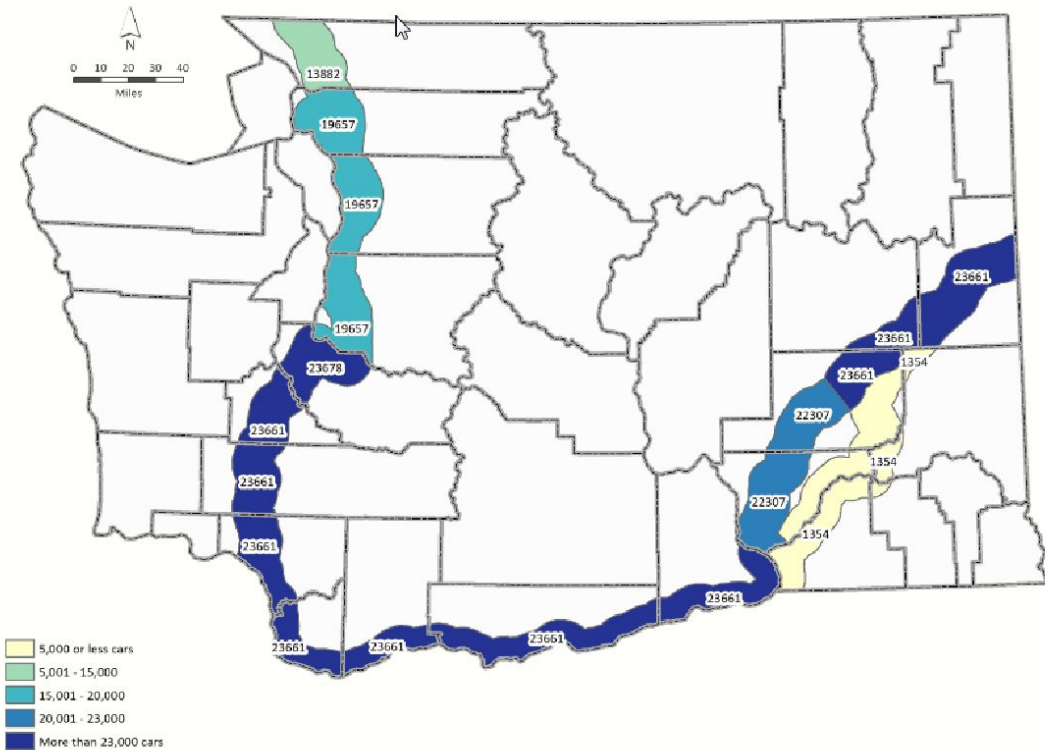




Mosier oil train derailment. June 3, 2016.

Estimated Crude Oil Movement by Rail (October 2018 through December 2018)



Summary of Crude Oil Transport by Rail in Oregon (in tanker cars)

Year	2016	2017	2018	2019	2020	Average	Max Vol	Max Year	2018% ^ AVG
BNSF Routes									
Vancouver to N Portland	34	249	2836			1040	2836	2018	173%
N. Portland to St. Johns	26	249	2836			1037	2836	2018	173%
East St. Johns to Albina	8	4	3			5	8	2016	-40%
East St. Johns to Rivergate	25	25	119			56	119	2018	111%
East St. Johns to Willbridge	2	150	2836			996	2836	2018	185%
Willbridge to Portland	27	150	2836			1004	2836	2018	182%
Wishram to K Falls (East)	3506	3248	5687			4147	5687	2018	37%
Klamath Falls to Lookout CA	3395	3245	5663			4101	5663	2018	38%
UP Routes									
Wallula to Hinkle	6017	4835	5942			5598	6017	2016	6%
LaGrande to Hinkle	6472	6278	7110			6620	7110	2018	7%
Hinkle to Oregon Trunk	6533	6278	7310			6707	7310	2018	9%
Oregon Trunk to Troutdale	6336	5940	6944			6407	6944	2018	8%
Troutdale to Peninsula Jct	6344	5697	6639			6227	6639	2018	7%
Troutdale to Portland	209	384	166			253	384	2017	-34%
Portland to Eugene	1079	183	400			554	1079	2016	-28%
Eugene to Chemult	1077	1	399			492	1077	2016	-19%
Chemult to K Falls	1077	183	399			553	1077	2016	-28%
K Falls to State Line (West)	1077	183	399			553	1077	2016	-28%
K Falls to State Line (East)	491					491	491	2016	-100%

