Programmatic approaches – GHG & noise reductions

IMO Expert Workshop on relationship between Energy Efficiency & Underwater Radiated Noise

Theme 4: Bridging gaps & going to scale

19 September 2023

Bruce Anderson, Principal
Starcrest Consulting Group, LLC
- Ports
- Regional initiative
- Maritime industry initiative
Ports

- Focused on air quality pollutants & more recently focusing on GHGs
- Several ports use a combination of data sources to conduct & track ship emissions
  - AIS data
  - vessel boarding data
  - port data sources
  - IAPH ESI data
  - commercial vessels parameter data sets
- Vessel speed reduction for some ports is a key emission reduction strategy
- Ports are working with the maritime industry to support & promote just-in-time arrival
  - Co-benefits – vessel speed, anchorage times, emissions, URN, & whale strike
Port examples

- Port of Los Angeles & Port of Long Beach
- Air quality strategy
- First port-led voluntary/incentive-based vessel speed reduction program
- Established 2005
- 12 knots
- Over 90+% annual compliance
- Co-benefits recognized
- Quantified benefits

https://www.portoflosangeles.org/environment/air-quality/vessel-speed-reduction-program
https://polb.com/business/incentives/#green-flag-program
Port examples

- Port Authority of New York & New Jersey
- Air quality strategy
- Established 2012
- Voluntary/incentive based
- 10 knots
- Extends & expands NOAA's Right Whale Ship Strike Reduction Rule
- Quantified benefits

Port examples

- Port of Vancouver
- Unique as the program was started to reduce URN & now assessing co-benefits in emission reductions
- 11 & 14.5 knots
- Two areas & lateral displacement zone
- Quantified benefits
Regional example

- Protecting Blue Whales & Blue Skies
- Broad coalition
- Building from the POLA/POLB VSR program
- Voluntary VSR program
- Southern & central California coast
- Combined URN, whale strike, & emission reductions
- Fleet based program
- 10 knots
- Quantified benefits
Regional example
Season Highlights

- 23 global shipping companies participated
- Total VSR distance: 266,148 nautical miles
- Air pollution (NOx) reduced by: 921 tons
- Regional greenhouse gas emissions reduced by: 32,604 metric tons
- Ocean noise reduced by: 4.6 db/transit on average
- Risk of ship strikes to whales reduced by: 44%

2022 Fleet Cooperation Awards

Participating companies received awards and recognition based on the percentage of total nautical miles traveled at 10 knots or less by each company’s fleet of vessels.

Sapphire Tier (85-100%):

Gold Tier (60-84%):

Blue Sky Tier (35-59%):
Regional example

**“Protecting Blue Whales and Blue Skies” Vessel Speed Reduction Program**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VSR Zone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Barbara Channel Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Barbara Channel Region &amp; San Francisco Bay Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong># Companies</strong></td>
<td>7</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>15</td>
<td>16</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td><strong># Vessels</strong></td>
<td>14</td>
<td>25</td>
<td>44</td>
<td>295</td>
<td>349</td>
<td>483</td>
<td>545</td>
<td>684</td>
</tr>
<tr>
<td><strong>Slow-speed Distance (nautical miles)</strong></td>
<td>2,700</td>
<td>5,000</td>
<td>12,630</td>
<td>46,026</td>
<td>99,019</td>
<td>181,306</td>
<td>179,530</td>
<td>266,148</td>
</tr>
<tr>
<td><strong>Overall Fleet Cooperation</strong></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>36%</td>
<td>55%</td>
<td>60%</td>
<td>64%</td>
<td>78%</td>
</tr>
<tr>
<td><strong>NOx Reductions (tons)</strong></td>
<td>12.4</td>
<td>25.6</td>
<td>84</td>
<td>266</td>
<td>536</td>
<td>748</td>
<td>650</td>
<td>921</td>
</tr>
<tr>
<td><strong>Regional GHG Reductions (metric tons)</strong></td>
<td>535</td>
<td>1,005</td>
<td>2,630</td>
<td>8,668</td>
<td>17,026</td>
<td>24,258</td>
<td>22,201</td>
<td>32,604</td>
</tr>
<tr>
<td><strong>Ocean Noise Reduction</strong> <em>(Decibels [dB] / transit)</em></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1.0</td>
<td>--</td>
<td>2.3</td>
<td>4.1</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Ship Strike Risk Reduction</strong> <strong>(</strong></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>35%</td>
</tr>
</tbody>
</table>

*Represents the decrease in noise from participating vessels in the Southern California Region.
**Represents the proportional decrease in risk from participating vessels and not absolute estimates of mortality avoided.

https://www.bluewhalesblueskies.org/
Maritime industry initiative

- 2020-2022 container ship queueing at POLA & POLB
- Pandemic + logistics chain disruptions
- 100+ container ships at local anchorages
- Significant increase in air quality pollutants & GHG emissions
- Racing to the 20 nm line to enter port arrival queue
- Voluntarily changed point to last port departure prior to calling ports
- Established Safety & Air Quality Area
- Co-benefits: reduction in speed, URN, whale strike severity, & emissions
New queuing system effectiveness on local anchorages

2020 - 17 Aug 2023 daily POLA container ship anchorage counts

New Queueing System

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

ό at local anchorage
What was avoided by the new queuing system
Thank You!

Bruce Anderson
Principal
andersob@starcrestllc.com
1.360.930.2523
www.starcrestllc.com

photographs © Starcrest 2023
© POLA 2023

Note: when viewing our website please consider: The site had been "under construction" for 16+ years prior to the current version. We do not focus our efforts on our website, as we’re too focused on our clients’ work. Thanks for your consideration!