BRINGING LNG TO THE MARITIME INDUSTRY

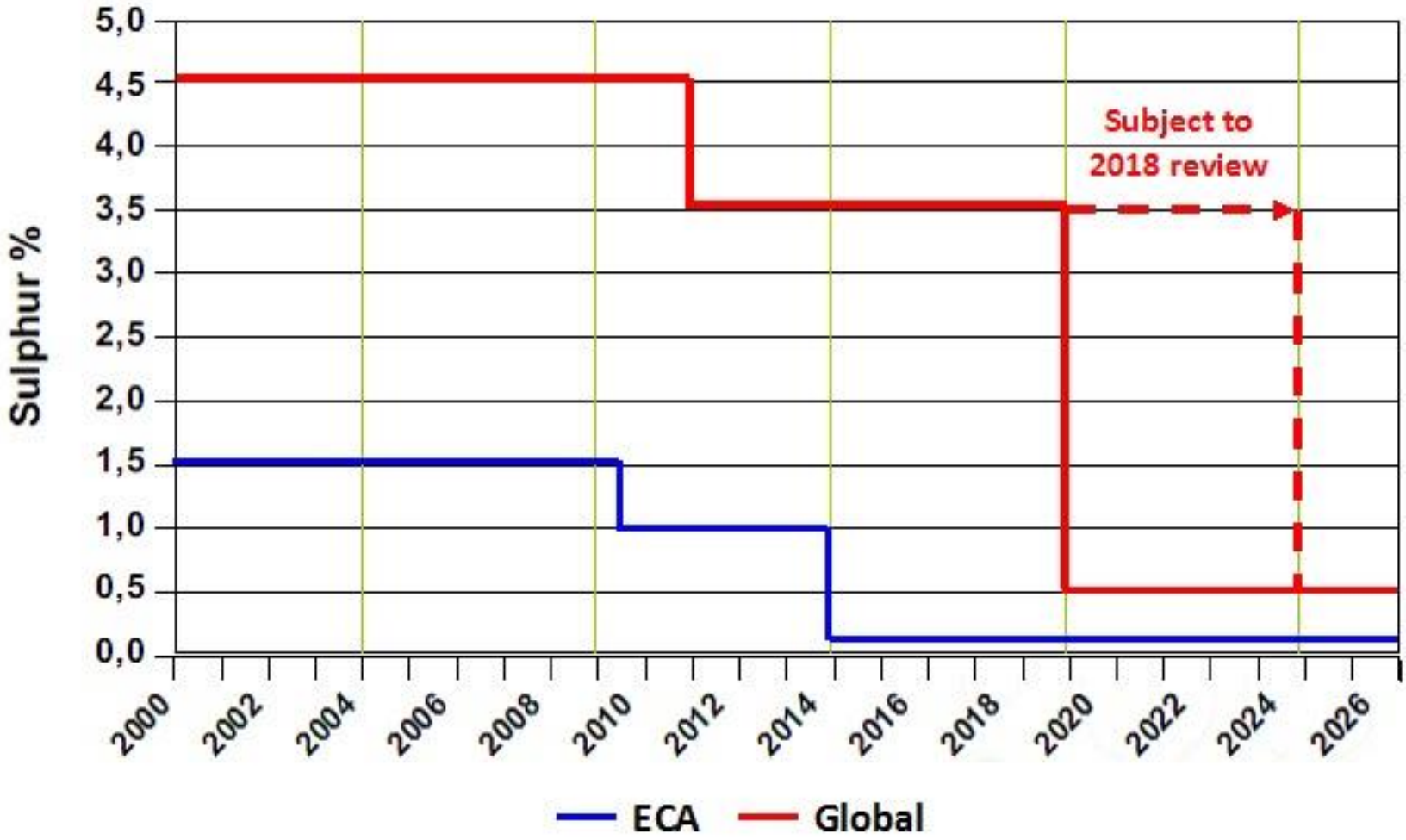
SALTCHUK

AIR CARGO	MARINE SERVICES	PETROLEUM DISTRIBUTION	SHIPPING & LOGISTICS *domestic*	SHIPPING & LOGISTICS *international*	TRUCKING & LOGISTICS *nationwide*	TRUCKING & LOGISTICS *alaska*
Aloha Air Cargo	AMNAV	Delta Western / Inlet Petroleum	TOTE Maritime Alaska	CaribTrans Logistics	Interstate Distributor Co.	Carlile
Aloha Tech Ops	Cook Inlet Tug & Barge	Hawaii Petroleum	TOTE Maritime Puerto Rico	Deluxe Freight	Interstate Logistics	Carlile Logistics
NAS Contract Services	Foss Maritime	Minit Stop	TOTE Services	Seven Seas Insurance	Spectrum Transportation	
Northern Air Cargo	Young Brothers			Tropical Shipping		
Northern Air Maintenance Services				VI Cargo Services		

updated 2.15.16

Environmental Consciousness

North American Emission Control Area (ECA)
Challenge and Opportunity



Possible Solutions

- **Do nothing:** Cost of 1% compliant IFO 380 is significantly higher with further increases expected in 2015 and beyond
- **Install exhaust gas cleaning system:** Scrubbers use existing fuel with added costs
- **Convert to Natural Gas:** Meet all current and future emissions requirements, cleanest of all options

