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# **Container Terminal Operation Emissions**

Presented to

## **West Coast Region Conference on Marine Port Air Quality Impacts**

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**Seattle - Tacoma**

**April 2004**





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## **Future of Container Business**



### **Issues**

- **Constant Growth in World Trade**
- **Cargo Growth 4 - 5% Annually**
- **LAX/LBC Example**

### **Result**

- **Need for Expansion of Container Terminals**
- **Increase of Traffic**
- **Affecting Quality of Life in the Port Region**



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## **Port Challenges to Handle Future Growth**

- **Almost No Land Available for Container Terminal Development**
- **Utilize Existing Industrial Developed Land and Reconstruct for Container Terminal**
- **Increase Capacity of Existing Terminals - Expend Vertically**



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# Shore Side Emissions at Container Terminals

- **Vessels**
- **Operation Handling Equipment**



- **Shore Cranes**
- **RTG / Straddle Carriers**
- **Container Handlers**
- **Yard Hustlers**



- **Rail**
- **Trucks**





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## **Modes for Container Cargo Distribution at Ports**

- **Trucks** **70%**
- **Rail** **20%**
- **Barges / Transload** **10%**



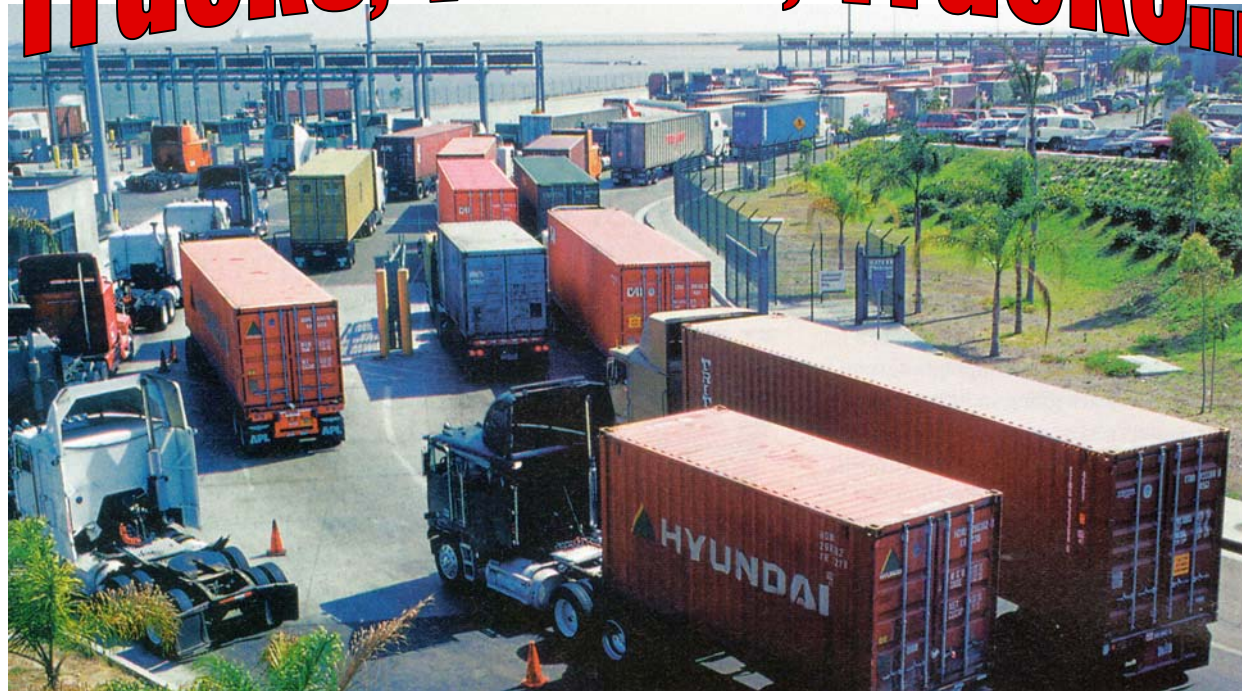
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***What do we see at the Ports?***



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# Trucks, Trucks, Trucks...





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## **Truck Impact → Different Perception**

- **Shippers / Terminal Operators**
- **Ports Owners & Authorities**
- **Environmentalists**



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## **Gate Transactions to Process Trucks**

- Per Day *1,300 - 4,000*
- Per Week *6,500 - 20,000*

### **At Terminals**

- Trucks per day **2,000**
- Trucks per week **10,000**

### **At Ports**

- Trucks per day **35,000**



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## **Trucks' Time at Terminal Gates**

**Waiting to be Processed**

**+**

**Running Engines for AC / Heating**

**=**

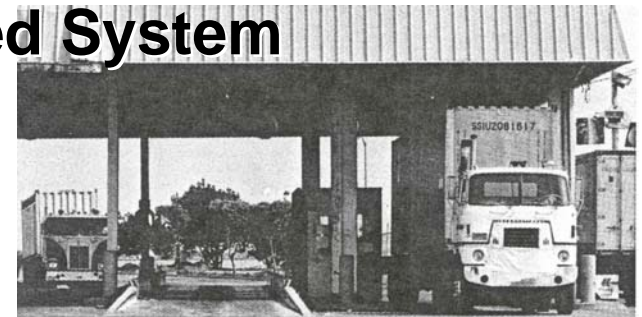
**Air Emissions**



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## **Gate Processing at Container Terminals in the Past**

- **Window - Manual Processing**
- **Initial TAS - Terminal Automated System**





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## **TAS Gate Automatization Objectives**

- **Increase Productivity**
- **More Gate Move\$\$\$\$\$\$\$\$**
- **Trucking Community Concerns**
- **Explore Available Technology**



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## **Modern Gates at Container Terminals Gate Processing Utilize**

- **Intelligent Systems Technology**
- **Paperless Gate Systems**





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## **Gate Facility**





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## **Gate Control Technology Integrates**



- **Intercoms**
- **Video Cameras**
- **WIM Scales**
- **Bar Code Readers**
- **Transponders**
- **CCR - Computer Character Recognition**
- **OCR - Optical Character Recognition**
- **Host Controlled Gate Arms**
- **Message Signs / Repeaters**



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## **Results of New Gate Technologies**

- **Faster Processing**
- **Greater Data Accuracy**
- **Faster Gate Turn-time**
- **More Efficient Terminal Operation**







## **New Gate Technology Can Incorporate Security Features**

- **Bio-metric Devices (Fingerprint / Facial Readers)**
- **Integration of TWIC Cards**



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**One of Most Important Results of New  
Gate Technologies**

***Less Shore-Side Emissions by Trucks***



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## **Modern Gates at Container Terminals**



**Success Story**

***“Rolling Through the Gate”***



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## **Future of Gate Operations**

- **Integration of Next Technology**
- **Extended Gate Hours (24 / 7 Gate Operation)**
- **Impose Idling Reduction (*The “Lowenthal Bill”*)**
- **Premium Charge - Spread Cargo Flow Throughout the Day**
- **Implement Scheduled / Appointment System**



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## **Future of Marine Operation and Impacts on Air Quality**

- **Larger Vessels - Less Trips / Shore Power**
- **Fuel Efficient Handling Equipment / RMG**
- **Low Polluting Modern Generation Trucks**
- **Cargo Distribution Share Trucks / Rail**
- **PIDN - Port Inland Distribution Network Implementation**
- **“Green Ports” Engineering Approach**



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**Let's Work Together to Make  
Air Cleaner for Us and New  
Generations!**

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