Execution Original

MEMORANDUM OF AGREEMENT

PUGET SOUND MARITIME AIR EMISSIONS INVENTORY

This Memorandum of Agreement ("MOA") is made and entered into on this 26th day of May, 2005, by and among the parties listed below. These parties are collectively referred to as the Puget Sound Maritime Air Emissions Inventory Steering Committee (hereafter, the "Steering Committee"), and individually as "Members."

1. American Lung Association of Washington, a voluntary health 501(c)(3) organization
2. Olympic Region Clean Air Agency, a Washington Municipal Corporation
3. Pacific Merchant Shipping Association, a private non-profit organization
4. Port of Seattle, a Washington Municipal Corporation
5. Port of Tacoma, a Washington Municipal Corporation
6. Port of Everett, a Washington Municipal Corporation
7. Puget Sound Clean Air Agency, a Washington Municipal Corporation
8. Washington State Ferries, a division of the Washington State Department of Transportation; and
9. Western States Petroleum Association, a private non-profit organization.

Additional parties may be added at a later date pursuant to the terms of this Agreement.

RECITALS

WHEREAS, diesel emissions are a growing concern for public health and a top priority of the Washington Department of Ecology and local air authorities in Western Washington, and maritime sources (vessels, cargo-handling equipment, locomotives, buses and trucks) are believed to be significant generators of diesel emissions;

WHEREAS, there is limited knowledge about the relative contributions and locations of these maritime sources to diesel emissions in and around the ports of the greater Puget Sound area;

WHEREAS, the Puget Sound Maritime Air Forum, a regional coalition of organizations interested in this issue, was formed to increase the level of shared knowledge about maritime diesel emissions and to provide a means to facilitate collaborative efforts to voluntarily reduce impacts from this transportation sector;

WHEREAS, the Puget Sound Maritime Air Forum has decided that a baseline information collection process, in the form of a Puget Sound Maritime Air Emissions

Inventory, is a necessary first step, agrees that this inventory will be most valuable if it is based on uniform data collection methods acceptable to all interested parties, and coordinated to the maximum extent practical with a similar inventory being conducted by the province of British Columbia, Canada;

WHEREAS the Puget Sound Maritime Air Forum has established the Steering Committee and directed that they conduct such a coordinated and consistent Puget Sound Maritime Air Emissions Inventory; AND

WHEREAS the Steering Committee acknowledges that the development of such a Puget Sound Maritime Air Emissions Inventory will be a costly endeavor, requiring not only that each participating entity individually generate high quality information but also the joint development of uniform methods and reports, and the services of a consultant to collect and summarize this information;

NOW THEREFORE, the members of the Steering Committee hereby agree as follows:

1. Purpose. The purpose of this MOA is to define the authority and responsibilities of the Port of Seattle, the Steering Committee and the Technical Working Group (TWG) as they pertain to the joint development of a report and supporting information concerning maritime sources of air quality emissions throughout the Puget Sound area, hereafter called "the Puget Sound Maritime Air Emissions Inventory" or "the Project."

2. Effective Date. This MOA shall become effective on the day that the last of the originating Members, listed above, signs this document.

3. Port of Seattle (POS) Responsibilities. POS agrees to the following:

3.1 Appointments. POS shall appoint one Designated Representative, and one alternate, to the Steering Committee. POS shall also appoint a person to act as Data Manager for the Project.

3.2 Administration. The POS Designated Representative shall serve as Administrative Lead for the Steering Committee. The Administrative Lead shall determine Members' availability for meetings, notify Members of meetings, distribute materials and information as required, and facilitate meetings.

3.3 Project Management.

3.3.1 In consultation with the Steering Committee, POS shall prepare a Final budget and schedule for the Project.

3.3.2 The Port shall work with the Consultant to assure that the Project is carried out in accordance with the Scope of Work (Exhibit A)

3.4 Consultant Management.

3.4.1 POS shall prepare a short list of potential consultants qualified to perform the work, as described in Exhibit A. POS shall present this list to the Consultant Selection Team, as described in Section 4.7.3.

3.4.2 In accordance with POS contracting policies and State law, and in consultation with the Consultant Selection Team described in Section 4.7.3, POS shall select one or more qualified consultant(s) ("the Consultant") from this short list. POS shall execute a contract with the Consultant and pay all invoices.

3.4.3 POS shall manage performance of the Consultant's work, which shall be performed as described in Exhibit A.

3.4.4 The POS Designated Representative shall act as the liaison between the Consultant, the TWG, and the Steering Committee, collectively and individually. POS will be responsible for all direction given to the Consultant. No change in the Scope of Work or Consultant's contract will be effective unless issued in writing by POS.

3.5 Financial Management.

3.5.1 POS shall establish a separate Fund to manage this Project. POS shall use monies deposited in this Fund for no other purpose than to pay the Consultant(s) and project-related expenses.

3.5.2 After receipt of the Consultant's first invoice, POS shall send an invoice to the Members listed in Section 4.6.1 for the amounts shown.