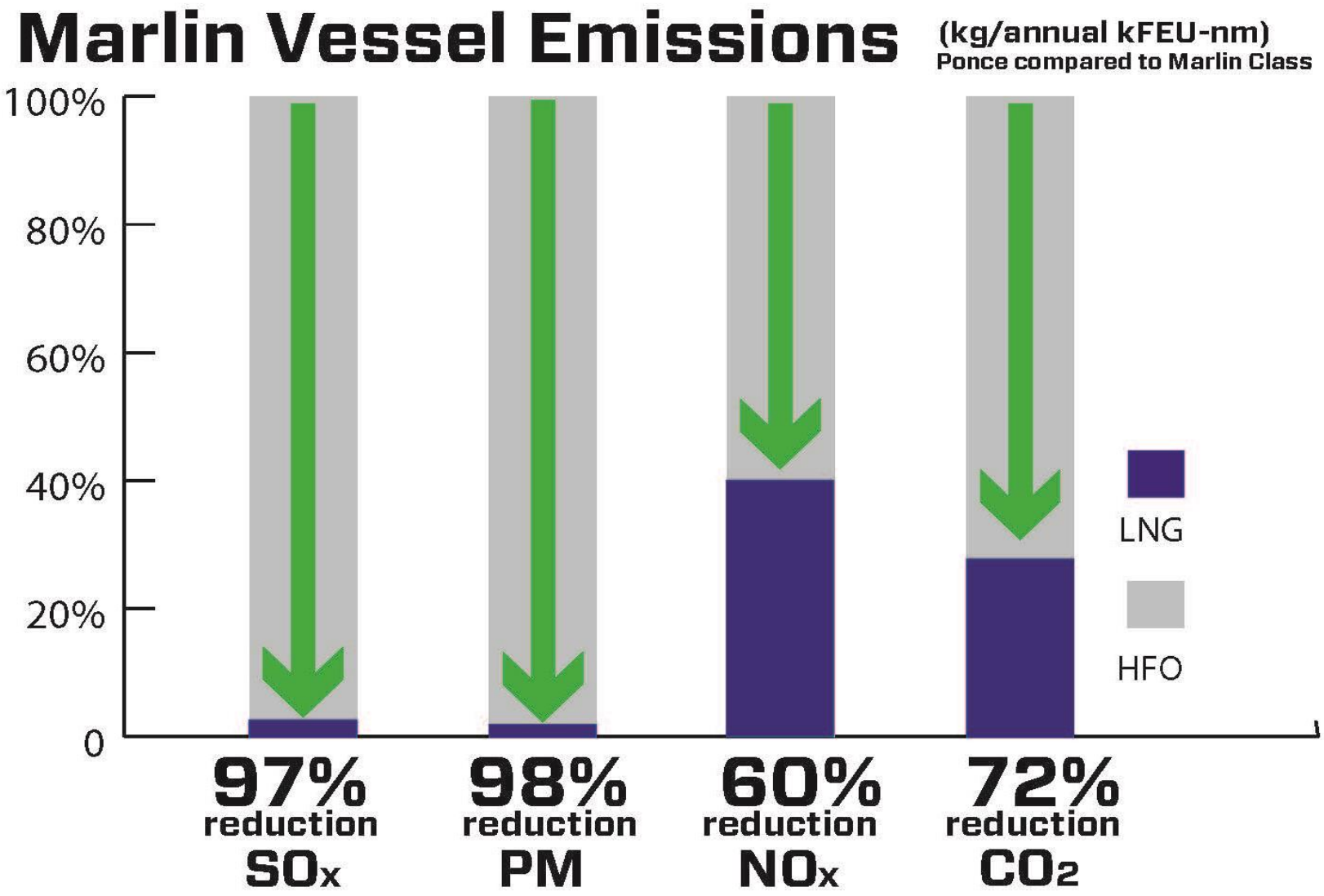
Address the CORE Issue

LNG - A Clean & Safe Fuel

- Conversion to natural gas will reduce ship emissions well below even the world's most stringent air quality standards that are outlined in the North American Emissions Control Areas
- LNG will virtually eliminate Particulate Matter (PM) and dramatically reduce Sulfur Dioxide (SOx), Nitrous Oxide (NOx) and Carbon Dioxide (CO2).