Bold = More than one UN ID used for crude products transported (UN1267 & UN3434)

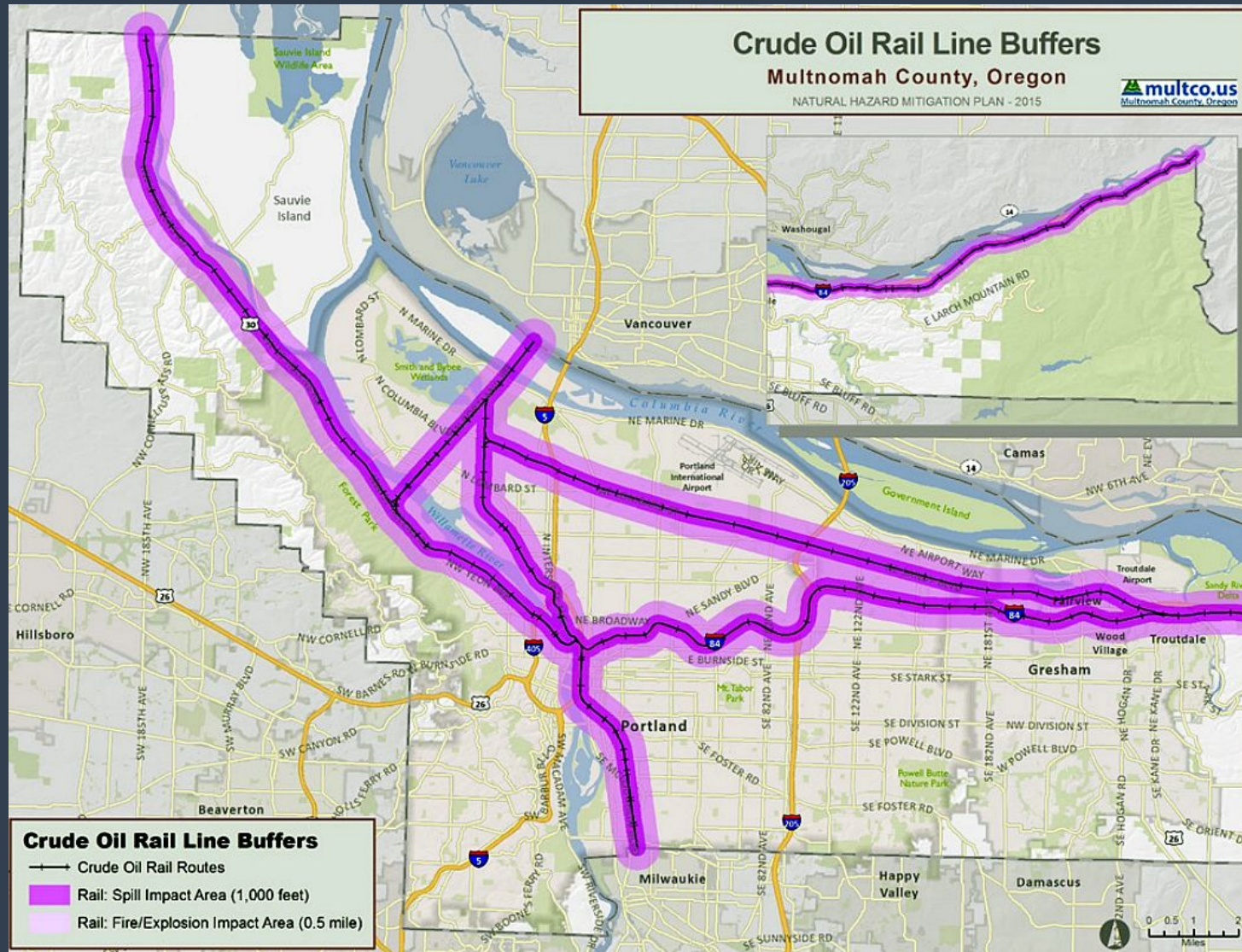
Not Bolded = Just UN1267

Italicized = Likely data error

Note: Does not contain refined products (such as fuel oils or petroleum distillates) or other wellfield products such as Octanes/Petroleum Condensates, Wellhead Condensates or Combustible Liquids NOS

