

**Model 101 Webinar
June 30, 2021**

Ecology Staff

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Attendees

Ahren Stroming, <i>Puget Sound Partnership</i>	Lovel Pratt, <i>Friends of the San Juans</i>
Alex Pittman, <i>Snohomish County Surface Water Management</i>	Mark Curtis, <i>Crowley</i>
Andrew Drennen, <i>Polar Tankers / Conoco Phillips</i>	Mark Toy, <i>Washington State Department of Health</i>
Brad Korpela, <i>Shaver Transportation</i>	Marta Green, <i>San Juan County</i>
David Bain, <i>Orca Conservancy</i>	Melba Salazar-Gutierrez, <i>Auburn University</i>
Don Noviello, <i>Fish and Wildlife</i>	Paul McCollum, <i>Port Gamble S'Klallam Tribe</i>
Eleanor Kirtley, <i>Green Marine</i>	Rein Attemann, <i>Washington Environmental Council</i>
Elisa Dawson, <i>Snohomish County</i>	Robert Lewis-Manning, <i>BC Chamber of Shipping</i>
Jamie Stephens, <i>San Juan County Council</i>	Robert Poole, <i>Western States Petroleum Association</i>
John Wright, <i>Polar Tankers / Conocophillips</i>	Ross McDonald, <i>Sause Bros.</i>
Joycelyn Blue, <i>Snohomish County Surface Water Management</i>	Shayne Cothorn, <i>Washington Department of Natural Resources</i>
Kip Killebrew, <i>Stillaguamish Tribe Natural Resources</i>	Todd Hass, <i>Puget Sound Partnership</i>
Kris Faucett, <i>Faucett Lund</i>	Tom Ehrlichman, <i>Swinomish Indian Tribal Community</i>

The following summary notes are not intended to be a transcript but rather a review of the discussion session. Participant questions and comments are shown in bold text followed by Ecology responses. Ecology responses that have been added after the conclusion of the event are preceded by the text “Supplementary answer.”

The direction of the wind makes a difference in how a vessel swings while at anchor, will that be included in the model? (Mark Curtis)

JD Leahy: We haven't finalized an approach for modeling a ship's movements while at anchor, but our current thinking is that we will not include the direction of the wind as a factor in the directionality of an anchored vessel's movements. We will be talking more about ways to model anchored vessels at the July 14th event ([register](#)).

Some notorious incidents have involved vessels taking unapproved routes. Does your database include such routes (e.g., Friday Harbor to Sydney via the south end of San Juan Island rather than on the normal northerly route)? (David Bain)

JD Leahy: Our routes are built based on historical behaviors. If unauthorized or unusual routes show up in the historical data, they will appear in the model. On the one hand, that means we'll capture the real life historical ways that ships are operated. On the other hand, the model won't be running ships along routes that aren't present in the historical data, but might theoretically be operated on in the future.

I'm curious at how we arrived at the 20-minute grounding vector as this seems very dependent on vessel type, speed and current? (Andrew Drennen)

JD Leahy: The length of the 20-minute vector is based on a time, speed, distance calculation. The faster a given ship is travelling, the longer the vector will be, because the faster ship would travel further in 20 minutes. This means that different vessel types that operate at different speeds will have different size 20-minute vector lines.

Supplementary answer: We identified this approach from the literature. We found the 20-minute vector in a couple different sources. [Fowler \(2000\)](#) described the 20-minute vector in connection to risk assessment work performed in the North Sea, portions of which are managed by VTS systems. [Skinnemoen \(2018\)](#) described the use of a similar 20-minute vector for Norwegian coastal waters, which are managed by Vardø VTS.

Why are the ships moving around in the model not aware of other ships? That doesn't reflect what happens in the real world. It seems that a lot of safety features such as pilots, AIS, world class VTS are being disregarded. This seems to be an oversimplification that is driving the results to something not accurate and representative of the real world (Andrew Drennen)

JD Leahy: One of the main reasons we have taken this simplified approach is that a) we think we'll still get informative results and b) the way that ships interact is complicated, and we can't quantify each individual aspect of their interaction (good or bad) because of a lack of data.

Supplementary Answer: Ultimately the question is, are we still able to assess risk in the system while using this simplification? Our answer is yes, we can still assess risk, because we are approaching this from a big picture lens, and looking at risk on a large scale.

Even though we don't have access to all information that goes into the decisions that are made while operating vessels in these waters, we are able to develop aggregated incident rates. Existing safety measures will be incorporated into those rates, at varying scales, through selecting the populations of interest that we review for historical rates of accidents.

The more the population of interest we select mirrors the safety measures and risk factors present within the study area, the more confident we can be that the accident rate we calculate has those safety measures and risks incorporated within it.

Let's discuss what the end result of the modeling effort will be. Will it be real time assessment of vessels operation in Puget sound, or will navigation rules be changed such as vessel spacing? Help us understand what you envision the model doing once it's complete. (Kip Killebrew)

Brian Kirk: This model won't be used to look at vessel movements real time. This tool is not designed for that nor would a tool like that be within scope for the Department of Ecology. That type of oversight is part of US Coast

Guard responsibilities. The questions about whether vessel spacing might have an effect on oil spill risk and it seems like a question that the model could be used to explore but we have not been asked to analyze that.

Our first two reports that we have been asked to produce are on tug escorts for specific waterways and the question of whether ERTV would reduce spill risk for Haro, Rosario and Boundary. For those reports we'll include caveats and discussions of uncertainty and data limitations. What is done with the information after that will depend on requests from the legislature. The legislature has not directed a rule making process to consider the possibility of stationing an ERTV to reduce spill risks for these waters.

For tug escorts, the final report does not determine whether tug escorts will be required for certain tank vessels in the Salish Sea. The report must be considered in rule making by the Washington Board of Pilotage Commissioners. The rulemaking process will include outreach and opportunities for consultation with BPC, will consider a wide range of topics.

Does the data set you will use for movements include the tanker and tug trips in Haro and other routes for the trans mountain pipeline expansion already approved by the Canadian government? (Tom Ehrlichman)

JD Leahy: When we evaluate oil spill risk as part of the analysis questions, we may want to evaluate it under different traffic scenarios such as the Trans Mountain Pipeline or other scenarios. Determining which scenarios to include, and which baseline to compare them against will be part of the analysis phase.

That's the general answer, but I also want to say that we specifically built the model in a way that includes all of the facilities and waypoints. This will allow us to adjust traffic levels and traffic patterns for different scenarios. We've anticipated the need to look at changes in traffic and we feel we have a robust way to do that.

The route based vessels that have been plugged in do reflect at least most of the safety measures used because you have used historical data. The risk of an accident might be understated when you get to non-route based vessels, non-AIS vessels, and tugs. (Jamie Stephens)

JD Leahy: We do plan to use historical data for movement on non-route based vessels but when we get to non-AIS vessels we won't be able to use the same level of detail as AIS data.

Are you going to handle in the non-routine vessels submarines? (Kip Killebrew)

JD Leahy: No, we won't model submarines or their escorts as dependent vessels. The escorts will be captured if they have an AIS signature.