DUTCH HARBOR, ALASKA

North American Emissions Control Area

Lessons Learned in California

The Current Situation

- Effective August 01, 2012-International Maritime Organization (IMO)-
  - Ships use 1% Sulfur Fuel Oil or Low Sulfur Fuel Oil (LSFO) within 200 miles of North American Coast

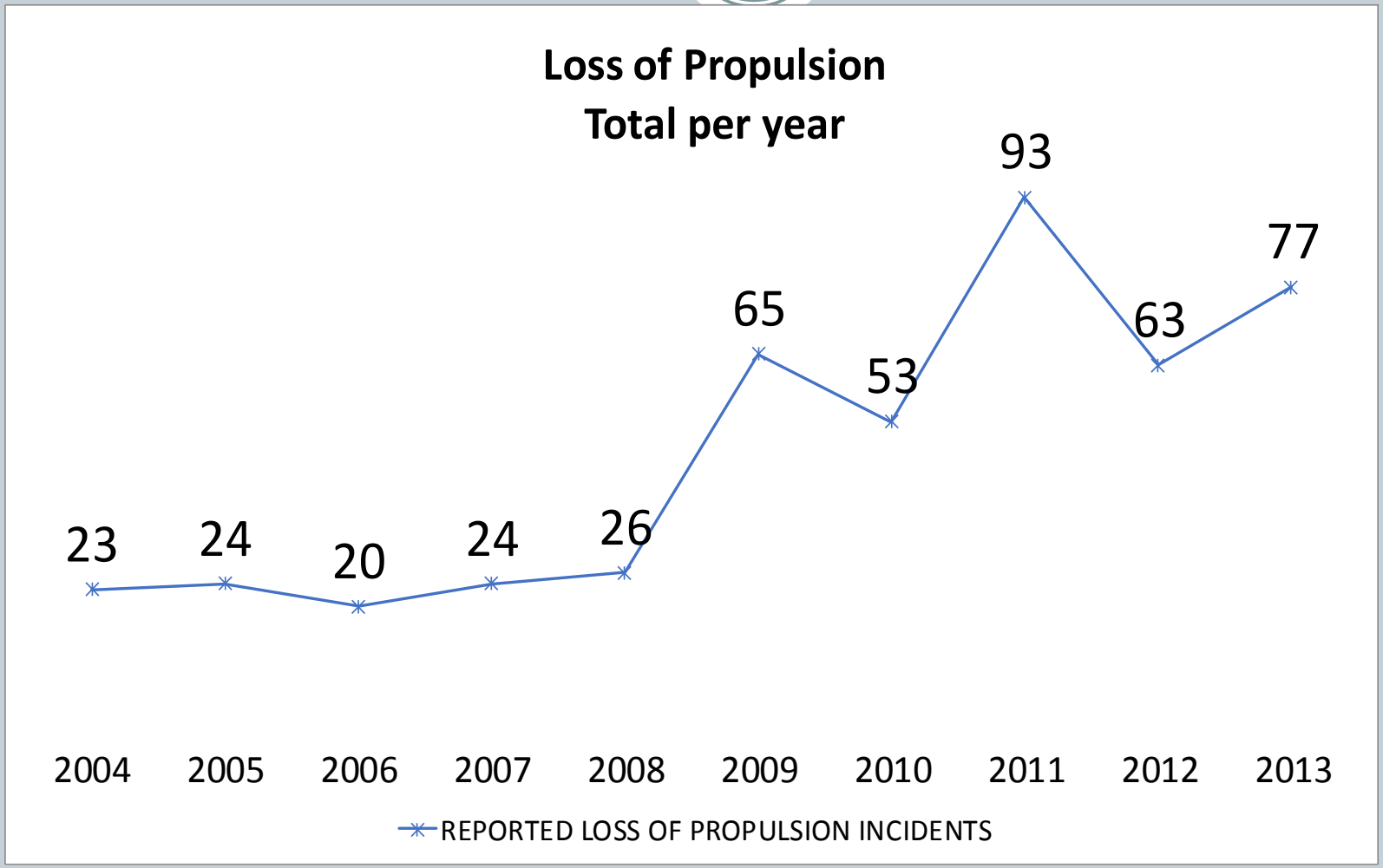
- Effective January 01, 2014- California Regulation- Ultra Low (0.1%) Sulfur Distillate Fuel- 24 miles of shoreline

(1.0% Sulfur Distillate started July 01, 2009. 24 miles of California shoreline)

Upcoming

- Effective January 01, 2015- IMO Ships use 0.1% Sulfur Fuel within 200 miles of North American Coast

Problem!


Loss of Propulsion
Total per year
23
24
20
24
26
65
53
93
63
77
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
REPORTED LOSS OF PROPULSION INCIDENTS

Categories of Loss of Propulsion Incidences

1. Increase in “Failure to Start” scenarios
2. Heat incompatibility issues – Heavy Fuel Oil (HFO) to Distillate fuel
3. Fuel system leakage
4. Clogged strainers and/or fuel filters
5. Distillate less viscous and less lubricity

Suggestions-Ships Arriving in CA Since 7/1/2009

Repeat and Primary Entry

<u>Part One-TRAINING:</u>

- *Within* 45 days prior to entering the Ports of California it is strongly advised ship engineers exercise:

A. Operating main engine from the engine control room.

B. Operating main engine from engine side (local).

Suggestions-Ships Arriving in CA Since 7/1/2009

Part Two – While Underway after Fuel Switching Completed (HFO to Low Sulphur Distillate):

- Ensure one of the senior* engineering officers is in the engine control room while the vessel is in pilotage waters.