Oil Trains Through Washington:

- Trains primarily travel along the Columbia River
- Oil trains carrying tar sands crude not reported in Oregon
- Oil trains that do not stop in Washington are not reported in Washington
- Upshot: No one knows how many trains and which routes are used for tar sands shipments into Oregon, for sure.



Multnomah County developed an assessment of the risks of oil trains through Portland. Multnomah County identified oil trains as a potential environmental justice concern. This report is worth reading. <https://multco.us/file/48386/download>





Tar Sands Oil Train Terminal in Portland?

Zenith Energy Operation

- Trains travel to Zenith marked 1267 and with a white “Toxic Inhalation Hazard” placard
- Trains come in carrying heavy oil, likely from Alberta, according to OPB.
- Sometimes Zenith heats cars, moves heavy oil into tank. Diluent mixed into large tank (likely naptha).
- Other times, Zenith brings in diluted tar sands from Christina Lake, Alberta.
- Diluted bitumen (dilbit) includes hydrogen sulfide, as well as dangerous VOCs. These chemicals could require first responders to wear supplied-air respirators during oil release incidents.
- Diluted tar sands piped to marine vessel, shipped to China
- Lack of tethered tug escort for marine vessels raises concerns.
- Failure to conduct spill response training with dilbit
- *See OPB reporting on this site dating back to 2014 and recent Oregonian and OPB articles.*



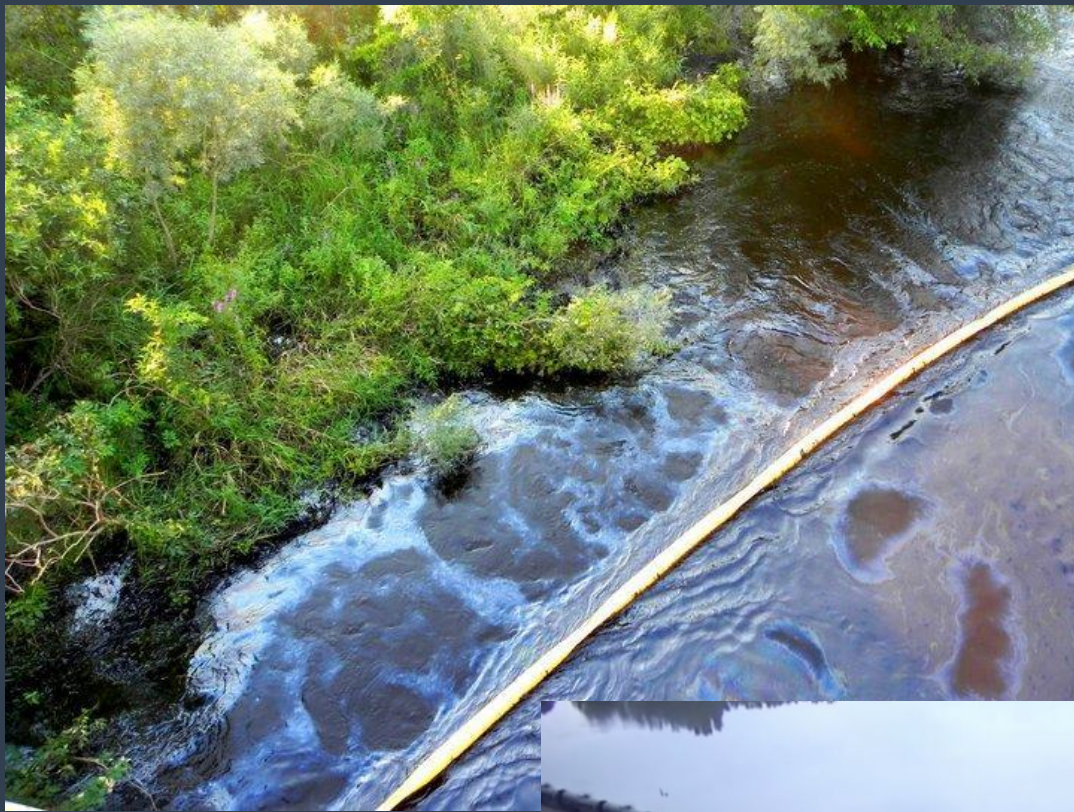
Bakken Crude Oil Development



Canadian Tar Sands:

