

# Introducing Trucking by Water: California's Maritime I-5 Seaway

How US ships built in US shipyards can revolutionize transportation  
in California and the United States

Presentation to The Governor's Freight Movement Council  
& Homeland Security by The Santa Maria Group

# The Shipyard

Santa María Steel LLC



A lattice boom construction crane will lift ship units into the drydock for erection

A parcel of land with drydocks at the Mare Island Navy Shipyard can be economically converted to a modern US ship assembly plant – land under negotiation today

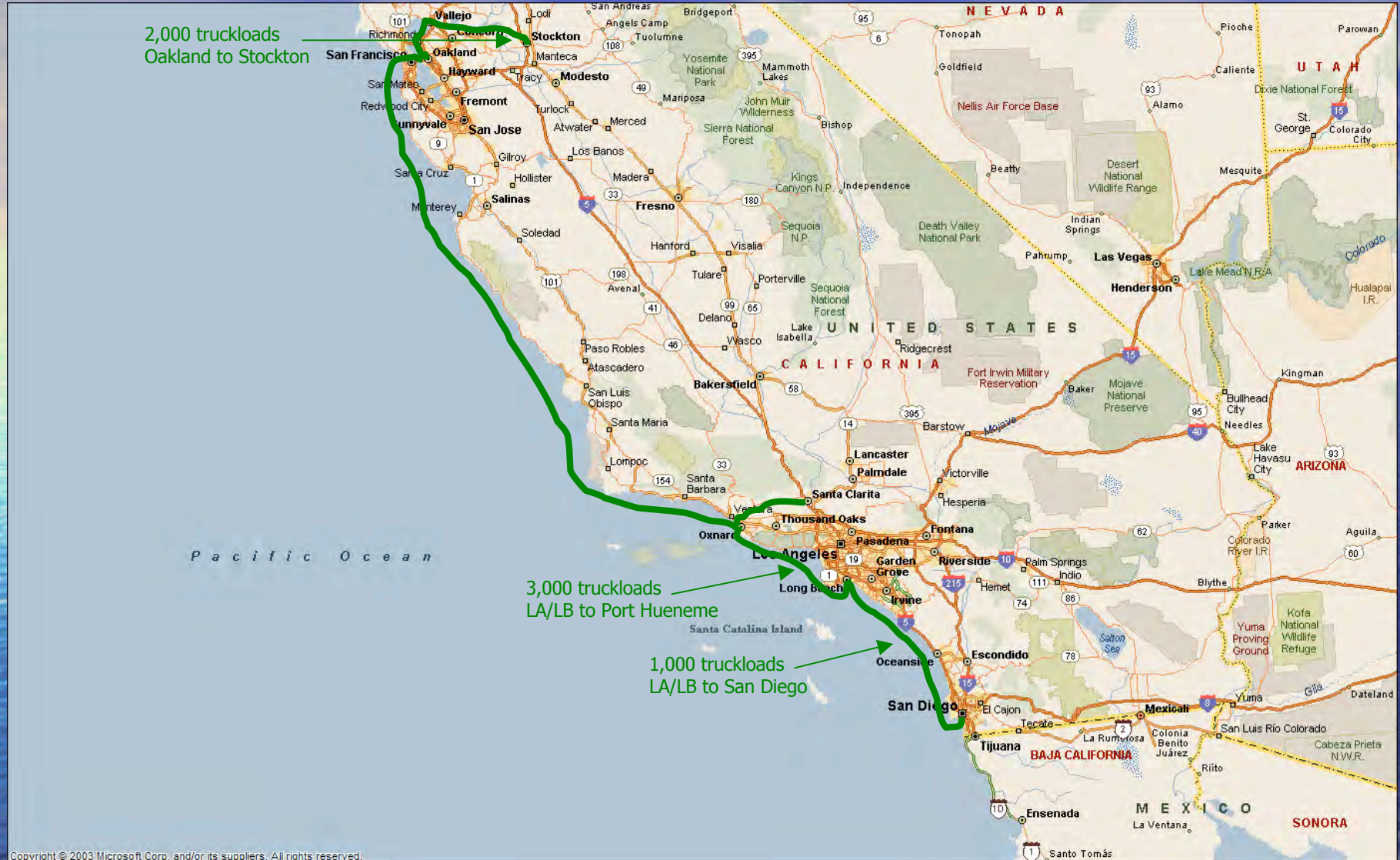
# The Ship

Santa María Shipping LLC



Existing design Conofeeder of 150 forty foot container capacity means that within a 24 hour round trip =  $150 \times 2$  trips = 300 containerized truckloads per day

# California's New I-5 Seaway: 6,000 Containerized Truckloads by Water per Day



1 Ship = 300 daily truckloads X 20 Ships = 6,000 truckloads / day  
1 ship = \$15 million X 20 ships = \$300 million

# Estimated Transit Times Savings to Shippers

- Trucking by water from LA/LB = 24 hours savings in deliveries
- Trucking by water from Oakland = 12 hours savings in deliveries
- Additional benefits are...
  - Reduced atmospheric pollution – cleaner air
  - Reduced noise pollution – healthier citizens
  - Reduced congestion – safer roads