*Special Attention to STCW Rest Requirements

Suggested Procedures

1. Ship operators should practice the fuel switch. (Distillate)

2. The ship engineers should practice operating main engine from engine control room and engine side.

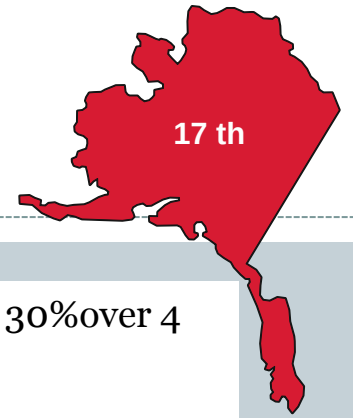
Suggested Procedures

3. Crew should become familiar with “Failure to Start” corrective protocols.

4. While in pilotage waters, one of the senior engineers should be in the ship engine room.

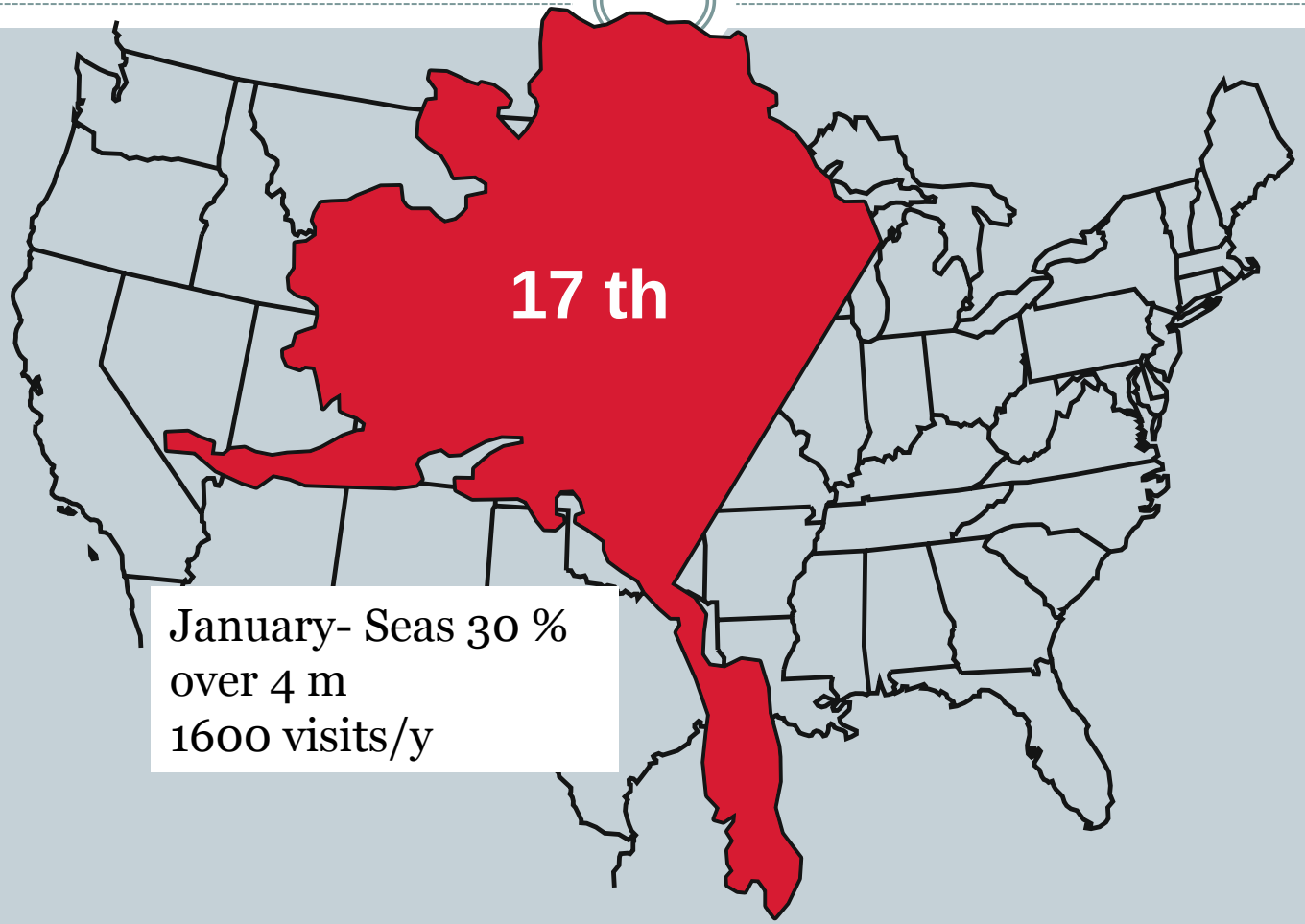
5. Fuel Rack settings/limits and adjusting.

