



**WEST COAST COLLABORATIVE**

Public-private partnership to reduce diesel emissions

# *LNG Technologies for West Coast Diesel Emission Reductions*

March 21, 2005

Seattle, WA

Erik Neandross



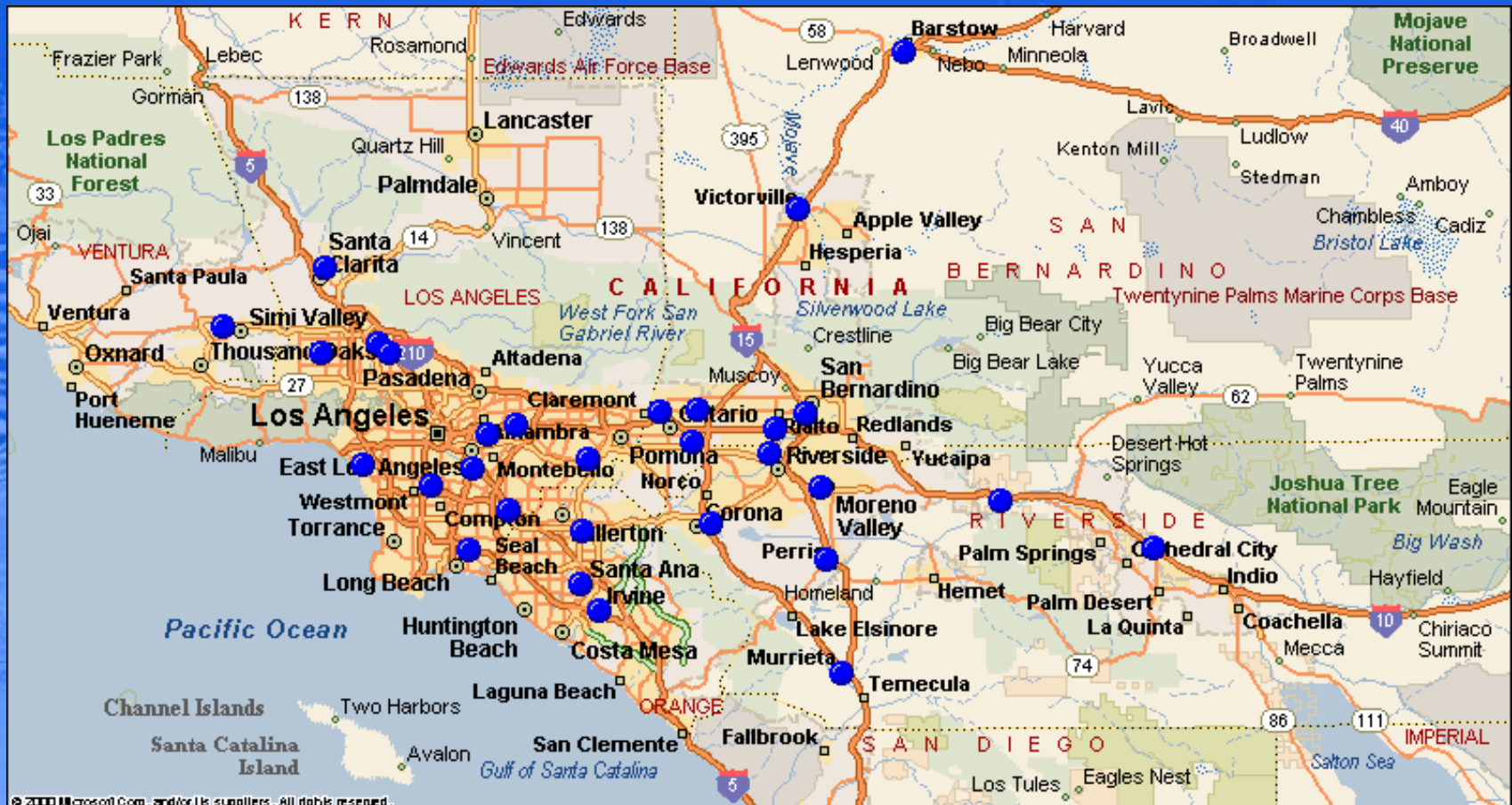
# *LNG Transportation Projects*

	<u>U.S.</u>	<u>CA</u>
<b>Existing Projects</b>	<b>66</b>	<b>52</b>
<b>No. LNG Vehicles</b>	<b>2,411</b>	<b>1,614</b>
<b>No. LNG Stations</b>	<b>49</b>	<b>35</b>
<b>New LNGVs (1-2 yrs)</b>	<b>1,171</b>	<b>726</b>
<b>New Stations (1-2 yr)</b>	<b>19</b>	<b>18</b>