No other viable fuel source provides the same levels of environmental safety

Emissions Comparison: *Ponce* versus *Marlin*

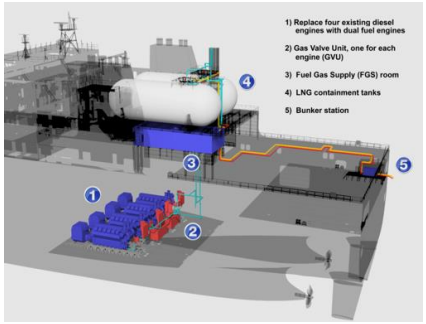
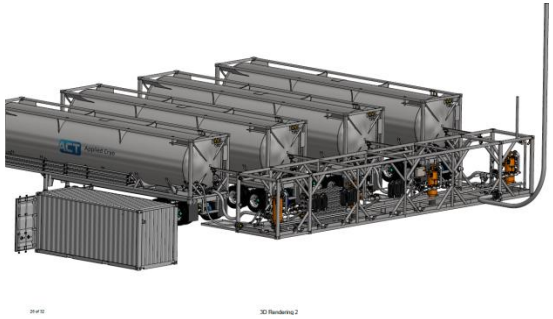


The TOTE LNG Program

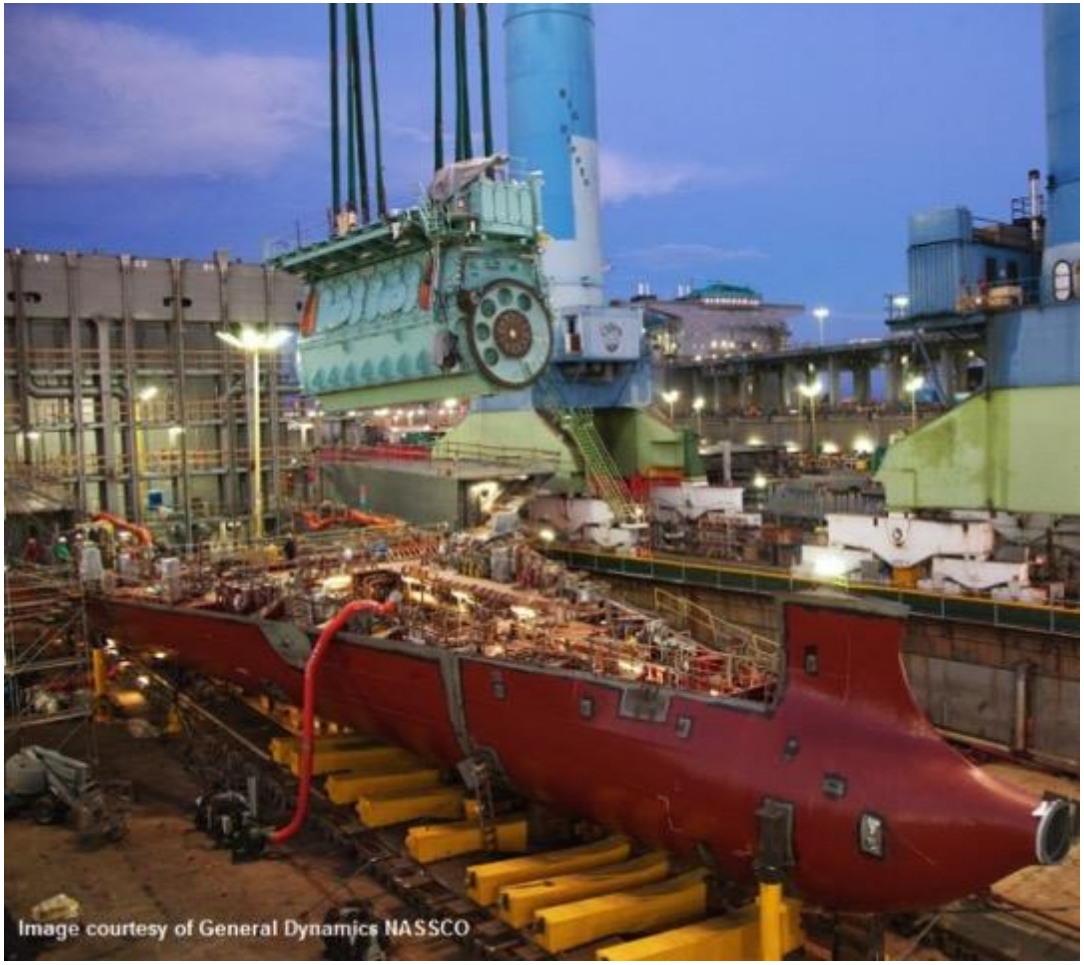
Encompassing every aspect of Maritime LNG