3.5.3 After the issuance of the Final Report, POS shall send an invoice to Washington State Ferries for its share of services performed, as described in Section 4.6.2.

3.5.4 POS shall deposit all monies received from Members into the Fund created for this purpose. POS shall individually contribute $120,000 into the Fund.

3.5.5 POS shall provide quarterly financial reports to the Members. Upon completion of the Project, any unexpended funds shall be returned to the Members, pro-rated in accordance with Member's original contribution share.

3.6 Data Management.

3.6.1 POS shall select the database software to be used, which shall be compatible with POS's Environmental Management Information System format, and be capable of handling Geographic Information System (GIS) information.

POS retains the absolute right to ensure that the format, systems applications and platform used for this project are compatible with POS's information management system.

3.6.2 POS shall provide use of hardware for the database at no charge.

3.6.3 POS agrees to accept all data provided by Members for inclusion into the database, if it is received in the format specified by the Data Manager.

3.7 Grants. On behalf of the Steering Committee, POS shall apply for grant funds to assist in Project costs. Any grant funds received shall be put into the Fund.

4. Steering Committee Tasks and Responsibilities. The Steering Committee Member organizations hereby agree to the following:

4.1 Members and Designated Representatives.

4.1.1 Each Member shall appoint one Designated Representative, and one alternate, to the Steering Committee. Each Member shall have the right to change its Designated Representative upon five (5) days written notice to each of the other Members and the Administrative Lead.

4.1.2 The Steering Committee shall consist of one Designated Representative from each of the following organizations: the American Lung Association of Washington; the Olympic Region Clean Air Agency; the Pacific Merchant Shipping Association; the Port of Seattle; the Port of Tacoma; the Port of Everett; the Puget Sound Clean Air Agency; Washington State Ferries; the Western States Petroleum Association; and any additional parties added in accordance with Section 4.2.

4.1.3 All notices, draft reports, and other communications to or by a Member or the Consultant relating to the Project or the MOA shall be sent to the Designated Representative.

4.1.4 Only the Designated Representative, or alternate, shall be entitled to vote on behalf of such Member in connection with Steering Committee decisions pursuant to Section 4.3.

4.2 Additional Parties. At any time during the course of the Project, additional entities that have interest in participating in the Project may, with the unanimous consent of the Steering Committee, join this MOA by executing and delivering a counterpart hereof and by paying a one-time fee in an amount to be proposed by the new participant and approved by the Steering Committee. Additional parties must accept the Steering Committee decisions that have been made to date.

4.3 Administration. The Steering Committee shall hold such meetings as it deems necessary, which may be called at any reasonable time by any designated representative. Meetings may be in person, by teleconference or a combination.

4.4 Decision-making. A Steering Committee meeting or teleconference cannot be held unless a majority of the Designated Representatives (or alternates) are present or available by telephone. The goal of the Members is to reach decisions by consensus, *i.e.* a unanimous vote of all Members, with each Member being entitled to one vote. An absent Member may vote by giving a written proxy to another Member. The Members shall endeavor in good faith to reach consensus in resolving all matters to be decided by the Steering Committee. However, if a pending decision has been discussed at two (2) Steering Committee meetings without reaching consensus, at the conclusion of the second meeting the decision shall be made by majority vote of the Members present.

4.5 Termination and Withdrawal. This MOA shall terminate thirty (30) days after the Final Report is issued to the public, or payment of the final Consultant invoice whichever is later. Each Member, including the POS, shall have the unilateral right to withdraw at any time, upon thirty (30) days notice to the Steering Committee. However, a withdrawing Member is not entitled to a refund of the payment described in Section 4.6.

4.5.1 In addition to the termination requirements described above, POS, in its role as Project Manager, must complete the following tasks prior to withdrawal:

4.5.1.1 The Consultant must be paid for any and all work that was incurred prior to POS's withdrawal announcement.

4.5.1.2 POS will provide each Member with an electronic copy of the most final work product produced prior to POS's withdrawal announcement.

4.5.1.3 POS shall return any remaining fund to the Members in accordance with Section 3.5.5

4.6 Payments

4.6.1 Majority Payment: After receiving the invoice described in Section 3.5.2, the following Members of the Steering Committee shall transmit a check, in the amount listed below, payable to the Port of Seattle, in consideration for its participation in this Project and eventual receipt of Final Report

4.6.1.1 American Lung Association of Washington: $5,000

4.6.1.2 Olympic Region Clean Air Agency: $5,000

4.6.1.3 Pacific Merchant Shipping Association: $10,000

4.6.1.4 Port of Tacoma: $75,000

4.6.1.5 Port of Everett: $35,000

4.6.1.6 Puget Sound Clean Air Agency: $25,000

4.6.1.7 Western States Petroleum Association: $10,000

4.6.2 WSF Payment. Following receipt of the Final Report as described in Section 3.5.3, Washington State Ferries shall transmit a check for $10,000, payable to the Port of Seattle, in consideration for its prior participation in this Project and receipt of the Final Report.