  - Reduced road damage – reduced cost of road repair
  - Reduced fuel consumption – less reliance on imported fuel
    - But we are getting ahead of ourselves!

# Delivery Cost Savings to Shippers

(1 containerized truckload / round trip at 12/05)

- Trucking from Oakland to Stockton distribution centers = \$475/container
  - Trucking by water from Oakland to Stockton distribution centers = \$270/container + \$150 drayage = \$420/container
- and
- Trucking from LA/LB ports to Southern California distribution centers = \$475/container
  - Trucking by water from LA/LB to Oxnard/San Diego = \$270/container + drayage

NOTE: Trucking rates assume \$2.50 gallon diesel fuel cost. Higher fuel prices will result in a 55% REDUCTION in delivery costs per container when trucking by water

# Pollution: One ship engine eliminates 300 truck engines on long distance trips

Current commercial vessels have a number of fuel and propulsion options

- Diesel electric drives having multiple generators utilizing direct, azimuth or cycloid type propulsion systems reduce fuel consumption by always working at high efficiency

Fuel options include

- Ultra Low Sulfur Diesel Fuel with <5 ppm sulfur
- Low Sulfur Diesel Fuel with <15 ppm sulfur
- Liquefied Natural Gas used in a Compressed Natural Gas format
- Dual Fuel Engines combining