- New Builds – Marlin Class
- Re-engine – Orca Class
- Long Term LNG fuel procurement
- Development of Liquefaction plants with our partners
- LNG transfer to vessels
  - Multiple and mobile truck transfer to vessel
  - Barge to vessel transfer
  - Plant to vessel via cryogenic pipeline

TOTE's LNG Projects

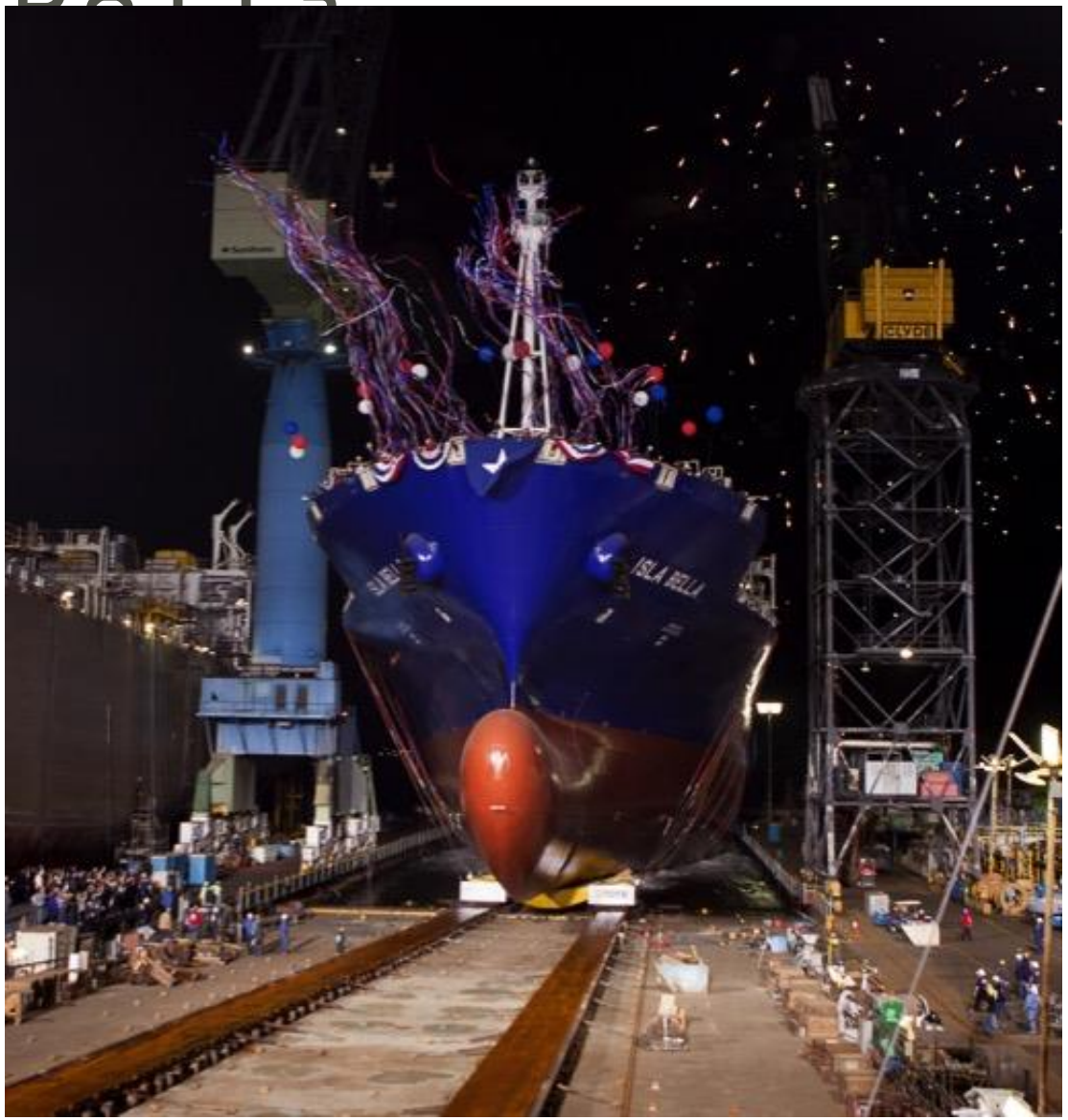
LNG Barge: Jacksonville	Marlin Class Ships: Jacksonville	Orca Class Ships: Tacoma
		
