Criteria for a Successful Shore Power Project

- Availability of an adequate supply of electricity at a reasonable cost.
- Frequency of calls by cruise vessels equipped to connect to Shore Power.
- Availability of the same dock and pier facility for these vessels for every call.
- Adequate dock and uplands space for equipment.
- Willing partners including – utility, port and government agencies.
Criteria for a Successful Shore Power Project

First High Voltage Shore Power Connection for Cruise Ships - Juneau, Alaska
Criteria for a Successful Shore Power Project

Shore Power Description

Power is transmitted from an on-shore transformer to the ship, through five flexible electrical cables. These cables connect to the ship’s electrical system through traditional male/female plugs & sockets and enable the entire ship to run on electricity rather than diesel.

4 Power Connectors
1 Neutral Connection
Criteria for a Successful Shore Power Project

Seattle, WA T-30
Transformer, Main & Secondary Metering Equipment
Criteria for a Successful Shore Power Project

Electrical Energy Sales In Seattle, Washington:

Transformer Capacity:
- 16.25 Megawatts.
- Total annual consumption 3.5 – 4 GWH.

Dual Service Delivery (Secondary) Voltage:
- 6.6kv and 11kv depending on class of ship.
- Both voltages are not used at the same time.

In Seattle the Primary Voltage is 27kv.
Criteria for a Successful Shore Power Project

Electrical Energy Sales In Juneau, Alaska:

- Ship Hotel Electrical Loads 7 to 11 MW @ 6.6 KV or 11 KV and .83 to .86 PF
- Total Annual Shore Power Consumption is 11 -12 GWH Annually
Criteria for a Successful Shore Power Project

Step 1 – Electrical Design
Step 2 – Procurement
Step 3 – Installation
Step 4 – Commissioning & Testing
Criteria for a Successful Shore Power Project

Electrical Design

- Meet with utility company to determine source of power.
- Field survey & agree on location of equipment.
- Perform load calculations & place equipment on drawings.
- Design is generated & forwarded to local jurisdiction for approval.
Criteria for a Successful Shore Power Project

Electrical Design

Transformer - Main Metering Equipment - Secondary Metering Equipment
Grounding Switch - Shore Power Cable Winch - Power Cables
Criteria for a Successful Shore Power Project

Seattle Festooning

[Diagram of power cable crane and festooning system]

POWER CABLE CRANE

NOT TO SCALE
Criteria for a Successful Shore Power Project

Juneau, Alaska Festooning System
Criteria for a Successful Shore Power Project

Seattle, Washington Festooning System
Criteria for a Successful Shore Power Project

Installation

1. Excavation

2. Conduit Installation

3. Transformer Pad Installation

4. Equipment Installation
   (Transformer, Main Metering Equipment, Secondary Metering Equipment, Grounding Switch, & Cable Winch)

5. Cable Installation
Criteria for a Successful Shore Power Project
Criteria for a Successful Shore Power Project

Commissioning & Testing Process

1. Ship is docked.
2. Winch lowers cables into hull & cables are attached.
3. Testing is completed to ensure entire system is functional.
4. Commissioning is completed.
Criteria for a Successful Shore Power Project

Step 4 - Commissioning & Testing Process
Alternative Mitigation – Air Emissions

- Low Sulfur Fuel
- Technology Scrubbers Fuel Treatment
- Engine Technology