Low Pressure Natural Gas and Low/Ultra Low Sulfur Diesel Fuel

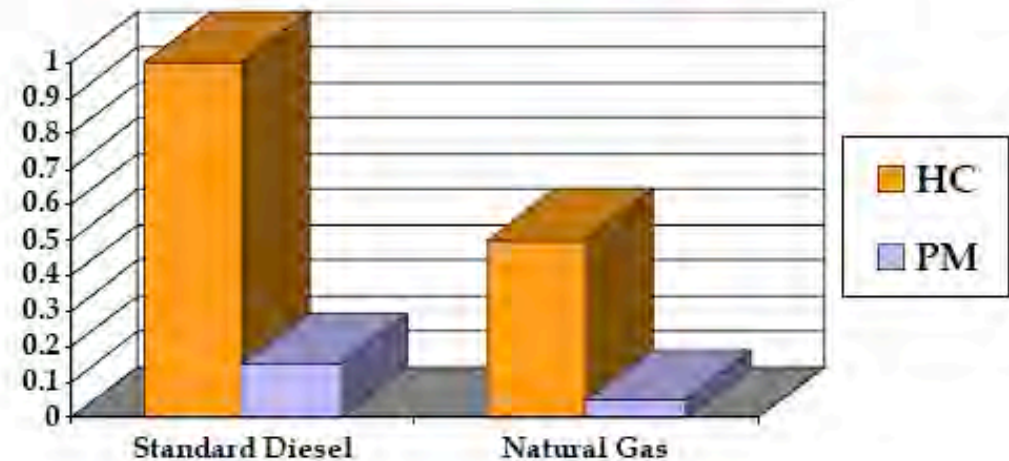
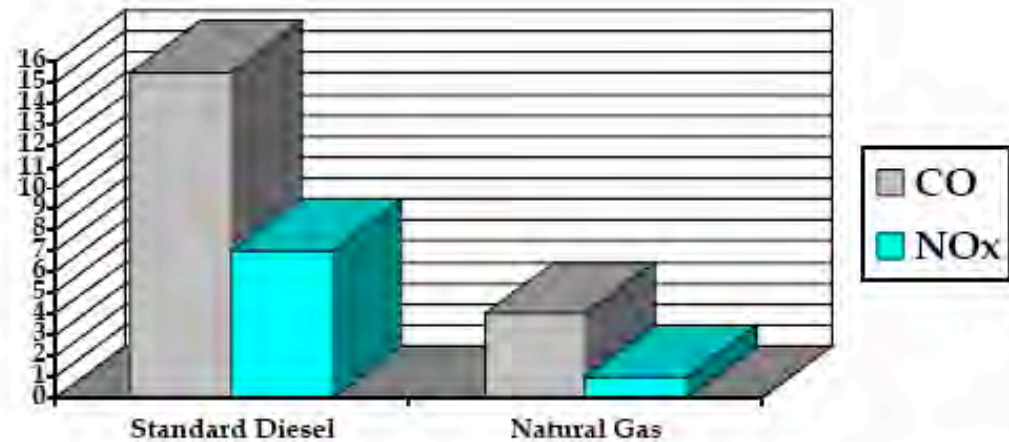
# Duel Fuel Examples



Wärtsilä 6L50DF

- High efficiency
- Low gas pressure
- Low emissions, due to:
  - High efficiency
  - Clean fuel
  - Lean burn combustion
- Fuel flexibility
  - Gas mode
  - Diesel mode
- Two engine models
  - Wärtsilä 32DF
  - Wärtsilä 50DF

# Emissions



## STANDARD DIESEL

4000 hours @ 1000kW

CO =  $(15.5 \times 4000 \times 1000) = 62$  Tonnes

NOx =  $(7 \times 4000 \times 1000) = 28$  Tonnes

HC =  $(1 \times 4000 \times 1000) = 4.0$  Tonnes

PM =  $(0.15 \times 4000 \times 1000) = 0.6$  Tonnes

## NATURAL GAS

4000 hours @ 1000kW

CO =  $(4 \times 4000 \times 1000) = 16.0$  Tonnes

NOx =  $(1 \times 4000 \times 1000) = 4.0$  Tonnes

HC =  $(0.5 \times 4000 \times 1000) = 2.0$  Tonnes

PM =  $(0.05 \times 4000 \times 1000) = 0.2$  Tonnes

# Taxpayer Savings & New Economic Development for California

- Diminishes need for \$5.5 billion to widen 710 freeway
- One ship can reduce freeway maintenance costs by \$1 million per year
- Create new shipbuilding industry in California
- Creates new port business and jobs for Oxnard (Port Hueneme), San Diego, Stockton and potentially Sacramento, San Francisco. Note: ports will require terminal upgrades

# Port Security and Emergency Services

- Satellite ports can expedite container screening
- Satellite ports offer terminal alternative in an emergency
- Maritime I-5 service is an alternative in case of earthquake or influenza panic

# Conclusion

- Service diminishes need for \$5.5 billion widening of 710 and other freeway spending
- One ship = 300 truckloads per day = \$15 million X 20 ships = 6,000 truckloads by water @ \$300 million (+ \$250 million port & rail upgrades = \$550 million)
- Delivery time savings = 12 to 24 hours per container
- Money savings to shippers = over 10% savings (\$55/container Oakland to Stockton)
- Fuel consumption: 55% less consumption per container load
- Emission reductions: one ship eliminates 300 long-haul truck trips with new marine engines