APPENDIX D: Shore Power

A. Equipment Project Specifications

Shore Power

Eligible Equipment	Existing cargo ship berth or existing cargo ship terminal at a seaport located in a trade corridor.

Option (1) Grid-Based Power
 	
Requirements
	The lower of $2.5 million/berth or 50% of the covered shore-side costs of installing permanent, grid-based electrical power at a cargo ship berth.
	
	• Program-funded grid-based shore power shall be installed and in operation at least 2 years prior to a regulatory requirement for that technology or level of emissions control.
	
	Equipment owner shall:
	• Commit to at least 20 years of the use of grid-based shore power at the berth at the following levels or greater:
	  o 25 percent of ship visits in 2011-2013.
	  o 60 percent of the ship visits in 2014-2016.
	  o 70 percent of the ship visits in 2017-1019.
	  o 90 percent of the ship visits in 2020 and beyond.
	• Agree to equipment inspections that include demonstrated operability with a cargo ship fully powered by shore-based electrical power.
	• Comply with record-keeping, reporting, and audit requirements.
	• Sign a legally binding contract with the local agency including project milestone and completion deadlines.
	• Comply with all permitting requirements.

Shore Power (continued)

Option (2) Non-grid based power	Partial funding of up to $210,000 per megawatt of the covered costs of an electricity generating unit that provides power at a cargo ship berth or multiple berths. This unit can be portable or fixed on the terminal. Only zero emission units (e.g. fuel cell, solar), or natural gas engines equipped with selective catalytic reduction to control NOx emissions are eligible.
Requirements	• Program-funded non grid-based shore power shall be installed and in operation at least 2 years prior to a regulatory requirement for that technology or level of emissions control. Equipment owner shall: • Commit to 7 years of 100% California operation at the following levels or greater: o 1,000 hours per year in 2011-2013. o 3,000 hours per year in 2014 and beyond. • Agree to equipment inspections that include demonstrated operability with a cargo ship fully powered by shore-based electrical power supplied by the electricity generating unit. • Comply with record-keeping, reporting, and audit requirements. • Sign a legally binding contract with the local agency including project milestone and completion deadlines. • Properly maintain equipment in good operating condition and according to manufacturer's recommendations. • Demonstrate proof of equipment warranty. • Comply with all local permitting requirements. • Perform source testing to measure emissions from the unit every 1,000 hours of operation, according to the source test requirements contained in ARB's shore power regulation.
Pro-rated Alternative	Equipment owners may opt for a pro-rated alternative consisting of duplicate requirements, except that the Program will pay up to $150,000 per megawatt for a 5 year commitment to use non-grid based shore power in 100% California operation.
Project Cost Assumptions	• Total shoreside cost of equipping a berth with permanent grid-based electrical power is ~$5.0 million/berth; some ports may incur additional costs to bring new/additional power capacity to the port. • Total cost of distributed generation power is anticipated to be $4.0 million/ 2 MW unit. • Shipside modifications will cost ~$1 million/ship.
Excluded Funding Components	• Providing additional electrical power to the port. • Construction and protection of infrastructure (e.g., natural gas lines) used to supply fuel for non-grid based electrical generation. • Shipside modifications to accept shore-based electrical power.

B. Major Milestones for Project Completion

- Preliminary design.
- Environmental clearance (if applicable).
- Final design.
- Equipment acquisition (if applicable).
- Construction bid award.
- Construction completion/equipment installation.
- Submittal of invoice to local agency for reimbursement.
- 1st reporting milestone 6 months after equipment project completion.

C. Recordkeeping Requirements

Equipment owners shall retain, at minimum, all documents, invoices, and correspondence associated with the application, award, contract, monitoring, enforcement, and reporting requirements at least two years after equipment project contact term or three years after final payment, whichever is later. Records shall be readily available and accessible to the local agency, ARB, or designee upon request for the purposes of ongoing evaluations or auditing.