USCG Regions



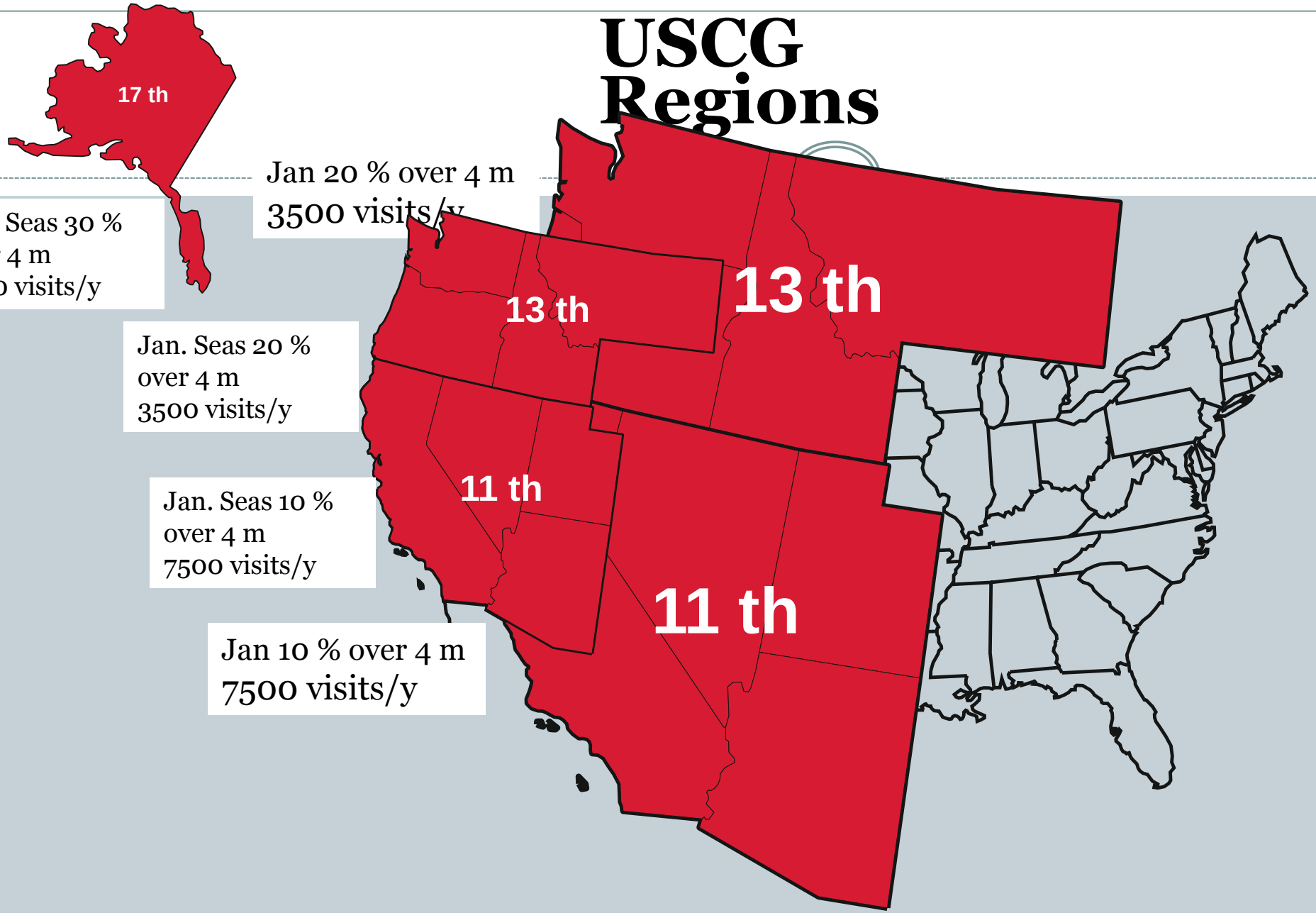
Jan 30%over 4 m

1600 visits/y



January- Seas 30 % over 4 m
1600 visits/y

USCG Regions



Jan 20 % over 4 m
3500 visits/y

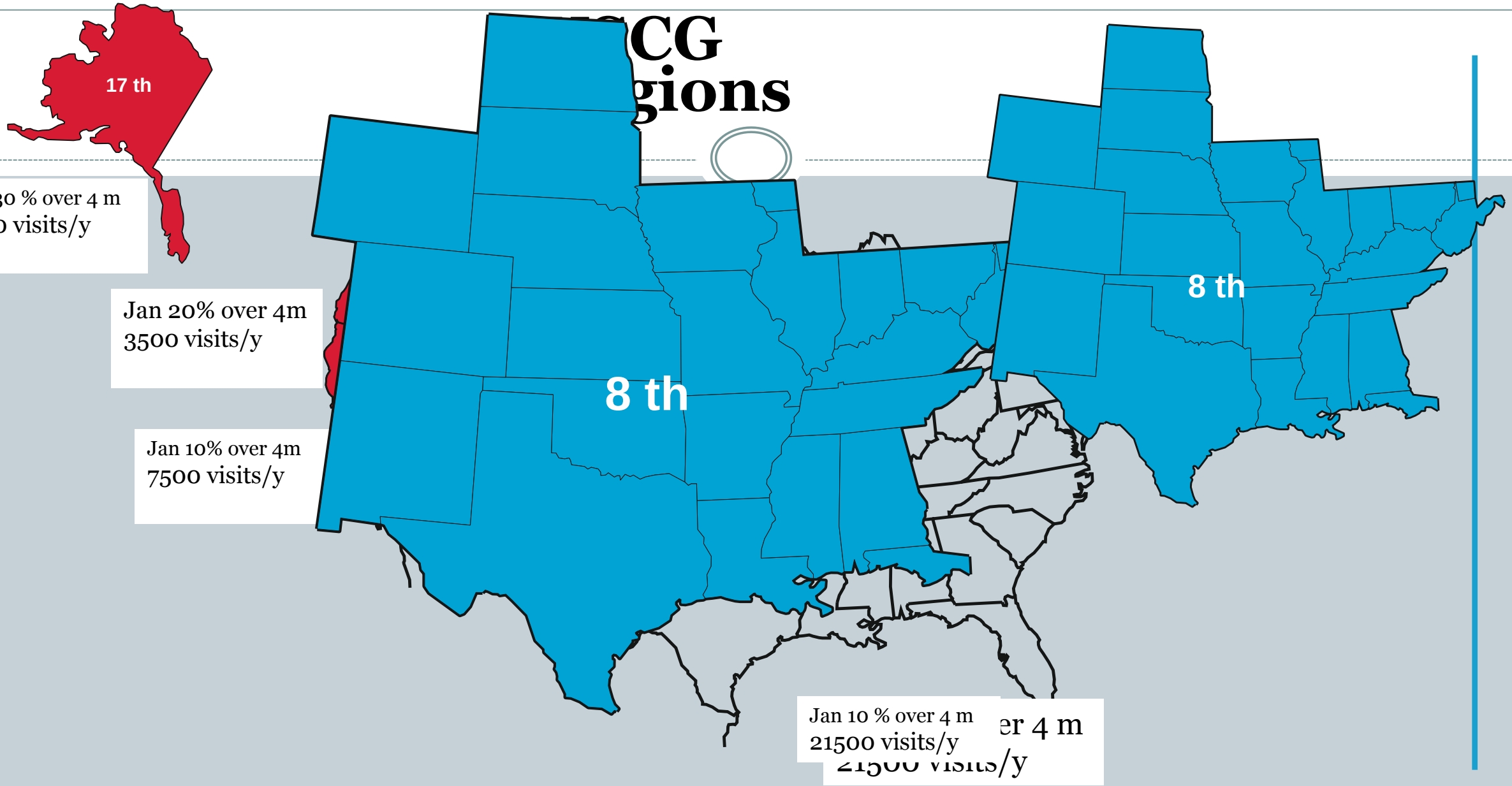
Jan. Seas 30 %
over 4 m
1600 visits/y

Jan. Seas 20 %
over 4 m