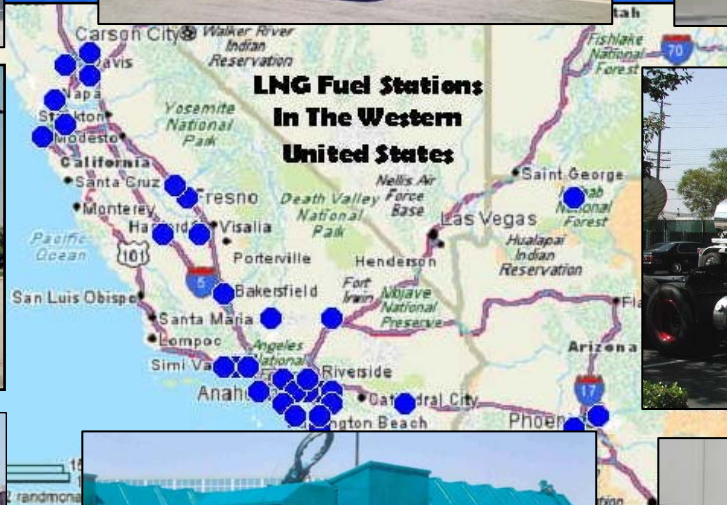
# Existing LNG Fuel Stations



# Southern California LNG Stations



# Heavy-Duty LNG Fleet Vehicles



# LNG for Agriculture



# LNG for Construction Applications

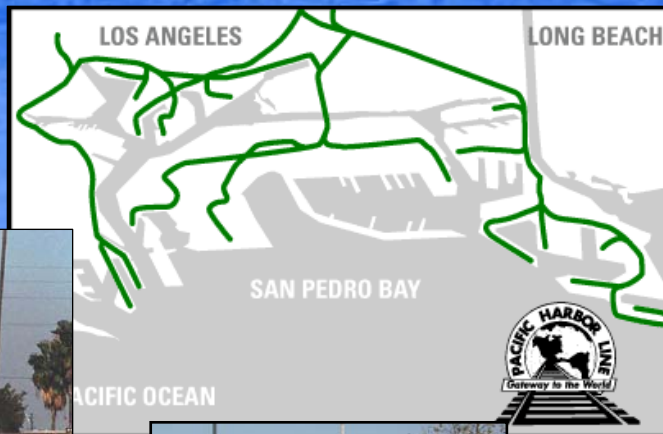


# LNG for Construction Applications



# LNG for Locomotive & Rail

- Los Angeles Junction Railroad (BNSF)
- Clean Air Partners Transportation System (CAPTS)
- Metrolink
- PHL



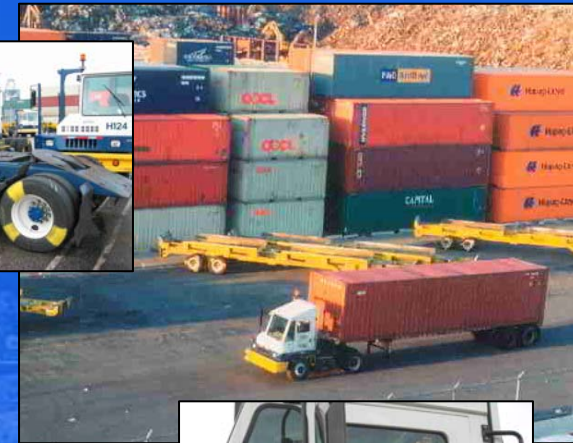
# LNG for Maritime Ports & Intermodal

- Yusen Terminals
- P&O NedLloyd
- LBCT



# LNG for Maritime Ports & Intermodal

- Initial Meeting – Spring 2003
- Carl Moyer Application – October 2003
  - 10 LNG Terminal Tractors
- ALT & Waste Management – Strategic Partners
- Kalmar/Ottawa Commando 50
- Cummins-Westport C Gas Plus 8.3 liter NG Engines
- NexGen Fueling LNG Fuel Tanks
- POLA Quality Mitigation Program Application - \$886,672
  - 24 LNG Terminal Tractors
  - On-Site LNG Fuel Station (NexGen or NorthStar)
- First Purchase Order – August 2, 2004; Delivery - May 2005
- 120 + Terminal Tractors in Fleet (5 Yr. Replacement Plan)



# LNG for Heavy-Duty Trucking

- Ace Hardware
- Albertsons
- Jack B. Kelley
- Harris Ranch
- Hunter & Hunter Trucking
- Stater Bros. Markets
- Sysco Food Services
- United Parcel Service
- Vons / Safeway