D. Reporting Requirements

Equipment owners shall be responsible for annual reporting to the local agency that includes, but is not limited to:

1. Annual reporting for grid based power

- Contact information (owner name, company, address, phone).
- Equipment description and type providing electrical power.
- Berth name/identifier.
- Date of installation of equipment.
- Vessel type, name, and Lloyd's number of vessels utilizing berth.
- Date(s) and time each vessel was initially connected to shore power and subsequently disconnected.
- Monthly utility statements that separately identify electricity for shore power (if avail).
- Documentation of electricity usage at berth (if billing statements are unavailable).
- Episodes of electrical service interruption by local utility company, as confirmed and documented by local utility company.
- Summary of maintenance and inspections conducted.
- Signed Certification statement that the bond-funded project was operated in accordance with signed contract and that all information submitted is true and accurate.
- Project records must be retained for at least two years after contract expiration or three years after final project payment, whichever is later.
- Other information as requested by the local agency.

2. Annual reporting for non-grid based power (every 1,000 hours)

- Contact information (owner name, company, address, phone).
- Equipment description and type providing electrical power.
- Berth name/identifier.
- Date and location of installation of equipment.
- Vessel type, name, and Lloyd's number of vessels utilizing shore power.
- Location of vessels serviced, by berth.
- Date(s) and time the vessel utilized non-grid based power.
- Power, in megawatts, supplied to the vessels.
- Date(s) and time each vessel was initially connected to shore power and subsequently disconnected.
- Date, time, and description of any equipment failure that affected the ability of vessel to turn off its auxiliary engines or use alternative control technologies to reduce emissions.
- Summary of maintenance and inspections conducted.
- Signed Certification statement that the bond-funded project was operated in accordance with signed contract and that all information submitted is true and accurate.
- Other information as requested by the local agency.

E. Ongoing Evaluations and Audits

Equipment owners shall agree to ongoing equipment project evaluations and equipment project audits by the local agency, ARB, or authorized designees. ARB and local agency audit requirements and provisions are found in Chapter II.E.5.

F. Application Information

Equipment owners shall provide the following information and documentation in addition to the requirements described in Chapter IV and other information ARB or local agencies may request on the equipment project applications.

1. General contact information

This section applies to all equipment project options listed below.

- Organization/agency/company name
- Mailing address
- Primary contact name and phone number
- Person(s) with equipment contract signing authority (Owner)

2. Option (1): grid-based shore power

a) Proposed equipment project information

- Project Information
  - Port where the berth is located
  - Berth name/identifier and location within port
  - Owner and operator of berth
  - Project description, design, maximum power demand (megawatts)
  - Itemized cost information by phase (e.g. design, environmental, construction)
- Documentation of current ownership may be required
- Berth activity data for the past 2 years
  - Number of ship visits to the berth
- Ship information (per ship and berth)
  - Number of visits per year
  - Average hotelling time per visit (hours/visit)
  - Ship type, size (e.g. TEU capacity), description (e.g. number of engines, fuel type), power demand (total auxiliary power (kW), net hotelling load (kW))
- Predicted berth activity data with new equipment
  - Estimated monthly hours of operation
  - Estimated monthly MW usage
  - Estimated annual ship visits using electrical power
  - Estimated ship types, description, power demands
- Equipment project funding demonstration
  - Total project cost
  - Program dollars requested
  - Funding sources and amounts of other funding (private, local, other State, federal)
  - Documentation of match funding availability

3. Option (2): non-grid shore power

a) Proposed equipment project information

- Project Information
  - Port where the berths are located
  - Berth(s) name/identifier and location within port
  - Owner and operator of berth
  - Project description, design, maximum power demand (megawatts)
  - Itemized cost information for eligible expenses (verifiable quote)
- Documentation of current ownership may be required
- Berth activity data for the past 2 years (per berth)
  - Number of ship visits to the berth
- Ship information (per ship and berth)
  - Number of visits per year

    - Average hotelling time per visit (hours/visit)
    - Ship type, size (e.g. TEU capacity), description (e.g. number of engines, fuel type), power demand (total auxiliary power (kW), net hotelling load (kW))
- Predicted activity data with new equipment
    - Estimated monthly hours of operation
    - Estimated monthly MW usage
    - Estimated annual ship visits using electrical power
    - Estimated ship types, description, power demands
- Equipment project funding demonstration
    - Total project cost
    - Program dollars requested, including option for pro-rated alternative
    - Funding sources and amounts of other funding (private, local, other State, federal)
    - Documentation of match funding availability