3500 visits/y

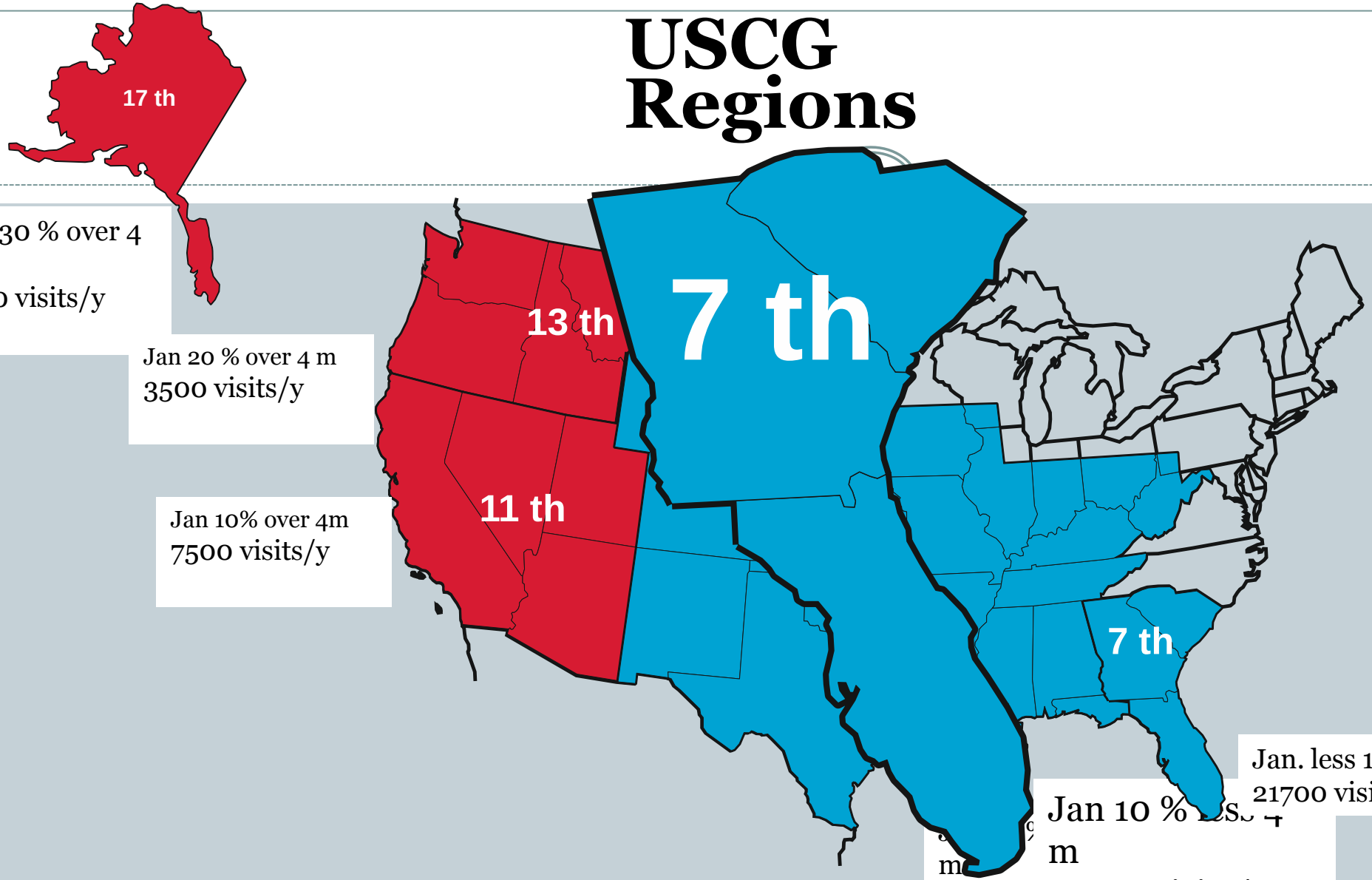
Jan. Seas 10 %
over 4 m
7500 visits/y

Jan 10 % over 4 m
7500 visits/y

CG
gions


17 th
Jan 30 % over 4 m
1600 visits/y
Jan 20% over 4m
3500 visits/y
Jan 10% over 4m
7500 visits/y
8 th
8 th
Jan 10 % over 4 m
21500 visits/y

