World Ports Climate Initiative
Carbon Calculator

Bruce Anderson, Principal
Starcrest Consulting Group, LLC
Port of Los Angeles

AAPA Harbor, Navigation, & Environment Seminar Meeting
5 May 2010
Port of Los Angeles
Origins of the Port’s Carbon Calculator

- Climate Change Issues Reach Ports
  - 2006 Global Warming Solutions Act (AB 32) is Signed
  - Mid 2007/08 IAPH Houston & Dunkirk Resolutions
  - Mid 2008 C40 & WPCI

- Early 2008 Port Customers & BCOs Express Interest in GHGs – Static Calculators (Route Analysis)

- POLA Expanded Emissions Inventories 2006 – 2008

- WPCI Carbon Footprinting for Ports

- POLA Develops Dynamic Calculator Tool
# Carbon Calculators

**Railroads Have Them**

![BNSF Railway Carbon Estimator](image)

<table>
<thead>
<tr>
<th>Company Name:</th>
<th>Test Plot One</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1: Commodity</strong></td>
<td></td>
</tr>
<tr>
<td>Commodity Group:</td>
<td>Intermodal</td>
</tr>
<tr>
<td>Commodity Type:</td>
<td>Containers</td>
</tr>
<tr>
<td>Tons per Unit:</td>
<td>14.9</td>
</tr>
<tr>
<td><strong>Step 2: Rail Volume</strong></td>
<td></td>
</tr>
<tr>
<td>Number of Rail Units:</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>Step 3: Geography / Mileage</strong></td>
<td></td>
</tr>
<tr>
<td>Origin:</td>
<td>LOS ANGELES, CA</td>
</tr>
<tr>
<td>Destination:</td>
<td>ATLANTA, GA</td>
</tr>
<tr>
<td>Miles:</td>
<td>2,566</td>
</tr>
<tr>
<td><strong>Step 4: Comparable Truck Volume</strong></td>
<td></td>
</tr>
<tr>
<td>Equivalent Trucks Required:</td>
<td>1,000</td>
</tr>
</tbody>
</table>

**Detailed Truck Performance Assumptions**

Use BNSF Default Assumptions? **Yes**

| **Your Carbon Footprint and Comparison** |               |
| Estimated Rail Carbon Footprint (Metric Tons CO₂ equivalent): | 1,934.4 | 1,652.5 |
| Estimated Long Haul Truck Carbon Footprint (Metric Tons CO₂ equivalent): | 5,117.4 | 4,371.5 |

Using a carload or intermodal rail solution instead of truck only would reduce this shipment’s estimated Carbon Footprint by: 62%
Carbon Calculators
Shippers Have Them

Calculate the CO2 emissions in your supply chain with our end-to-end carbon calculator, which includes the following transport modes:

- Vessel
- Rail
- Truck
- Barge/Feeder

Maersk Line Carbon Footprint Calculator
Calculate your carbon footprint from door-to-door transportation services.

SUPPLY CHAIN MANAGED BY MAERSK LINE
Carbon Calculators
Why Would a Port Make One?

- Ports Are Primary Nodes in Logistics Chain
- Understand the Complex Relationships Between Modes
- Ports Can Assert Influence/Collaborate with Operators to Reduce Carbon Footprint
- Screen/Assess Their Carbon Footprint
Carbon Calculators
Why Did POLA Make One?

- POLA Has Been Collecting Data & Estimating Emissions Since 2001
- POLA Has Developed a Comprehensive Environmental Data System to Query Data
- Full Understanding of Calculator Methods & Assumptions
- Identify GHG Reduction Opportunities in Port
- Respond to Management & Customer Questions
- Support Member Ports through WPCI
Dynamic Carbon Calculator Highlights

- Developed Highly Dynamic Scenario Model Using iThink Logic Platform
- Includes Full Logistics Chain
- Evaluates Container & Noncontainer Cargoes
- Adaptable to Ports, BCO, Shippers, Terminals, etc.
Dynamic Carbon Calculator Highlights

- Dynamic Ship Capacity Settings
- Any Route/Any Where Capabilities
- Includes Suez & Panama Transit Profiles
- *Includes Dynamic Growth Forecasting*
- Easily Expandable & Adaptable
Dynamic Carbon Calculator
Highlights

- Uses Data/Assumptions Taken From Actual EIs
- Does Not Replace Emissions Inventories
- Displays Results Real-Time & Web-Based Version

Containers and Vessels Specifications

<table>
<thead>
<tr>
<th>Non-Container Vessel Annual Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Calls[cruise]</td>
</tr>
<tr>
<td>Ship Calls[general cargo]</td>
</tr>
<tr>
<td>Ship Calls[auto carrier]</td>
</tr>
<tr>
<td>Ship Calls[buk general]</td>
</tr>
<tr>
<td>Ship Calls[buk heavy load]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Container Vessels Utilization Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV Utilization Percent[Container 1000]</td>
</tr>
<tr>
<td>CV Utilization Percent[Container 2000]</td>
</tr>
<tr>
<td>CV Utilization Percent[Container 3000]</td>
</tr>
<tr>
<td>CV Utilization Percent[Container 4000]</td>
</tr>
<tr>
<td>CV Utilization Percent[Container 5000]</td>
</tr>
</tbody>
</table>

Allocated: 100
Unallocated: 0
Dynamic Carbon Calculator

Highlights

Enter Parameters

Cargo
- Container
- Non-Container
- Growth Rates

Inland Transport
- Trucks
- Rail
- Inland Waterway

Departing Port
- Vessels
- Trucks
- Trains

Ocean Transit
- Route Distribution
- Canal Options
- Transition Zone

Receiving Port
- Vessels
- Trucks
- Trains

Inland Distribution
- Trucks
- Rail
- Inland Waterway

Emission Factors
- CHE
- Port Tenant Sources
- Municipal Sources

Generate Reports

GHGs
- Port Tenant Sources
- Municipal Sources

Emissions
- Source Type
- Mode
- Responsibility

Energy Consumption
- Fuel
- Electricity

Dynamic Scenarios
- User Defined
Dynamic Carbon Calculator
Next Steps

- Engage POLA Marketing Group
- Engage WPCI Carbon Footprinting Workgroup
- Discuss Further with Interested Parties
Contact Information

Bruce Anderson, Principal
Air Quality Director
Starcrest Consulting Group, LLC
andersonb@portla.org

Lisa Wunder
Environmental Specialist – Project Manager
Port of Los Angeles
lwunder@portla.org
http://www.portoflosangeles.org