

U.S. Container Ports and Air Pollution: A Perfect Storm

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New Markets for Natural Gas

Market sector analyses researched by Energy Futures, Inc. found that bus and refuse fleets are excellent market opportunities for natural gas:

✓ Urban Transit Buses

✓ Refuse Truck Fleets

✓ Ports are Next



Ingredients for Success

NGVs need to capitalize on the following market drivers:

- ✓ Critical air pollution concerns
- ✓ High fuel consumption vehicles
- ✓ Urban driving patterns
- ✓ Centrally refueled
- ✓ Availability of government incentives
- ✓ Advanced industry products perform well

Container Ports are Growing

Demand has doubled in last decade, will double again by 2020:

- ✓ Over 45 million TEUs handled every year, >20 million containers
- ✓ 10,000 ships each year
- ✓ 2,500 cargo handlers
- ✓ 30,000 trucks and trains to move goods out of ports
- ✓ Virtually all dependent on diesel fuel today

Air Basins Are Not Growing!

Most U.S. ports are in densely populated metropolitan areas already experiencing severe air pollution:

- ✓ Most port communities are nonattainment for PM and ozone
- ✓ Air pollution reduction needed to protect human health
- ✓ Ports cannot expand without finding air pollution offsets
- ✓ Diesel fuel costs are soaring
- ✓ Public image of ports is being seriously compromised

The Port Study

10 largest container ports in the U.S., >80% of total containers

● Los Angeles	8.4 million TEUs
● Long Beach	7.3 million TEUs
● New York City and N.J.	5.1 million TEUs
● Oakland, California	2.4 million TEUs
● Savannah, Georgia	2.2 million TEUs
● Tacoma, Washington	2.1 million TEUs
● Hampton Roads, Virginia	2.0 million TEUs
● Seattle, Washington	2.0 million TEUs
● Charleston, South Carolina	2.0 million TEUs
● Houston, Texas	1.6 million TEUs

Container Delivery Steps

There are 5 sequential steps in container deliveries

- ✓ Transoceanic ships and harbor craft
- ✓ “Cold ironing” of ships at docks
- ✓ Cargo handling equipment
- ✓ Trucks leaving ports for markets
- ✓ Trains leaving ports for markets

Oceangoing Container Ship



Yard Tractor



Rubber Tire Gantry



Major Sources of Pollution

The priorities for pollution control are different

- ✓ Transoceanic ships and harbor craft – 43%
- ✓ Trucks leaving ports for markets – 26%
- ✓ Trains leaving ports for markets – 13%
- ✓ Cargo handling equipment – 12%
- ✓ “Cold ironing” of ships at docks – 6%

Opportunity for Natural Gas

The priorities are different again for alternative fuels

- ✓ Cargo handling equipment
- ✓ “Cold ironing” of ships at docks
- ✓ Regional trucks leaving ports
- ✓ Trains leaving ports for markets
- ✓ Transoceanic ships and harbor craft

Pollution Control at Ports

Every port is involved

- ✓ 9 of 10 have environment directors and EMS
- ✓ All have diesel pollution reduction programs
- ✓ California ports way ahead
- ✓ Northwest ports form a 2nd tier
- ✓ East and Gulf coast ports lagging
- ✓ A number of alternative fuel programs underway

Natural Gas Projects at Ports

Natural gas is the clear leader

- ✓ Three yard tractor projects at Los Angeles and Long Beach
- ✓ Regional truck projects at all 3 California ports
- ✓ Cold ironing of ships at Oakland
- ✓ Natural gas locomotives in Los Angeles
- ✓ Not a slam dunk

Biodiesel Popular in NW

Biodiesel reduces particulate matter in Puget Sound

- ✓ High percentage blends (B50 to B99) at Seattle
- ✓ B20 and B50 at Tacoma
- ✓ Region in compliance with NOx
- ✓ Endorsed by regional clean air plan
- ✓ Environmental and energy benefits small

Hybrids Newest Competitor

Hybrid prototypes entering the field

- ✓ Los Angeles yard tractor
- ✓ PATH yard tractor
- ✓ Foss tugboat
- ✓ Problems matching duty cycle to benefits of hybrid drivetrain – hydraulic vs. electric

Recommendation #1

Promote the use of alternative fuels and advanced technologies

- ✓ Proof of concept works in port applications
- ✓ Provide environmental and energy benefits – best long term option
- ✓ Supported in approved port clean up strategies
- ✓ Incentive funds available
- ✓ Access to decisionmakers

Recommendation #2

Develop and implement a national port strategy

- ✓ Regional port clean up plans underway in southern California and the Northwest
- ✓ Individual port cleanups underway elsewhere
- ✓ National strategy needed to set uniform targets to prevent economic blackmail and to provide stature in international negotiations
- ✓ National funding sources needed

Recommendation #3

Enact a container fee to finance national port clean up

- ✓ Ports facing a \$20 billion clean up bill, \$1.5 billion per year through 2020
- ✓ All consumers buy imported goods, all should pay to reduce environmental costs
- ✓ \$30 per TEU fee would raise \$1.3 billion/year, but add less than 1% to cost of consumer products
- ✓ Distribution can be apportioned roughly equally to contributions

Recommendation #4

Advocate global environmental standards in the international arena

- ✓ Oceangoing ships are the elephant in the room – 45,000 ppm sulfur bunker fuel
- ✓ Impacts extend far beyond ports
- ✓ IMO grappling with issue for more than a decade, first actions now being implemented in the form of regional SECAs
- ✓ Long term goal must be to replace bunker fuel with alternative fuels

Recommendation #5

Create a clearinghouse for port clean up information

- ✓ More than 50 interviews, 100 reports, 14,000 miles of travel to do this report
- ✓ Access to information varied widely
- ✓ No newsletter or single repository for port clean up news
- ✓ An independent clearing house would benefit all stakeholders

Status of Report

Final report of the report is now in production

- ✓ Release likely in the next month or so
- ✓ National press release
- ✓ Copies to leading port stakeholders
- ✓ Presentations at conferences, articles in trade publications
- ✓ Cooperation with NGV industry groups and others to enhance distribution

Please call or email me

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