USCG Regions



Jan 30 % over 4 m
1600 visits/y

Jan 20 % over 4 m
3500 visits/y

Jan 10% over 4m
7500 visits/y

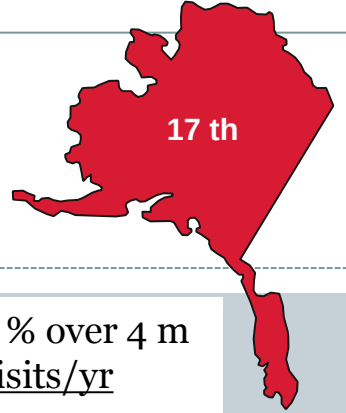
Jan. less 10 % 4 m
21700 visits/y

21500 v

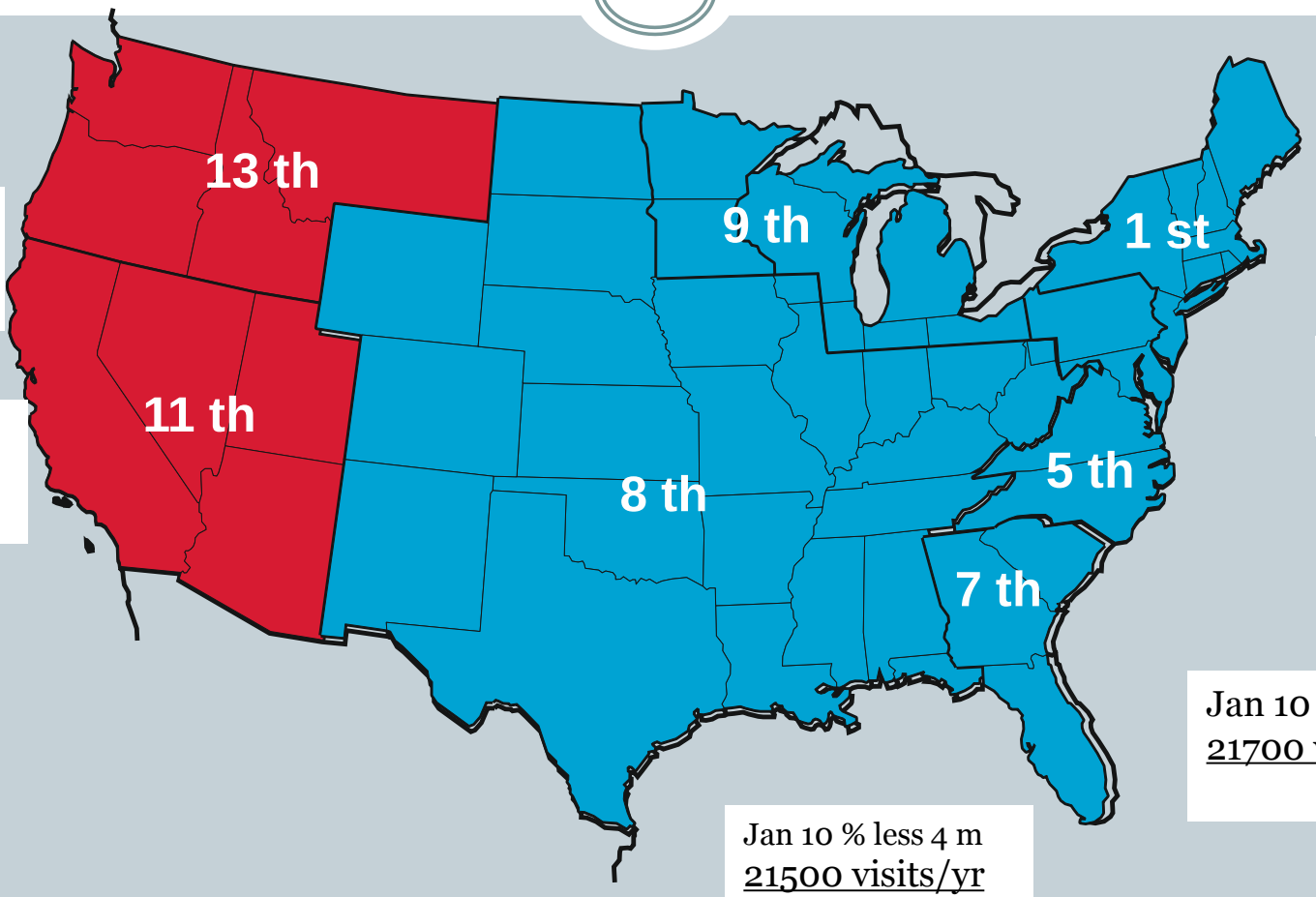
Jan 10 % 4 m
21700 visits/y

USCG Regions

Seas & Ship Arrivals



Jan 30 % over 4 m
1600 visits/yr



Jan 20 % over 4 m
3500 visits/yr

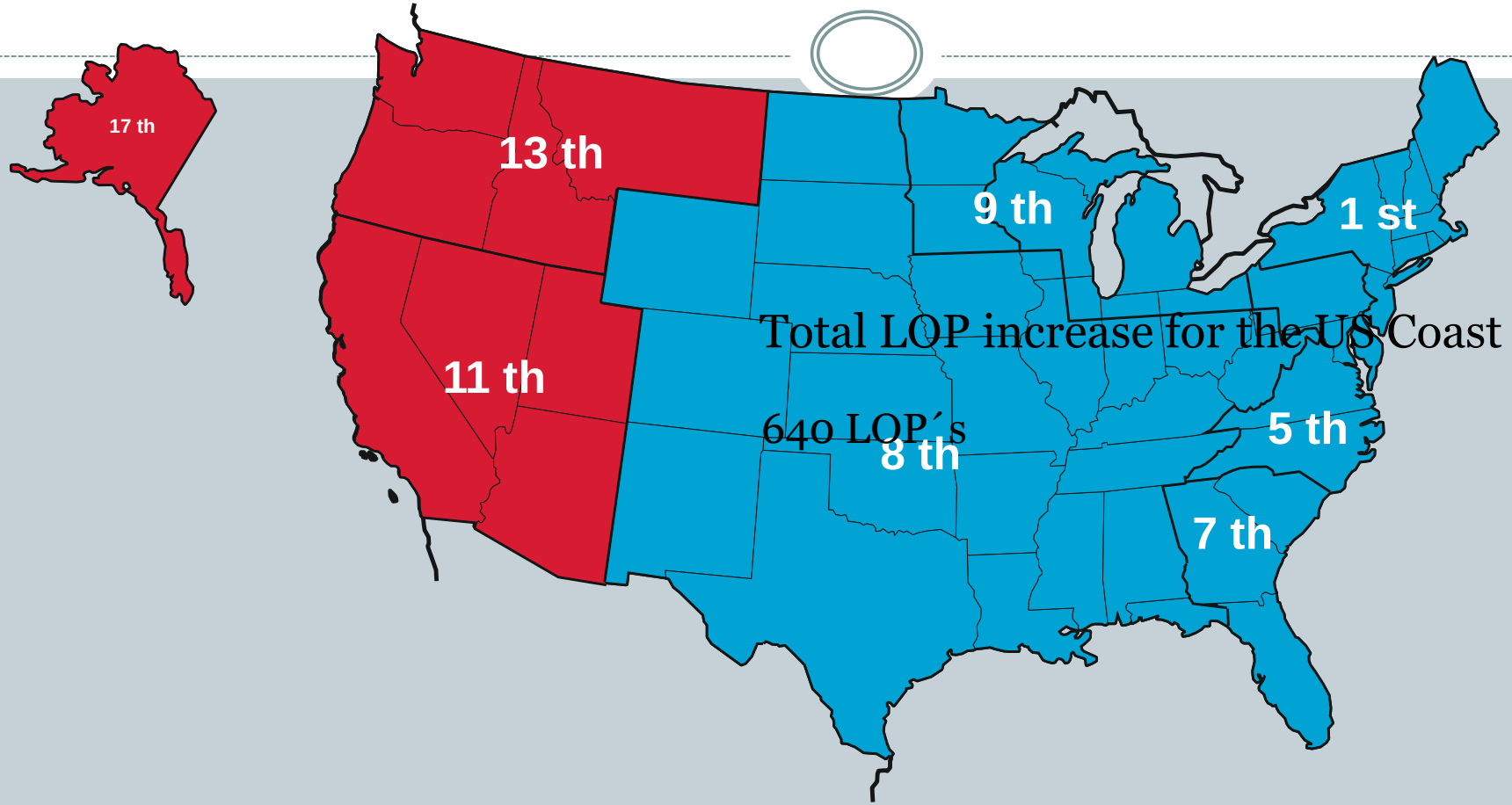
Jan 10 % less 4 m
7500 visits/yr

Jan 30 % over 4 m
12300 visits/yr

Jan 10 % less 4 m
21700 visits/yr

Jan 10 % less 4 m
21500 visits/yr

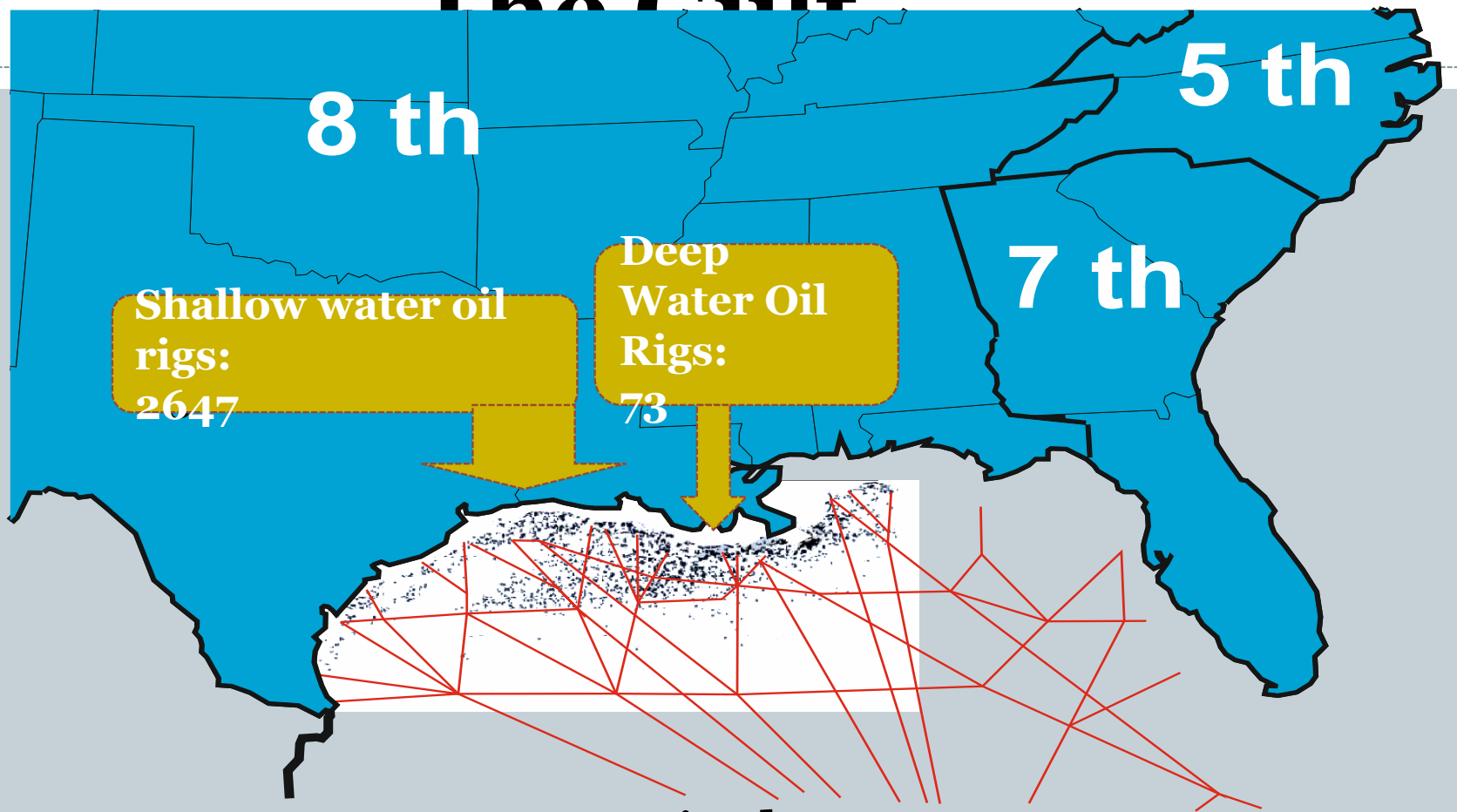
Potential LOP's



Total LOP increase for the US Coast

640 LOP´s

Troubles In The Gulf



21,500 Arrivals per year = 194 LOP's per year! 64 Fuel Related. CA numbers

Barge DBL-152
November 2005


Hole 30 feet x 6 feet
(10m x 2m)

