of the route which then increases costs and grid capacity demand.
- In the international context: more investment has been made into lo/no technology. We know their governments are also more supportive, and in many cases leading, the development of technologies and greenlighting projects.
- Some limitations include grant availability, risk adverse government and groups with respect to newer technology (need more review and scrutiny) (concerns over fire safety and not having standardized/established safety standards).
- Some existing vessels running on electric or hydrogen power that travel similar lengths and speeds include:

- Norway (electric) – vessel can travel one full length trip (about an hour) on one charge
- New Zealand (electric) – vessel requires a charge for every return run; this would also be a little different in the US, because the practice is to require the batteries to always be held at a certain percent full
- San Francisco (hydrogen fuel cells) – this is a pilot project and can run 16 hours on one full tank at 12 knots. This is a much smaller vessel than the ones considered in the River Circulator, however. This experimental vessel has been in development for over four years and still has not made a commercial voyage.

LO/NO EMISSIONS

Examples of Lo/No Emission Vessels

Ferry / Location	Passenger	Propulsion System	Route Speed	Trip Time	Length
MS Medstrøm ¹ Stavanger, Norway	147	All Electric	23 knots (1hr) Max: 27 knots	~35-40 minutes	~ 6 miles
Ika Rere ² Wellington, NZ	132	All Electric	20 knots	~ 35 minutes	~6.5 miles
Sea Change ³ San Francisco, CA	75	Hydrogen Fuel Cell	~12 knots, ~20 knots w/batteries	~15 minutes	~ 2 miles



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Figure 3 Examples of vessels in other cities/countries operating with low or no emissions technology

- In summary, longer trips with faster boats going about the same speed as our study is aiming for would more likely be successful with a hydrogen fuel cell operation than electrified vessel. However, that technology for marine propulsion has not been developed.

Questions:

- One of the questions was if our team reached out to National Capital Hydrogen Center <https://www.connectddmv.org/hydrogen> . Peggy Tadej said that the team had connected with them. There are lots of initiatives looking at hydrogen today. If this evaluation was accomplished four years from now, the potentials might be much higher.

PUBLIC/PRIVATE PARTNERSHIP DISCUSSIONS

- Tim Payne emphasized that the project is no closer to having a new lead organization to steer this effort forward than we were at the last meeting. Part of our upcoming efforts will be to engage with public, quasi-public, and private

- groups to discuss the project findings and identify interested parties for carrying the work forward.
- Jeremy Ebie began the presentation by stating that his team has started reaching out to stakeholders and encouraged others to contact him if they wanted to continue the conversation.
 - Jeremy mentioned that they want to advance the project in both efforts (both to seek leadership support as well as financial focus).
 - Private sector outreach includes: industry, landowners, developers, and operators.
 - Jeremy shared a screen of stakeholders initially contacted and mentioned that, in addition to those mentioned about potential partners, our team has reached out to other waterfront BIDs.

PS OUTREACH

Current Potential Partners (Open for Expansion)

Name	Organization	Title
John Hillegass	Greater Washington Partnership	(Director Regional Mobility and Infrastructure)
Sandra Marks	DDOT	Chief Project Delivery Officer
Tom Webster	WMATA	Chief Planning & Performance Officer
Brian Kenner	Amazon - Economic Development	Heading Economic Development for Amazon
Laura Miller Brooks	Federal City Council	Director of Transportation and Infrastructure
Roger Bohnert	Build America Bureau	(Director Project Development)
Thomas Sherman	Virginia Office of P3	(Deputy Director of the Virginia Office of Public-Private Partnerships)
Greg Billing	Georgetown BID	(Transportation Director)
Steve Moore	Southwest BID	(Executive Director)
Elizabeth Miller	National Capital Planning commission	Director, Physical Planning Division
Jaclyn Hartman	MDOT	Director of the Office of Public-Private Partnerships
Sybongile Cook	DMPED	Director of Business Development and Strategy
Jonathan Kayne	DM P3 Dept.	Head of DC P3 office
Julian J. Gonsalves	Alexandria P3 Dept	Assistant City Manager for Public-Private Partnerships

Figure 4 List of current outreach parties

- Our conversations will be more investigatory – not just asking will they invest, but also going to ask, “What does the private sector need to understand what they need in order to be interested in investing.”
- Someone asked about talking to stakeholders about interest in moving freight as well. Tim agreed that freight could help the conversation, but that the team would then need a partner to fund the feasibility of adding freight into the river transportation project, as the current funding did not allow funding for that component. IT may hold promise, we have not been able to address it in this study.

NEXT STEPS

- NVRC is stepping out of the project leadership in September, 2023. The team is trying to identify other champions that could take on a leadership role and help continue development of the project.
- NVRC’s website will stay up but the information will not be maintained.