4.7 Management Tasks.

4.7.1 The Steering Committee shall amend the Scope of Work (Exhibit A) as necessary.

4.7.2 The Steering Committee shall review and approve the Schedule and Budget, and amend it as necessary.

4.7.3 The Steering Committee shall select three (3) Members to function as a Consultant Selection Team. This Team shall review the short list of consultants provided by POS and recommend a Consultant for selection.

4.7.4 The Steering Committee shall appoint the members of the Technical Work Group.

4.8 Information Transmission, Validation and Report Approval Process.

4.8.1 Information Transmission. Unless the TWG determines that information from that Member is not necessary, each Member shall collect all air emissions information determined to be necessary for the Project within its respective area of jurisdiction, according to the assumptions and protocols developed by the TWG. No later than the date specified in the approved Schedule, each Member shall provide the information to the POS Data Manager in the required format. Each Member shall individually bear the cost of producing the information in the required format. Each Member shall respond in a timely fashion to any questions that the POS Data Manager may have about the content or format of their information. By providing this information for inclusion in the Project database, the Members are not waiving their rights of ownership and use of the information.

4.8.2 Data Validation. Each Member that has provided information pursuant to Section 4.8.1 shall receive an electronic copy of its formatted data. Those Members shall have ten (10) days to review the formatted data for quality

and accurateness, and provide any necessary corrections, which shall be delivered to the Data Manager in electronic format.

4.8.3 Preliminary Report. Each Member of the Steering Committee, and each member of the Technical Work Group (TWG), shall receive an electronic copy of the first draft report ("Preliminary Report"), as well as the supporting information that was provided pursuant to Section 4.8.1 and validated pursuant to Section 4.8.2. Members shall have ten (10) days to review the Preliminary Report and supporting information, and provide any necessary corrections, which shall be delivered electronically to the Project Manager in strikeout-underline format.

4.8.4 Final Draft Report. The second draft report ("Final Draft Report") shall consist of a strikeout/underline version of the Report, incorporating all Steering Committee and TWG Members' comments on the Preliminary Report and the supporting information. Each Member of the Steering Committee, and each member of the TWG, shall receive an electronic copy of the Final Draft Report. TWG members shall provide their comments to the Project Manager in electronic format by the date required in the Schedule. After receipt of the TWG's comments, and unless the Steering Committee determines that it is unnecessary, the Steering Committee shall review the Final Draft Report at a Steering Committee meeting, the purpose of which is to obtain agreement on the content of the Final Report. Failure to attend the above-mentioned meeting shall be construed as agreement with the content of Final Draft Report.

4.8.5 Final Report. The third draft is the Final Report. Each Member shall have an opportunity to formally approve or disapprove the Final Report. The Steering Committee may decide to have another review cycle if there are any disapproving Members. At the conclusion of the Project, each Member shall receive an electronic copy of both the Final Report, and the supporting information, no later than thirty (30) days after they are final.

4.9 Public Communication.

4.9.1 No later than the date specified in the approved Schedule, the Steering Committee shall jointly develop a media/communications plan, including the preparation of a press release about the Final Report.

4.9.2 Members agree to endeavor to exercise good judgment and to act in the best interests of the Steering Committee in communicating in any manner with any governmental agencies or other entities concerning the subject of this MOA. Substantive communications by a Member with such third parties concerning the subject of this MOA should be disclosed to the other Members. Members shall not hold public meetings, press conferences, or issue press releases concerning the subject of this MOA without obtaining the prior consent of the Steering Committee or as specified in the media/communications plan developed pursuant to Section 4.9.1.

5. Technical Working Group.

5.1 Representation. The Technical Working Group (TWG) is a group of persons from the Puget Sound area with scientific or technical expertise in air quality emission data collection, who are appointed by the Steering Committee. Each TWG member must agree to sign a confidentiality agreement prior to participation in this Project, which shall be developed and approved by the Steering Committee.

5.2 Tasks and Responsibilities.

5.2.1 The TWG shall review the draft technical approach and data collection assumptions and protocols developed by the Consultant pursuant to Exhibit A, and make recommendations to the Steering Committee regarding what assumptions and protocols should be used.

5.2.2 The TWG shall provide comments on the Preliminary Report and Final Draft Report, pursuant to Sections 4.8.3 and 4.8.4.

6. Confidentiality and Use of Information.

6.1 Confidential Information. "Confidential Information" consists of documents, communications or mental impressions concerning the Project that have not been published or have not become a part of the public domain, *e.g.* the Preliminary Report and Final Draft Report and their accompanying supporting information. The Final Report, and its supporting information, are not Confidential Information. From time to time, the Members may either (1) elect to disclose or transmit Confidential Information to each other or to the Consultant, or (2) be under a duty to disclose Confidential Information pursuant to Section 4.8.1. Confidential Information may be disclosed to or transferred among the Members orally or in writing or by any other appropriate means of communication. The Members intend that no claim of attorney-client privilege or work product immunity or any other privilege be waived as a result of exchange or transmittal of Confidential Information.