Alternative Routing

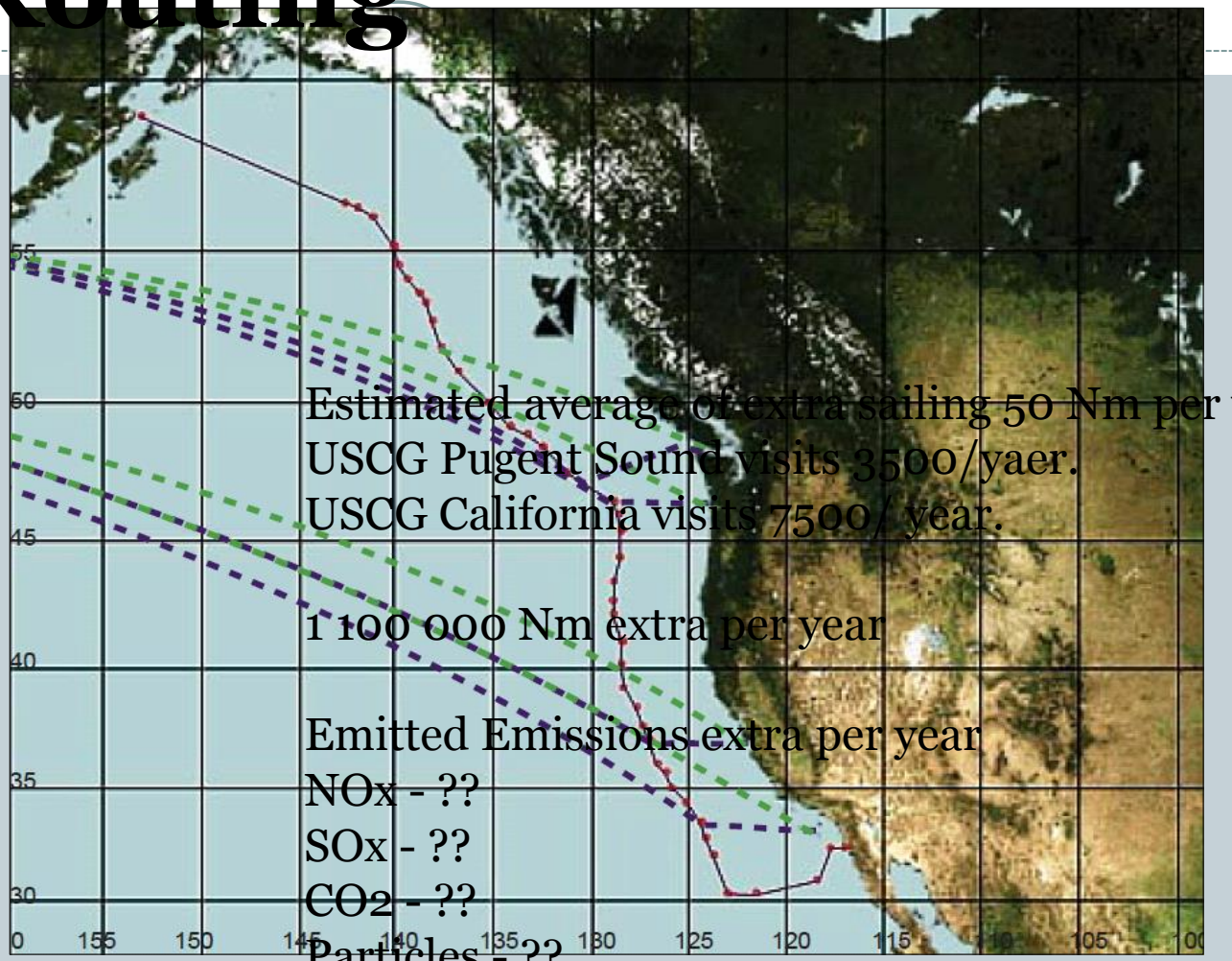
USWC Summary:

Puget Sound
Route Difference: 61nm
ECA Reduction: 273nm

Columbia River
Route Difference: 31nm
ECA Reduction: 254nm

San Francisco
(24nm off Golden Gate)
Route Difference: 33nm
ECA Reduction: 89nm

Los Angeles
(Santa Barbara Ch. Entr.)
Route Difference: 30nm
ECA Reduction: 168nm



Estimated average of extra sailing 50 Nm per visit.
USCG Pugent Sound visits 3500/yaer.
USCG California visits 7500/ year.

1 100 000 Nm extra per year

Emitted Emissions extra per year
NOx - ??
SOx - ??
CO2 - ??
Particles - ??

SOUND MARITIME

Estimated average of extra sailing 50 Nm per visit.
USCG Puget Sound visits 3500/yaer.
USCG California visits 7500/ year.

1 100 000 Nm extra per year

Emitted Emissions extra per year
NOx - ??
SOx - ??
CO2 - ??
Particulate - ??