- Another potential source for terminals
- Heated cars, heated coils in tanks
- Or, oil diluted with chemicals
- Cars marked 1267





- Top left: Tar sands spill in Kalamazoo River. Cleanup cost exceeds \$1.2 billion
- Bottom center: Tar sands train spill in Doon, Iowa
- Top Right: Tar sands train derailment and fire in Gogama, Ontario, Canada

A large fire at night, with thick smoke rising into the sky. The fire is bright orange and yellow, and the smoke is dark and billowing. The scene is illuminated by the fire and some distant lights.

Quebec

July 2013



North Dakota

December 2013



Illinois

March 2015



Mosier oil train derailment. June 3, 2016.



Mosier Oil Train Derailment

Contamination
persisted in
groundwater in Mosier
for months

PAHs in groundwater have generally consisted of naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene, phenanthrene, and pyrene



Diluted bitumen oil train derails, burns in February 2020

Fish in the Columbia & Upper Columbia River Basin

- **13 federally threatened or endangered species of salmon & steelhead**
- **Major tribal, commercial, & sport fishery**
- **23 percent annual spill risk from Tesoro oil project alone – spill every 4.4 years**
- **Spill could extend to mouth of Columbia – 8 million gallons**
- **Spill could cost hundreds of millions (likely billions), & River would take decades to recover, according to study commissioned by Washington Attorney General's Counsel for the Environment.**





- Washington Counsel for the Environment study showed major potential spill impacts
- For spills of 1,000 gallons or more the range is \$3 to \$300 per gallon spilled. For an effective WCD spill of 8 million gallons, that scales to \$24 million to \$2.4 billion.
- Summarizing data from multiple incidents, the range of damages from other oil spill incidents scaled by the volume of oil spilled in the Columbia River scenarios is \$232 million to \$1.16 billion for the tanker grounding, and \$24.4 million to \$122 million for the train derailment.

Name of spill	Year	Location	Quantity of oil (gallons)	Impact area	Impact period	Severity of impacts	Type of impacts
American Trader	1990	CA	416,598	14 mi of coastline	7.5 weeks	85% decline in trips for first 5 weeks; 30% decline for next 2.5 weeks	Beach use, including some fishing
Athos	2004	DE	263,000	60 RMs	7 months	11% decline in trips	Fishing
Bouchard 120 (shoreline)	2003	MA	22,000–98,000	65 mi of coastline	2 months	9% decline in trips	Shoreline use, including some fishing
Bouchard 120 (shellfishing)	2003	MA	22,000–98,000	65 mi of coastline	2 years	59% decline in trips in first year; 11% decline in second year	Shellfishing
Bouchard 120 (boating)	2003	MA	22,000–98,000	65 mi of coastline	1 month	3% to 6% decline in trips	Boating, including fishing
Chalk Point	2000	MD	140,000	17 RMs	6 months	10% decline in trips	Shoreline use, including some fishing
Cosco Busan	2007	CA	54,000	San Francisco Bay, plus 45 mi of coastline	3 months	57% decline	Fishing, including boat and shore
DWH (shoreline)	2010	Gulf of Mexico	134,000,000	575 mi	11 months	Not available	Shore fishing
DWH (boating)	2010	Gulf of Mexico	134,000,000	575 mi	4 months	Not available	Boating, including fishing
Kalamazoo River (shoreline)	2010	MI	> 840,000	39 RMs	27 months	60% decline (initially 100% due to closure, declined over time)	Shoreline use, including fishing
Kalamazoo River (boating)	2010	MI	> 840,000	39 RMs	27 months	69% decline (initially 100% due to closure, declined over time)	Boating, including fishing

When all the scenarios were summed, Case C risk was about five times the baseline risk (Case A). The large increase in cargo spill risk is because most of the additional traffic is from deep draft vessels, and a larger fraction of the new traffic is carrying cargo oil.