# Vehicle Grade LNG Fuel Supply

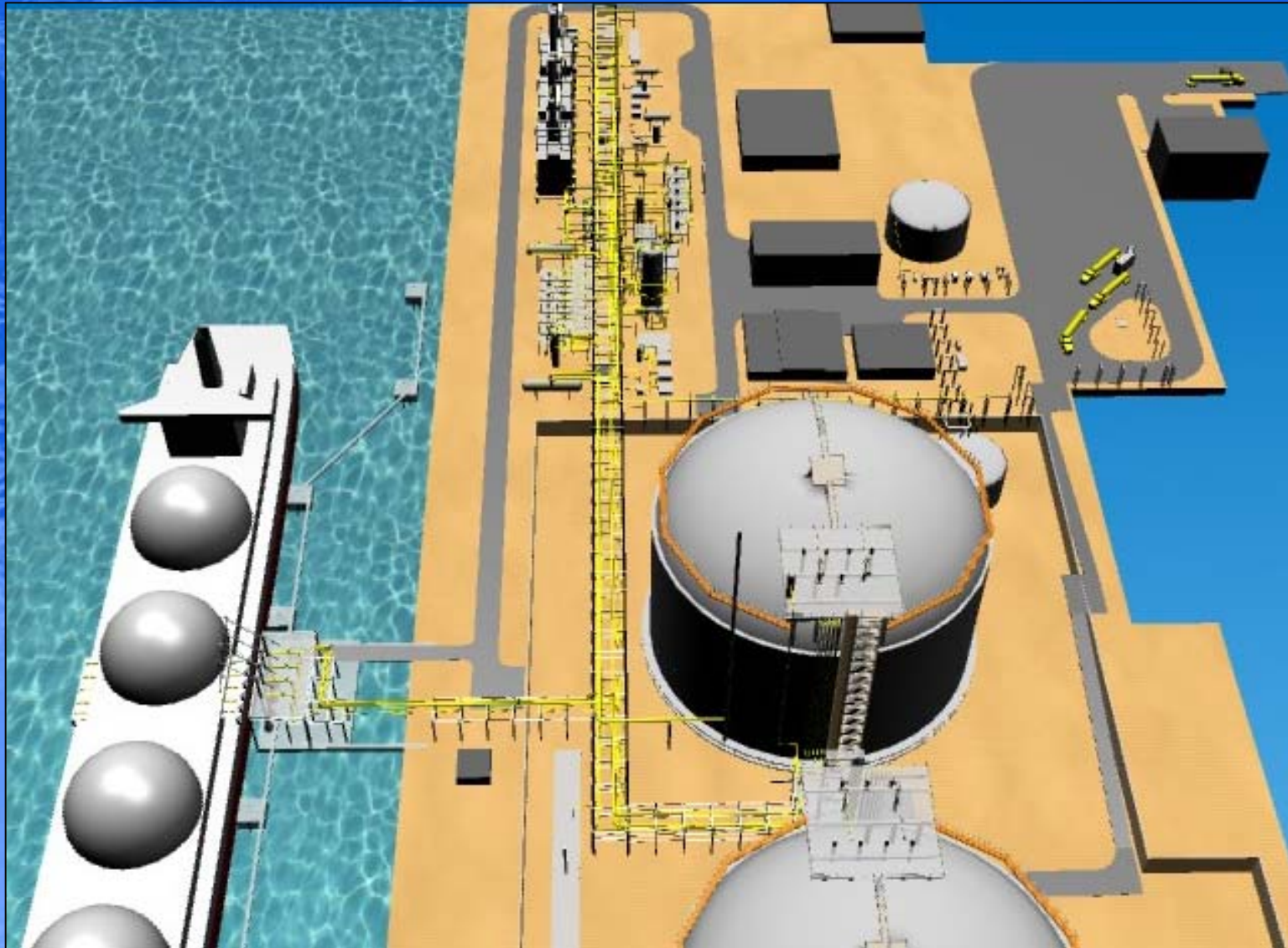


**SES/Mitsubishi**



**LNG Terminal**

# LNG Terminals Could Have Big Impact



# ***Future of LNG Transportation***

- **Increasing Regulations Focused on Diesel PM**
- **Increased Cost of Diesel Engine Technologies, After-Treatment and Fuel Price Makes LNG More Attractive**
- **Excellent LNG Refueling Infrastructure Already In Place and Growing**
- **Additional Engines and Platforms Still Needed**
- **Inter-District Funding Now Available Through Moyer Program (\$1 Billion over 10 Years)**
- **Continued Growth of LNG Supply Is Critical (LFG to LNG; Terminals)**

# ***For More Information***

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