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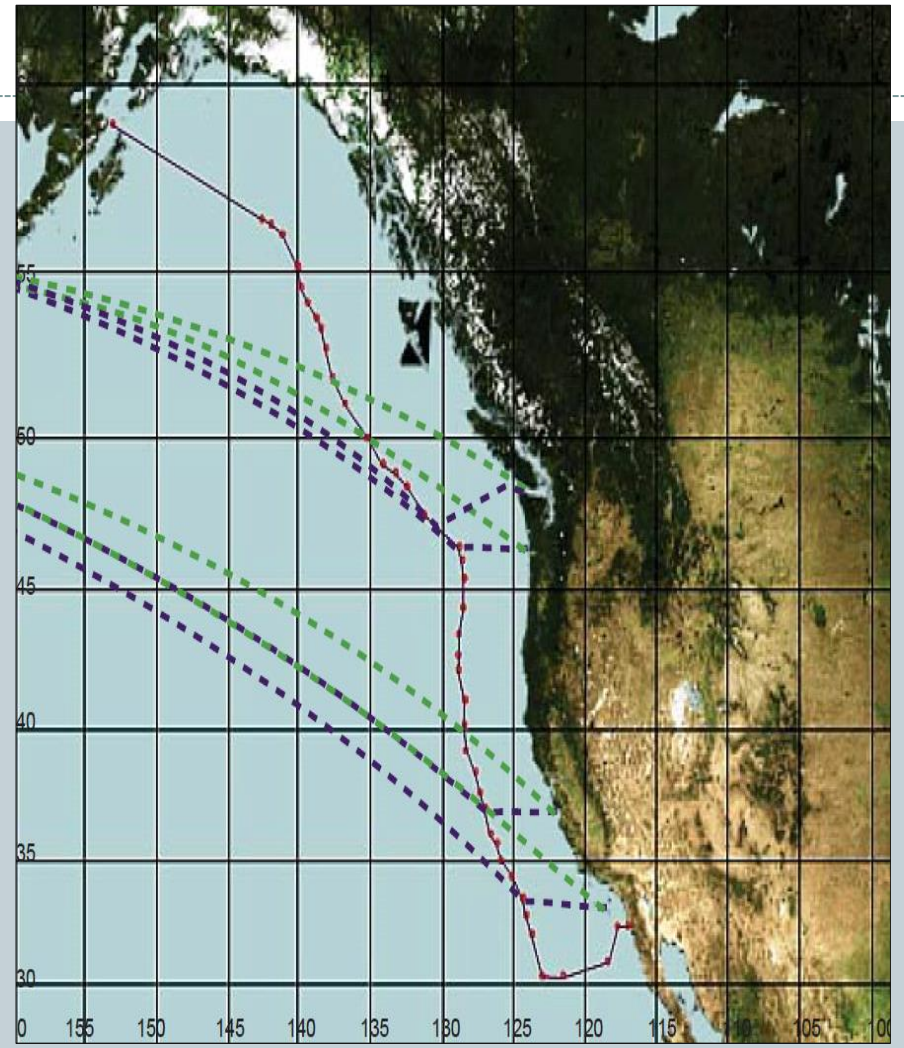


Alternate Routing

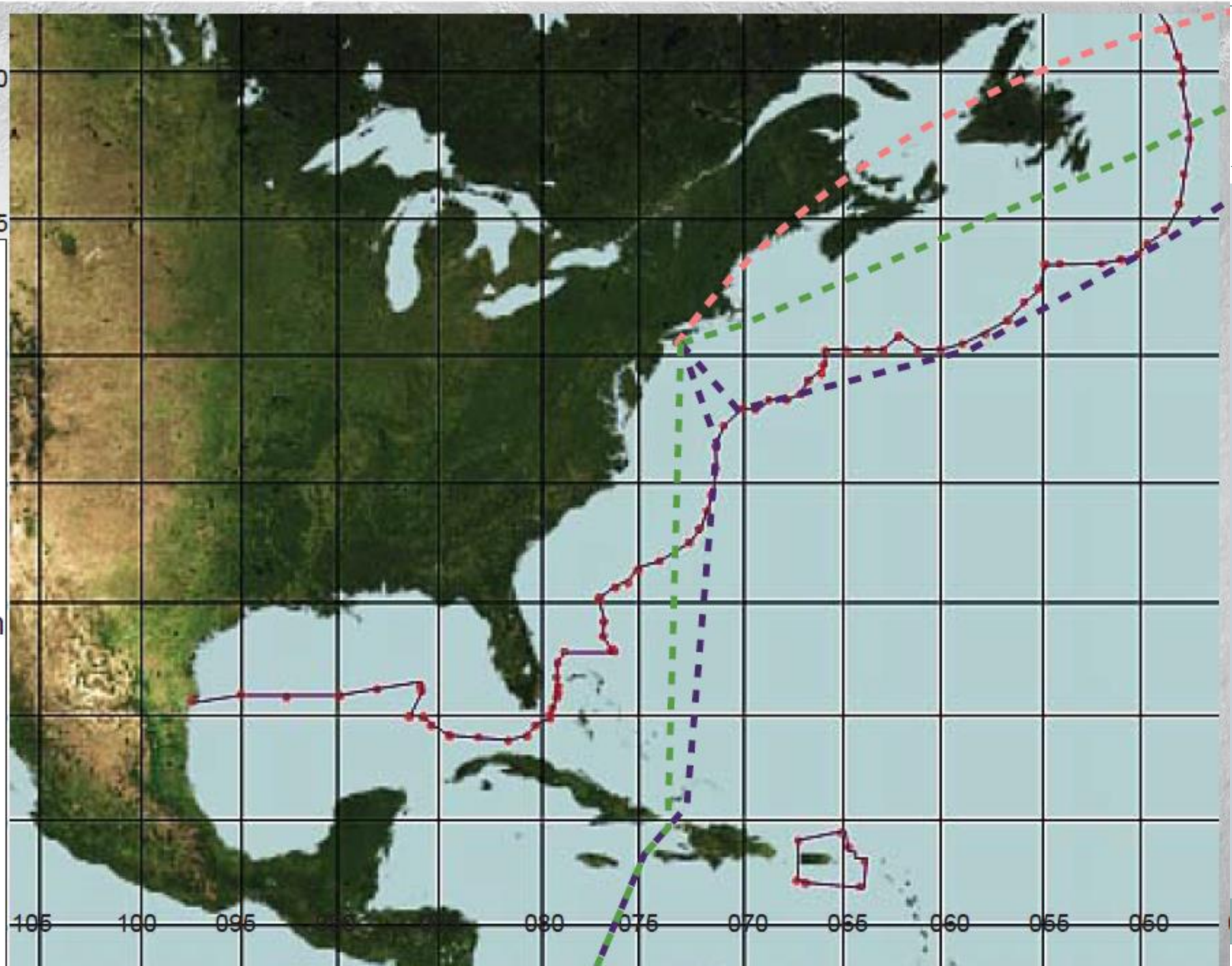
From: NY/NJ
To: Eng Channel
(Bishop Rock, UK)

Std. Distance: 2823nm
Sailed in ECA: 1215nm
Modified Route: 3010nm
New ECA dist: 218nm

Route Difference: 187nm
ECA Difference: 997nm

From: NY/NJ
To: Panama
(Cristobal)