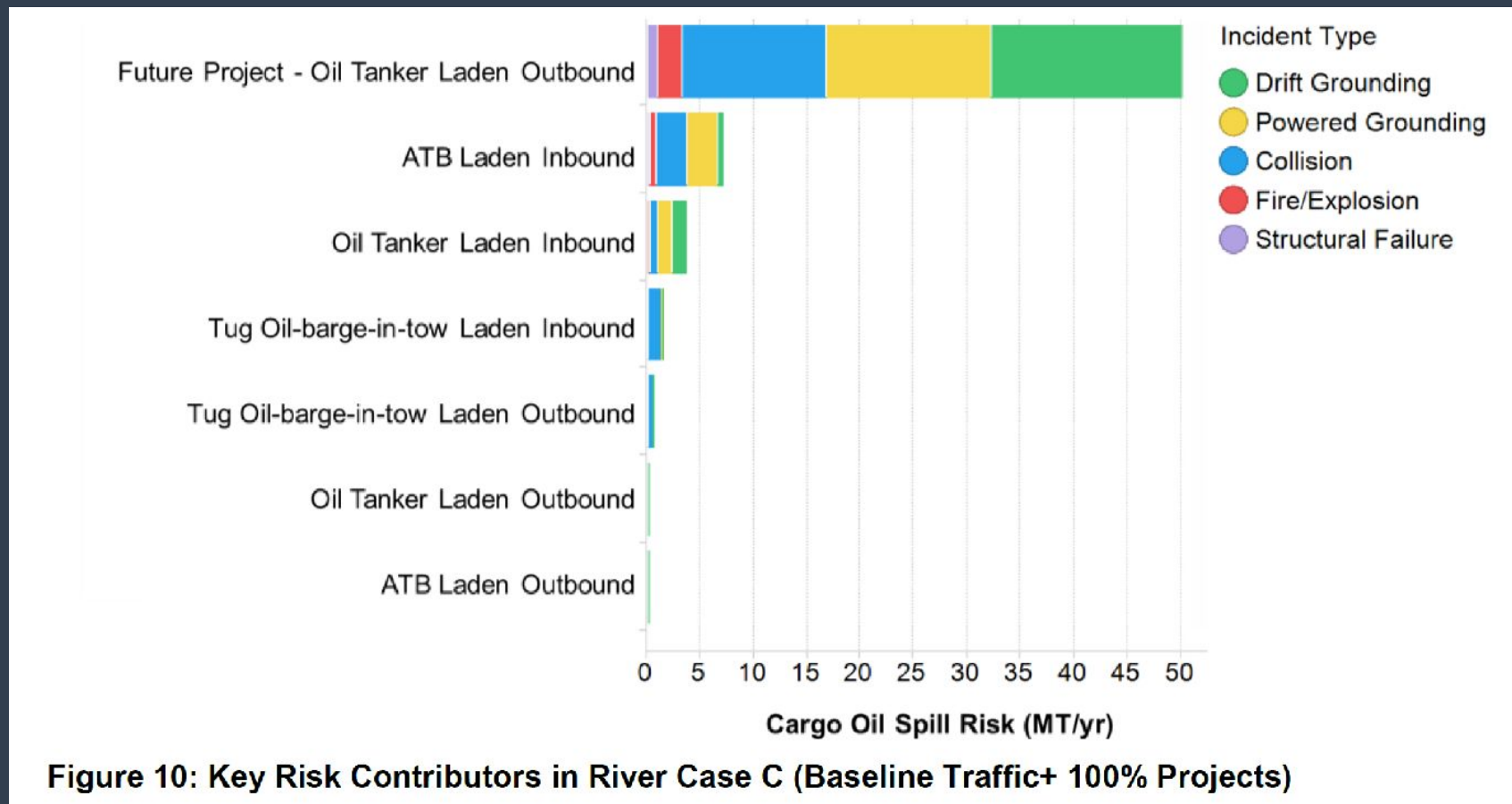


Figure 10: Key Risk Contributors in River Case C (Baseline Traffic+ 100% Projects)