6.2 Maintenance of Confidentiality. Except as provided in Section 6.3, each Member agrees that all Confidential Information received from any other Member or the Consultant shall be held in strict confidence by the receiving Member, and that such Confidential Information shall be used only for conducting such activities that are necessary and proper to carry out the purposes of this MOA. Each Member shall take all necessary and appropriate measures to ensure that any person who is granted access to any Confidential Information or who otherwise assists the Consultant in connection with this MOA, including the members of the TWG, is familiar with the terms of this MOA and complies with the terms hereof as they relate to the duties of such person.

6.3 Compelled Disclosure. If Confidential Information becomes the subject of a Public Disclosure Act request, or an administrative or judicial order requiring

disclosure by a Member, the Member may satisfy its confidentiality obligations under this MOA by either (1) objecting to production of any such Confidential Information on grounds of confidentiality and/or any privilege, and seeking an order for protection from disclosure, or (2) promptly notifying the Member(s) that generated the Confidential Information at least five (5) business days prior to any such required disclosure and informing the generating Members of all material information concerning the required disclosure.

6.4 Non-confidential Information. Nothing in this MOA shall prevent the Members from disclosing to others or using in any manner information which the Member can show:

6.4.1 Was known by a Member prior to execution of the MOA, has been published or has become part of the public domain other than by the acts, omissions or fault of Members or their agents or employees in violation of this MOA; or

6.4.2 Has been furnished or made known to a Member by third parties (other than those acting directly or indirectly for or on behalf of the Members) or was obtained by a Member in some manner other than pursuant to this MOA, as a matter of legal right, without any applicable restrictions on its disclosure;

6.4.3 Was in the Member's possession prior to the disclosure thereof by or on behalf of any of the Members; or

6.4.4 Is information that has been made final pursuant to Report Approval Process described in Section 4.8. This includes both the Final Report and the supporting information for the Final Report.

7. Dispute Resolution. If and when there is a disagreement among Members concerning any aspect of this MOA that cannot be resolved pursuant to the decision-making process of Section 4.4, the aggrieved Member(s) may request appointment of a neutral mediator to resolve the dispute. Such request shall be a condition precedent to resorting to other remedies that the aggrieved Member may have. The mediator shall be selected by common agreement between any and all Members involved in the dispute; however, only the requesting Member shall be responsible for paying the fees of the mediator. All members involved in the dispute shall pay its own internal costs for participating in the mediation process. The entire mediation process shall last no longer than fourteen (14) days, starting with the request for appointment of the mediator.

8. No Admission of Liability. A Member's participation in the Steering Committee and compliance with this MOA shall not be considered an admission of liability for any purpose.

9. Enforceability by Third Parties. This MOA is not intended for the benefit of any person or entity not a signatory to this MOA and is not enforceable by any third party.

10. Amendments. This MOA may be amended only in writing by the unanimous approval of the Members, by receipt of written concurrence from each Designated Representative. Such amendments shall become effective on the date written notice of such amendments is postmarked to all Members. However, nothing in this Section prohibits Members from entering into separate agreements with other Members, and unanimous approval is not required for such separate agreements.

11. Successors and Assigns. This MOA shall binding upon the successors and assigns of the Members. No assignment or delegation of the obligation to make any payment or reimbursement hereunder shall release the assigning Member without the prior written consent of the other Members.

12. Severability. If any provision of this MOA is deemed invalid or unenforceable, the balance of the MOA shall remain in full force and effect.

13. Authority of Members. Each Member represents and warrants that he or she has all requisite power (corporate or otherwise) to enter into and be bound by the terms and conditions of this MOA and to carry out its respective obligations hereunder and the execution and delivery by such Member of this MOA and the performance of such Member's obligations hereunder have been duly authorized by all necessary action (corporate or otherwise) of such Member.

14. Counterparts. This MOA may be executed in multiple counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same instrument.

15. Governing Law. This MOA shall be construed under and in accordance with laws of the state of Washington and venue shall lie in King County Superior Court.

16. Entire Agreement. This MOA, including documents incorporated by reference, constitutes the entire understanding of the Members with respect to its subject matter.

IN WITNESS WHEREOF, the Members hereto enter into this MOA. Each person signing this MOA represents and warrants that he or she has been duly authorized to enter into this MOA by the corporation, entity or municipality on whose behalf the person is signing.

AMERICAN LUNG ASSOCIATION OF WASHINGTON	PACIFIC MERCHANT SHIPPING ASSOCIATION
By: [signature]	By: _____
Name: Marina Cofer-Wildsmith	Name: _____
Its: CEO	Its: _____

10. Amendments. This MOA may be amended only in writing by the unanimous approval of the Members, by receipt of written concurrence from each Designated Representative. Such amendments shall become effective on the date written notice of such amendments is postmarked to all Members. However, nothing in this Section prohibits Members from entering into separate agreements with other Members, and unanimous approval is not required for such separate agreements.