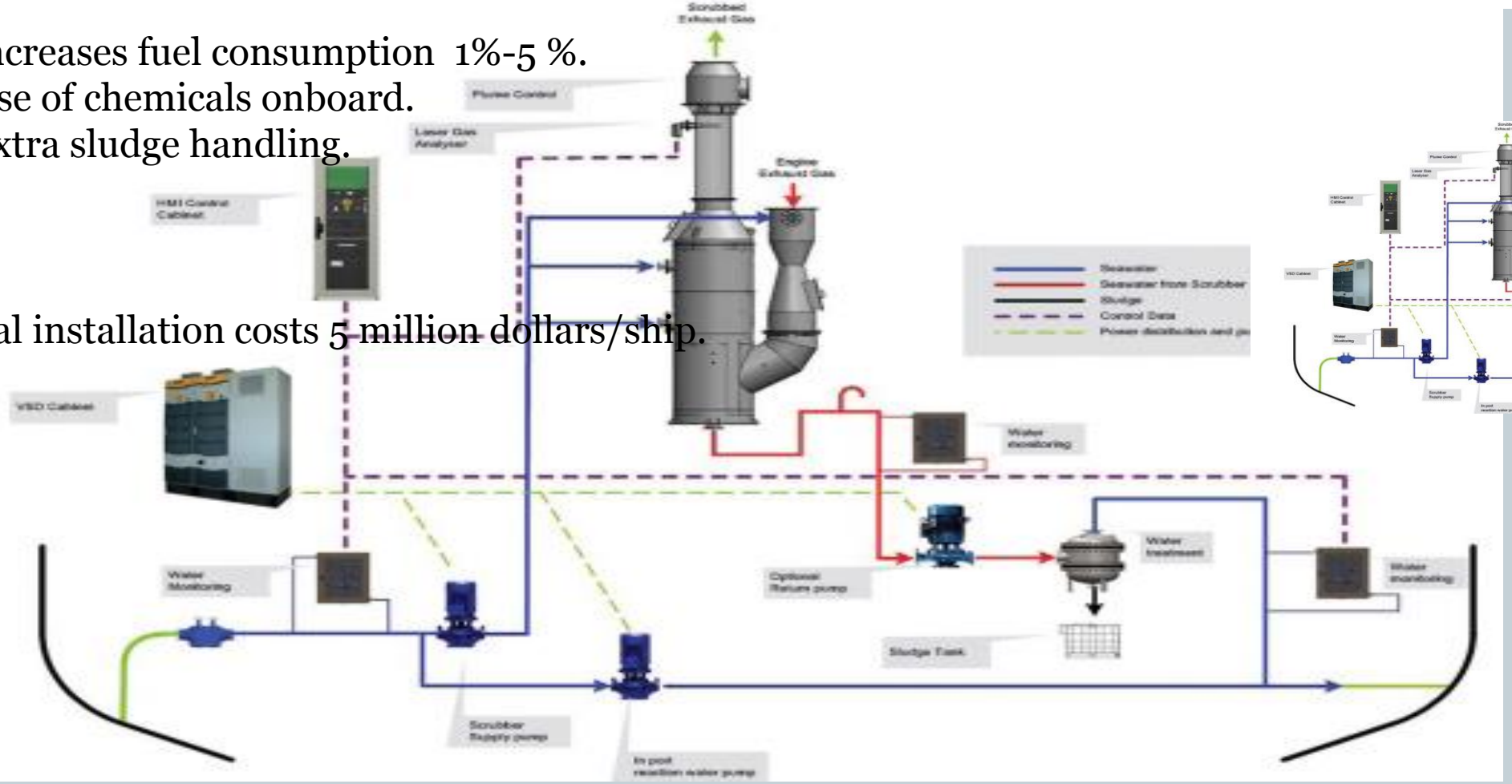
Std. Distance: 1966nm
Sailed in ECA: 465nm

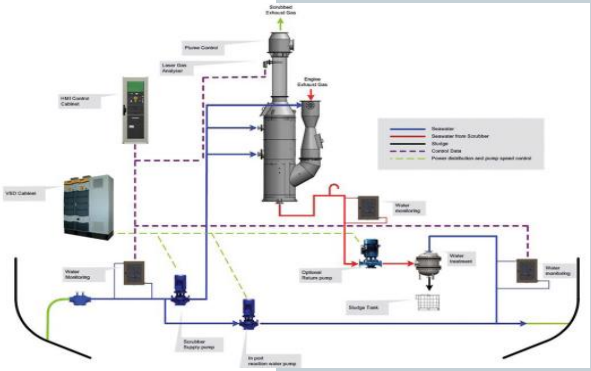


Scrubber Solutions of Today

- Increases fuel consumption 1%-5 %.
- Use of chemicals onboard.
- Extra sludge handling.

Initial installation costs 5 million dollars/ship.





To meet 2015 standards, operating solely in the ECA

- Caustic soda
- 1 railcar per week

- Fresh Water
- 2/3 of an olympic pool per week

Sludge truck
1 per week
Hazmat

CEECM

Resulting European acidification, eutrophication and health impacts for HFO 0,5 % relative to MDO, 2020 (positive sign = improved environmental situation).

	Acidification	Eutrophication	PM2.5 Health risk	O3 Health risk
HFO 0,5 % rel. MDO	0.4%	0.9%	0.0%	0.1%

Resulting external costs from the emissions from the three ships for the different cases in $ per NM.

Ship	MDO	HFO 0,5 %
RoPax	194	155
Tanker	26	22
General cargo	42	37

Comparison-Hmm

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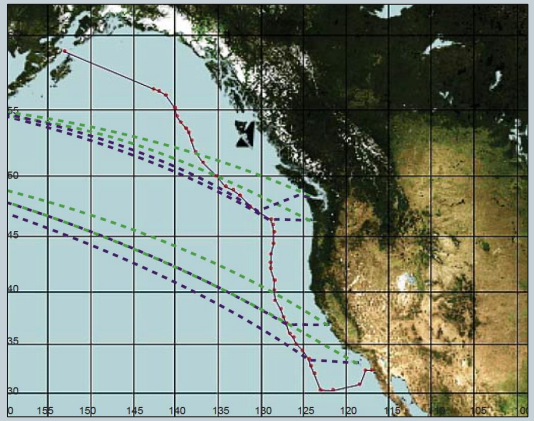

Estimated average of extra sailing 100 Nm per visit.
USCG Pugent Sound visits 3500/yaer.
USCG California visits 7500/ year.

1 100 000 Nm extra per year at the west coast only.

Emitted extra emissions:
Nox - ??
Sox - ??
Co2 - ??
Particles ??

Answers?

Bio-Diesel: Problem-Hygro-scopic!

L N G!: Problem- Bunkering(US)

Pending and Available Resources

- Guidelines for avoiding LOP incidents available - 2014 US Coast Pilot Guidebook #7 (Edition 46, Page 256)
  - Available online (www.noaa.gov)

Data Sources

- USCG District 11
- USCG Sector San Francisco
- USCG Sector Los Angeles / Long Beach
- The Marine Exchanges of Southern California & San Francisco
  - VTS LA/LB
  - VTS SF
- Wartsila
- MAN B&W
- Pilot organizations of San Francisco, Los Angeles & Long Beach
- APL Maritime, LTD
- Hans Muellar, MTD
- KPI
- DNVFS
- Claes Jakobssen, C-Energy

Thank You

Captain Jeff Cowan

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