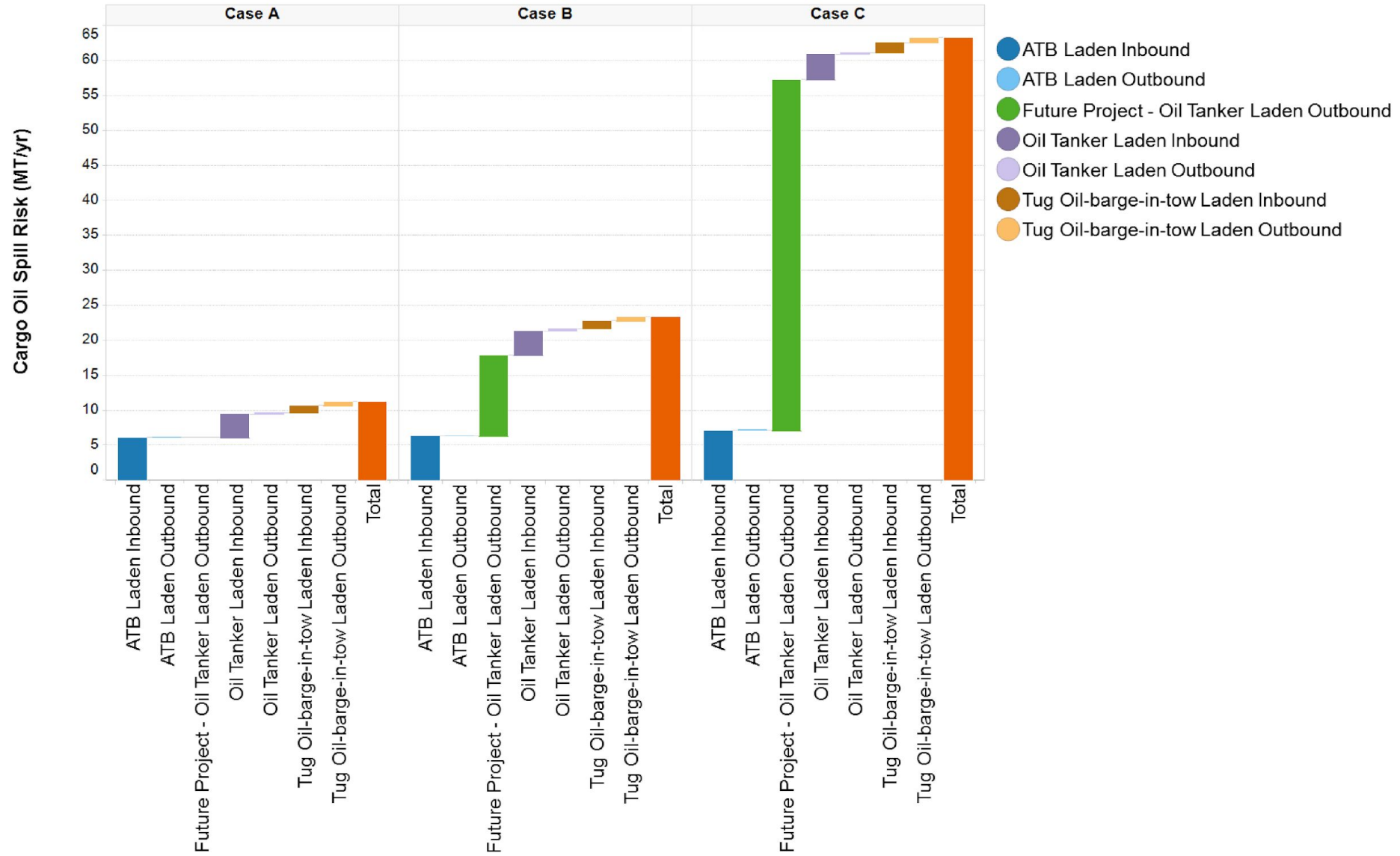


Figure 11: Case Comparison – Detailed Cargo Oil Spill Risk Contributors