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IN WITNESS WHEREOF, the Members hereto enter into this MOA. Each person signing this MOA represents and warrants that he or she has been duly authorized to enter into this MOA by the corporation, entity or municipality on whose behalf the person is signing.

AMERICAN LUNG ASSOCIATION OF WASHINGTON	PACIFIC MERCHANT SHIPPING ASSOCIATION
By:_____	By: M R Moore
Name:_____	Name: MICHAEL R. MOORE
Its:_____	Its: VICE PRESIDENT

OLYMPIC REGION CLEAN AIR AGENCY

By: _____

Name: Richard A. Stedman

Its: Executive Director

PORT OF SEATTLE

By: _____

Name: M.R. Dinsmore

Its: Chief Executive Officer

PORT OF TACOMA

By: _____

Name: _____

Its: _____

PORT OF EVERETT

By: _____

Name: _____

Its: _____

PUGET SOUND CLEAN AIR AGENCY

By: _____

Name: _____

Its: _____

WASHINGTON STATE FERRIES

By: _____

Name: _____

Its: _____

WESTERN STATES PETROLEUM ASSOCIATION

By: _____

Name: _____

Its: _____

OLYMPIC REGION CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

PORT OF SEATTLE

By:_____

Name:_____

Its:_____

PORT OF TACOMA

By:_____

Name: Timothy J. Farrell

Its: Executive Director

PORT OF EVERETT

By:_____

Name:_____

Its:_____

PUGET SOUND CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

WASHINGTON STATE FERRIES

By:_____

Name:_____

Its:_____

WESTERN STATES PETROLEUM ASSOCIATION

By:_____

Name:_____

Its:_____

OLYMPIC REGION CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

PORT OF SEATTLE

By:_____

Name:_____

Its:_____

PORT OF TACOMA

By:_____

Name:_____

Its:_____

PORT OF EVERETT

By:_____

Name:_____

Its:_____

PUGET SOUND CLEAN AIR AGENCY

By: [signature]

Name: Dennis J. McLerran

Its: Executive Director

WASHINGTON STATE FERRIES

By:_____

Name:_____

Its:_____

WESTERN STATES PETROLEUM ASSOCIATION

By:_____

Name:_____

Its:_____

OLYMPIC REGION CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

PORT OF SEATTLE

By:_____

Name:_____

Its:_____

PORT OF TACOMA

By:_____

Name:_____

Its:_____

PORT OF EVERETT

By:_____

Name:_____

Its:_____

PUGET SOUND CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

WASHINGTON STATE FERRIES

By:_____

Name:_____

Its:_____

WESTERN STATES PETROLEUM ASSOCIATION

By: Frank E Holmes

Name: FRANK E. HOLMES

Its: MANAGER, N.W. Region

OLYMPIC REGION CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

PORT OF SEATTLE

By:_____

Name:_____

Its:_____

PORT OF TACOMA

By:_____

Name:_____

Its:_____

PORT OF EVERETT

By: John M. Mohr

Name: John M. Mohr

Its: Executive Director

PUGET SOUND CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

WASHINGTON STATE FERRIES

By:_____

Name:_____

Its:_____

WESTERN STATES PETROLEUM ASSOCIATION

By:_____

Name:_____

Its:_____

OLYMPIC REGION CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

PORT OF SEATTLE

By:_____

Name:_____

Its:_____

PORT OF TACOMA

By:_____

Name:_____

Its:_____

PORT OF EVERETT

By:_____

Name:_____

Its:_____

PUGET SOUND CLEAN AIR AGENCY

By:_____

Name:_____

Its:_____

WASHINGTON STATE FERRIES

By: /FOR

Name: W. Michael Anderson

Its: Executive Director

WESTERN STATES PETROLEUM ASSOCIATION

By:_____

Name:_____

Its:_____

EXHIBIT "A"

TO MEMORANDUM OF AGREEMENT

PUGET SOUND MARITIME AIR QUALITY FORUM
EMISSIONS INVENTORY SCOPE OF WORK

21 April 2005

PUGET SOUND MARITIME AIR QUALITY FORUM
EMISSIONS INVENTORY SCOPE OF WORK

INTRODUCTION

Maritime related "activity-based" emissions inventories will be developed for the greater Puget Sound Area and the waters north to the border with Canada out to the mouth of the Strait of Juan de Fuca. This will include the Port of Seattle, the Port of Everett, and the Port of Tacoma as well as a number of smaller ports and other maritime participants. These participants include but are not limited to: the United States Navy (USN), United States Coast Guard (USCG), Washington State Ferries (WSF), Pacific Merchant Shipping Association (PMSA), and other discrete maritime entities that operate within the study area. The emissions inventory will also be coordinated with the Washington Public Ports Association, which represents these and other Washington ports. The ports and other organizations with maritime operations in the region have agreed to work in a coordinated and collaborative effort to develop the baseline inventory, including documentation of maritime air emissions reductions strategies implemented in the two preceding years. The work will also be coordinated, to the maximum extent practical, with similar work being initiated in British Columbia. It is important that the Technical Approaches for each port and maritime entity be consistent, be based on the latest methodologies, and coordinated up front with the regulatory community to build consensus, such that the final baseline report can receive broad backing from local, state, and federal regulators and the maritime industry itself.