		

Marlin Class



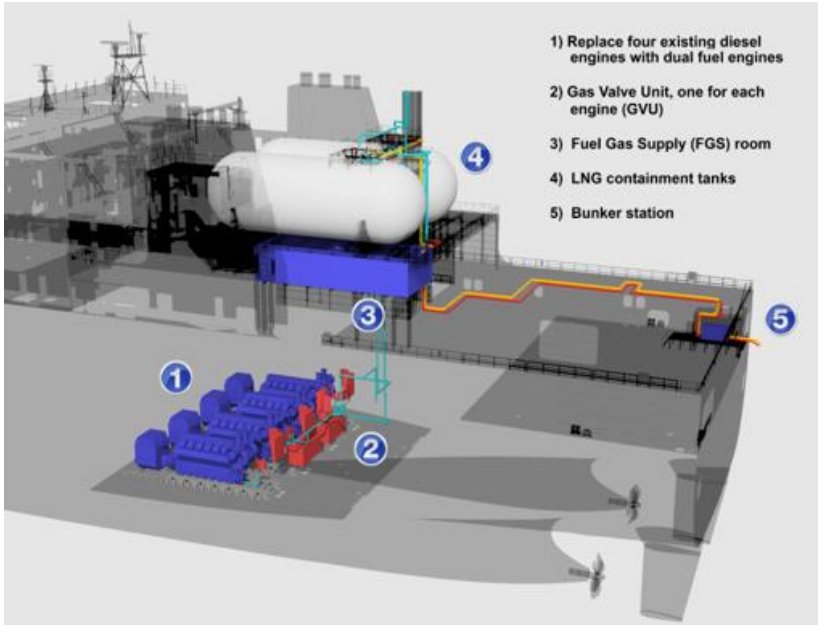
- Slow speed MAN ME-GI engine fueled by LNG. (Engine No 1&2)
- Dual fuel capable
- Two 900 cubic meter LNG tanks
- Main and Auxiliary Engines manufactured by Doosan

Launch of the Isla Bella



Twice Weekly Service to San Juan

Orca Re-Engine



- Built for Alaska
- Dual fuel capable Wartsila engines.
- Bunker in Tacoma
- Minimal out of service time during re-engining

LNG Supply to the Vessels

The Critical Issue

- No ready supply of fuel in any of the Ports served
- Liquefaction plant development time exceeds vessel construction or conversion time – **An important planning element**
- Significant investment required in both Jacksonville, Florida and Tacoma, Washington
- Standard setting for future Maritime applications
- Provides fuel source for growth in Maritime and other modes such as truck, rail

LNG Supply Timeline

Four Distinct Phases

- Jacksonville Short Term (Oct 2015)
  - Truck to vessel transfer
- Jacksonville Long Term (late 2016/ early 2017)
  - Plant to barge to vessel
- Tacoma Short Term (1st Qtr. 2016)
  - Truck to barge to vessel
- Tacoma Long Term
  - Cryogenic pipeline to vessel

First LNG Bunkering

JAX LNG Jacksonville Project

- LNG liquefaction plant and marine berth situated on 37 acre industrial water front property on the St. Johns River
- New build bunker barge
- Serve TOTE Maritime Puerto Rico and other marine customers situated in the Jacksonville area
- Actively targeting other markets, including power, trucking and rail
- Anticipated in-service date of Q1 2017. On schedule

Bunker Barge

- GTT Mark III Flex Membrane
- GTT designed unloading arm
- 2 submerged cryogenic pumps
- Radar tank gauging
- High and high-high level alarms
- Pressure and temperature sensors
- Emergency Shutdown System (ESD) – manual and remote
- Boiloff gas reliquifiers – 6 cryocoolers

Puget Sound Energy - Tacoma

Lessons Learned

- Environmental issues and doing what is right is important and sells!!
- Vessel technology is not THE major issue but LNG integration requires significant attention
- Having set deployments is a major advantage to LNG logistics but will change over time as LNG plants are developed and commissioned
- Long term commitments are essential. Must be **ALL IN!!**
- Partners are the key to success
  - Regulators are an integral part of the process
  - Need to have passion, expertise and look ahead
  - Leading edge does NOT have to be bleeding edge

The Way Ahead

- LNG is an important environmentally superior maritime fuel
- American technology and know how coupled with abundant supplies draw a positive picture going forward
- American shipyards are leading the way together with American labor and knowhow
- American leadership at all levels must embrace this technology and we must ALL move forward together


SEA STAR
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