MEETING DETAILS

Meeting Attendees

NVRC

Peggy Tadej, NVRC

CONSULTANT TEAM

Tim Payne, Nelson\Nygaard
Emily Oaksford, Nelson\Nygaard
Jeremy Ebbie, Phoenix Infrastructure Group
Deji Oyekunle, Phoenix Infrastructure
Barnabas Hong, KPFF
Mike Anderson, KPFF

MEETING ATTENDEES

Allahdoust, Fatemeh (VDOT)
Alyssa Tullar - JBAB Planner
Amani Beachum, Legislative Director for Senator Arthur Ellis
Antoine
Carl Wegener Metal Shark Boats
Chris Landgraf, MCBQ
Daniel S. Flores
Daniel Schwanik (USAF, JBAB, 11CES)
Eric Randall
Erica Hahn
Evrin, Yashar (DDOT)
George Clark, TriCounty Council
Hawkins, John, DHS
Hipski, Yolanda
Janie Nham, MWCOG TPB
Jeffrey King
Jessica Richards
John "JT" Thomas
John Hartline
Katherine Dyer
Katherine Rainone
Lenis Amaya, 11 CES JBAB
Longshore, Carla (DDOT)
MacNeil, Laura (DDOT)
Mike Anderson
Pamela Montgomery, PRW

Steering Committee Meeting #6 Notes
NVRC Passenger Ferry Business Case

Peggy Tadej, NVRC
Pierre Gaunard
Richard Moore
Richard Moore, Connected DMV
Rutherford, Amanda (MARAD)
Samantha Prog, JBAB
Steven Bieber, MWCOG
Supervisor, Angry, Victor S., PWCounty
Tannia Talento (Warner)
Terri Augustine
Terri Crockett Austine, Norfolk District Corps of Engineers
Terry Clower. GMU
Victor S. Angry, Supervisor Prince William County Board of Supervisors Neabsco District
Weissberg, Victor
Yi Shao Capitol Riverfront BID

Chat record

Carl Wegener - At what cruise speed?

Rutherford, Amanda (MARAD) - is this travel time chart based on 1 vessel operating?

It could make a difference if you have more than one vessel and you use the Wharf as a hub and each vessel go in opposite directions - one up to Georgetown and one up the Anacostia.

Rutherford, Amanda (MARAD) - are you proposing new terminals, rather than using existing infrastructure in this 'dc circulator' idea?--sorry if you covered that in beginning since I was a bit late.

Carl Wegener - What is the estimated cruise speed of the ferry for those times?

Erica Hahn - Is the intent to perform a NEPA analysis for all potential federal properties that may be involved at once? Or should federal properties be planning to execute NEPA for their location?

Rutherford, Amanda (MARAD) - Good question, Erica! Each Federal Agency handles NEPA differently.

Rutherford, Amanda (MARAD) - if federal dollars are used, then NEPA would be needed for all construction--not just on Federal properties

Erica Hahn - That makes sense. There has been discussion about this project at JBAB, so I was trying to figure out what the way forward is for handling NEPA, if there is already a plan in place, and what action JBAB should be taking now to address.

Rutherford, Amanda (MARAD) - for NEPA you need to know the scope of work completely....it would be premature to start that now in my opinion. It would be fiscally irresponsible to start NEPA in my opinion. What he is suggesting is an alternatives analysis - not NEPA.

Editors note – this item was discussed in the meeting and it was pointed out that an alternatives analysis is an instrumentality of USDOT, not DOD. DOD has a very different application of NEPA and tends to approach smaller projects on a project basis, as opposed to a system basis. Still the point about fiscal

Steering Committee Meeting #6 Notes
NVRC Passenger Ferry Business Case

responsibility is well taken. JBAB could develop a ferry terminal, including the NEPA documentation necessary, but if no ferry ever starts operating, was that an appropriate expenditure.

Rutherford, Amanda (MARAD) - curious - did you reach out to this org about hydrogen?

<https://www.connecteddmv.org/hydrogen>

National Capital Hydrogen Center

Greater Washington's clean energy future starts here.

Rutherford, Amanda (MARAD) – FYI – BUILD America is a bureau of USDOT. Buy America/Buy American is different.

Editors note: In the presentation there was a reference to “build America” this was not intended to refer to a specific bureau of USDOT. Rather it was intended to be a generic reference to the Jones Act and Buy America policies.

Rutherford, Amanda (MARAD) – I’m definitely not suggesting a study. I’m suggesting a conversation while you have the door open with potential partners.

Longshore, Carla (DDOT) – Want to clarify that the extent of the ferry study was limited to available grant funding and not an aspect of excluding freight. There was also a concern raised about using the name River Circulator vis-a-vis the possibility of confusing that with the DDOT funded DC Circulator (a land-based bus system).