The review and funding for the inventory will be provided by several different ports, maritime related entities, air agencies, and other parties. Those providing the funding are members of the Steering Committee which is made up of the American Lung Association of Washington, Port of Seattle, Port of Tacoma, Port of Everett, Puget Sound Clean Air Agency, the Olympic Region Clean Air Agency, Washington State Ferries, Western States Petroleum Association, the Pacific Merchant Shipping Association, and other parties to the Memorandum of Agreement. The Consultant will also review and perform tasks specified in this Scope of Work in accordance with the provisions of the Memorandum of Agreement (MOA). The Port of Seattle will be the lead-contracting agency for the project and serve as the Project Manager on behalf of the Steering Committee. Members of the Steering Committee and representatives of other organizations appointed by the Steering Committee will comprise the Technical Work Group. The Technical Work Group will review and make recommendations to the Steering Committee regarding the Technical Approach and the draft report(s). The TWG reports its recommendations to the Steering Committee for their final approval. The Consultant will report to the Project Manager and report to and assist in the coordination of the TWG and Steering Committee as directed by the Project Manager. All Consultant work products developed under this effort will go first to the Project Manager for their approval. Further distribution to the Steering Committee and the TWG will be as directed by the Project Manager.

The phrase "activity-based emissions inventory" is intended to include a physical inventory of the emission-producing equipment/vessels, an assessment of the relevant activity level(s) of these equipment/vessels, and an estimate of the exhaust emissions. Evaporative emissions will be included for gasoline-fueled engines. The emission sources to be included are primarily diesel-powered engines. In this context "diesel" fuel means any fuel burned in a diesel engine including, but not limited to on-road and off-road diesel fuels, marine diesel oils (MDO), marine gas oils (MGO), and marine bunker fuels. Commercial marine vessel emission sources commonly include

various diesel internal combustion engine configurations, steam boilers, and gas turbines. Additionally, some cargo handling equipment and on-road vehicles may be powered by gasoline or alternative fuels (e.g., propane forklifts).

Overview of General Approach

The pollutants to be considered as part of this scope include:

- Criteria pollutants
  - NO_x
  - SO_2
  - PM (total, 10-micron, 2.5-micron; elemental, organic, and sulfate PM - subject to availability of reasonably reliable emission factors)
  - VOC
  - CO
- Air Toxic contaminants (subject to availability of reasonably reliable emission factors)
  - Diesel particulate matter (DPM)
  - Selected gases (benzene, acetaldehyde, 1,3-butadiene, formaldehyde, etc.)
  - Metals (chromium, lead, vanadium, mercury, etc.)
  - PAH, other miscellaneous
- Greenhouse gases (TriState Governor's Global Climate Change Initiative)
  - CO_2
  - CH_4 (subject to availability of reasonably reliable emission factors)
  - N_2O (subject to availability of reasonably reliable emission factors)

The final suite of estimated pollutants will be based on those with sound emission factors as recommended by the TWG and approved by the Steering Committee. Emissions will be estimated in tons per year and tons per day.

The inventory will use 2005 as the baseline year. Members have been implementing strategies to reduce air emissions from maritime activities. The consultant and Members will also gather data to enable calculation and documentation of the benefits from reductions made within the two years prior to the baseline year. Strategies implemented earlier that have resulted in substantial emissions reductions may be included in the report narrative if approved by the Steering Committee. The following table presents the geographic extent of the inventories categorized by the maritime Members of the Steering Committee.

Maritime Members	Marine	Cargo Handling Equipment	Locomotive	Onroad Trucks
Port of Seattle	Regional	Terminal	TWG	TWG
Port of Everett	Regional	Terminal	TWG	TWG
Port of Tacoma	Regional	Terminal	TWG	TWG
PMSA	Regional	Terminal	TWG	TWG
WSPA	Regional	Terminal	TWG	TWG
USN	Regional	Terminal	TWG	TWG
WSF	Puget Sound from Sydney B.C. to Pt. Defiance, Tacoma, WA	NA	TWG	TWG
USCG	Regional	Terminal	TWG	TWG
Other Ports	Regional	Marine Facilities	TWG	TWG

The geographical extent for marine vessels (including harbor vessels) of the inventory will regional and encompass U.S. waters in the area from the U.S. Coast Guard "J" Buoy at the entrance to the Strait of Juan de Fuca eastward and from the U.S./Canadian border south each maritime facility. Data from the Coast Guard Coordinated Vessel Traffic System (CVTS) will be compiled starting with the vessel Tofino check-in which is required 24 hours prior to arrival at the U.S. Coast Guard "J" Buoy. The time and position data can be used to calculate speed and engine load factors for emissions estimates. Emissions from vessels heading through the inside passage will be estimated to the United States/Canada border. Cargo handling equipment by nature is nonroad and inventories are generally confined to terminals. Locomotives and on-road trucks will be estimated within each port and maritime facility and include directly related activities in the immediate vicinity as recommended by the TWG and approved by the Steering Committee in the Technical Approach.

