Gearing Up to Shut Down

Shore Power at the Port of Long Beach

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Who we are

• Second busiest container port in the country (18th in world)

• 7 million containers a year

• $140 billion in goods each year

• 1 in 8 jobs in Long Beach
Community health impacts

2005

Land Use Zoning
- Commercial/Industrial
- Open Space
- Residential

10 - 100
101 - 250
251 - 500
501 - 1,000
1,000 +
We had to change.

Green Port Policy

Ship Speed Reduction

Clean Air Action Plan

Clean Trucks
Shore power

- Ship plugged into electrical grid
- Auxiliary engines turned off
- Significantly reduced emissions
Emissions by ship mode (2011)

- Transit: 43%
- Maneuvering: 7%
- Anchorage: 10%
- Berth: 41%
Emissions by ship mode (2011)

- Transit: 43%
- Maneuvering: 7%
- Anchorage: 10%
- Berth: 41%

Port of Long Beach
Leading the way: ITS/K-Line

Pier G
First berth - 2008
Leading the way: BP

Pier T - BP
World’s only shore powered oil facility 2009
Leading the way: SSA/Matson

Pier C
Two berths - 2011
California shore power regulation

<table>
<thead>
<tr>
<th>Year Range</th>
<th>% of Fleet’s Visits</th>
<th>% Emission Reductions</th>
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<tbody>
<tr>
<td>2014-2016</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>2017-2019</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>2020+</td>
<td>80%</td>
<td>80%</td>
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</tbody>
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Building for the future

- $65 million over next two years
- Careful sequencing
- Substantial industry cooperation
International shore power standard

- Published 2012
- Three standards organizations
  - ISO
  - IEC
  - IEEE
- “High Voltage Shore Connection System”
- Covers system requirements, ship connections, verification and testing
System design

- 6,600 volts, 3 phases, 60 Hz
- Can provide 7.5 MVA of power – enough for fully loaded ship at max demand
- More details at www.polb.com
Challenges

- Cost
- Industry cooperation
- Technical issues
Figure 2: Projected NOx Emissions with and without the Proposed Regulation

California Air Resources Board, 2007
Figure 1: Projected Diesel PM Emissions with and without the Proposed Regulation

California Air Resources Board, 2007
Cutting the health risk
Questions?