All mobile sources associated with maritime-related activities will be included in the inventory. The list will be defined as specifically as possible as part of the Technical Approach approved by the Steering Committee. It will be important to identify any sources not captured in the inventory. The major source categories found operating in the maritime community include:

- Ocean-Going Vessels (cargo and cruise ships, large fishing vessels, government and military vessels, etc.)
- Harbor Vessels (towboats, fishing vessels, tugboats, ferries, excursion vessels, recreational vessels, etc.)
- Cargo Handling Equipment (nonroad equipment that works on terminals)
- Onroad Vehicles (onroad trucks predominately and in some cases, buses)
- Locomotives (switching and line-haul)
- Special Maritime-related Sources

All maritime-related and tenant-related emission sources will be included, such as those associated with cruise passenger cars/buses and school buses (Port of Seattle) under the on-road vehicle subcategory. Recreational watercraft will be included if a port owns/operates a recreational marine marina. Each source category is further discussed below with the goal of outlining the primary methods to be used to collect data and estimate emissions, and to discuss any options or alternatives.

For each source type, where feasible, emissions by activity metric will be included. For example, tons of cargo handing equipment/container move or tons of emissions/1,000 passengers.

The following table presents the initial list of source categories for which each Member will provide information as needed during the development of the inventory. The Consultant will seek data related to maritime operations from participants who are not subject to the agreement, such as the U.S. Coast Guard and Navy. Details will be specified in the Technical Approach approved by the Steering Committee.

Participant	OGVs	Harbor Vessels	CHE	Rail	Onroad Trucks	Other Sources
Port of Seattle	✓	✓	✓	✓	✓	✓
Port of Everett	✓	✓	✓	✓	✓	✓
Port of Tacoma	✓	✓	✓	✓	✓	✓
WSPA	✓	✓	✓			✓
WPPA	✓	✓	✓	✓	✓	✓
BNSF/UP Railroads				✓		✓
Wash. State Ferries		✓				✓
Clipper Navigation		✓				✓
PMSA	✓		✓			✓
NWFA	✓	✓				✓
USN	✓	✓				✓
USCG	✓	✓				✓

Other participants not listed in the above table will be identified and brought into the process by the Consultant working with the TWG and the Steering Committee.

The spatial allocation of the findings will be included in the Technical Approach to be approved by the Steering Committee and coordinated with the regulatory community. The TWG will recommend the resolution that will be needed. In general, emissions for each source category by maritime organization will be allocated within the agreed modeling grid system as resources permit. This grid system may change resolution depending on the needs and support from agencies requesting a more detailed resolution.

Finally, several of the participants in both the Steering Committee and the TWG have committed resources (such as interns, staff, and access to data sources) that will be coordinated by the Consultant as directed by the Project Manager.

The following six tasks will need to be completed by the Consultant under supervision by the Project Manager:

- Task 1: Develop and Coordinate an Approved Technical Approach
- Task 2: Develop Emission Estimates for the Six Source Categories
- Task 3: Coordinate with Technical Working Group and Steering Committee
- Task 4: Develop Draft and Final Reports
- Task 5: Integrate Support for Database Development & Populating
- Task 6: Coordinate Participant Committed Resources

Further details for each task are described in the following sections.

TASK 1: DEVELOP AND COORDINATE AN APPROVED TECHNICAL APPROACH

This task is key to understanding data sources and collection methods. The Consultant will develop a draft Technical Approach (TA) in conjunction with the TWG to describe how the activity-based emissions inventory will be prepared with an emphasis on accuracy and meticulous documentation of data and methodology to support additional analysis in the future. The TA will be as clear as possible regarding data collection methods up front. The draft TA document will be coordinated and approved by the Project Manager prior to submittal to the TWG for comments. The TA must be approved by Steering Committee prior to the start of detailed data collection and emission estimating begins. The TA will be built on estimating methodologies for maritime-related sources, including the recently completed marine inventories in California, New York, and as applicable, the Northwest. The TA will be standardized with other maritime emissions inventories to the extent practicable and as approved by the Steering Committee. The TA will include documentation of assumptions sufficient to allow technical use and comparison of this inventory with others cited in this paragraph. Since the inventory will include greenhouse gases, the latest available emissions factors and estimating methods will be evaluated and proposed in the TA document provided by the Consultant. Coordination, to the maximum extent practical, with Environment Canada and the Greater Vancouver Regional District (GVRD) will again be critical. The methodologies for each source category will be coordinated with the Project Manager prior to submittal to the TWG and the Steering Committee for their review, comments, and endorsements.

While each source category has a slightly different methodology for estimating air emissions, the general approach is basically the same. Emission estimates are developed as a function of engine power, activity, and an emission factor (where feasible). Review of the fuel sulfur content sampling of a statistically significant number of vessels, including fuels for both the main engines and on-board generators, will be conducted with the assistance of PMSA and other Members and participants. To the extent practicable, every vehicle or piece of equipment will be inventoried and entered into a database, with engine parameters (make and model, maximum rated power, etc.) and applicable activity/operational data (e.g., hours, miles, gross ton-miles, gallons, throttle notch, etc.) being recorded. For those activities associated with a marine terminal, a terminal source identification code will be developed. Off-terminal activities will be assigned geographic identifiers relating to specific areas, (such as a rail yard or roadway).

The TA document will include the following subject areas at a minimum:

- Emission estimating methodologies for the six source categories listed above
- Data collection approach and description of types of information to be collected for each source category (for example: engine manufacturer, make and model years, fuel type, and duty cycle data).
- Project schedule and milestones
- Coordination plan for incorporating resources provided by participants
- How the Consultant will address confidentiality concerns from source operators and owners
- Quality Assurance/Quality Control (QA/QC) plan

TASK 2: DEVELOP EMISSION ESTIMATES FOR THE SIX SOURCE CATEGORIES

Based on the methodologies suggested by the TWG and approved by the Steering Committee, the Consultant will collect the appropriate data and develop emission estimates for the six source categories under this task.

The methodologies by source category are further discussed below.

Ocean-Going Vessels (OGVs)

OGVs are typically grouped by the cargo they carry as the cargo type strongly influences their physical parameters and operational activities. At a minimum the following OGV subcategories will be considered:

- Containerships
- Cruise ships
- Tankers (crude, chemical)
- Dry bulk carriers
- Auto carriers
- General cargo ships
- Large fishing vessels
- Refrigeration ships
- Roll-on/roll-off ships
- Military ships (USN, Coast Guard)
- Others (heavy-lift, research, integrated tug-barge, etc.)

OGV emissions will be estimated in three modes of activity: transiting, maneuvering, and hotelling. Transiting is the mode in which the ship approaches the coast, including picking up the pilot (arrivals), to the start of maneuvering (or vise-versa for departures) operations. Maneuvering is when a ship transitions from transiting to hotelling. Hotelling is typically when the ship is at berth dispensing or loading cargo, but can include maintenance time at berth for maintenance and repair. Emissions will be estimated by vessel type and mode for the study area. The Consultant will include a combination of existing data from other relevant studies; interviews with vessel owners, operators, and association representatives; and vessel rides to directly observe and document key activity data as specified in the TA and resources permit.

Harbor Vessels

Commercial marine vessels not listed above fall into the towboat or harbor vessel category. The harbor vessel source category includes any vessel that generally spends its time within the study area and includes:

- Assist tugboats
- Line-haul and shift towboats
- Ferries
- Excursion vessels (charter fishing vessels may be included here)

- Commercial fishing vessels
- Dredges and dredge support vessels
- Crewboats
- Recreational vessels (for completeness)
- Government vessels (pilot, patrol, fire boats, research, and enforcement)
- Others

Similar to OGVs, emissions will be estimated on an activity basis and cross-checked with fuel data if available.

The Puget Sound Clean Air Agency has developed a methodology for estimating emissions from the recreational vessel fleet that the Consultant will review and refine in coordination with the agency. This will be used as the baseline methodology for recreational vessels. The report will include a sensitivity analysis comparing the methodology with the activity based approach and a discussion of limitations for this approach.

For the Washington State Ferries, existing emissions estimates will be reviewed, and values for time-in-mode and engine power for the various routes will be reviewed and refined, and the WSF data will be compiled into the regional database. Washington State Ferries has monthly and annual fuel consumption data for each ferry, which may be used to estimate the ferry emissions by the power demand method as well. The deviation of the power demand estimates from the fuel method estimates can be a gauge of how reasonable the power setting assumptions are for the ferries and other categories for which fuel data is not available.

As with OGV, the Consultant will include a combination of existing data from other relevant studies; interviews with harbor craft vessel owners, operators, and association representatives; and vessel rides to directly observe and document key activity data as specified in the TA and resources permit.

Cargo Handling Equipment (CHE)

CHE is nonroad equipment that operates primarily on port terminals. CHE covers a broad range of equipment that typically includes:

- Yard tractors
- Top and side loaders
- Forklifts
- Rubber tired gantry cranes
- Rail mounted gantry cranes
- Wharf cranes (can be electric or diesel electric configured)
- Cranes
- Backhoes
- Others (such as container refrigeration units, landscape and maintenance equipment)

All equipment types will be assigned a source category code (SCC). The method to estimate emissions is to incorporate physical and activity parameters into the model as inputs. The Consultant will interview terminal operators to better understand terminal hours of operation, equipment characteristics and duty cycles, and other activity related parameters that are relevant to the project. Output will be in a by-model-year output format. It should be noted that there are some kinds of equipment used at marine ports which need to be reclassified because they do not naturally fit into the model's source categories, such as:

- Container lift, top-pick, side-pick (industrial forklift)
- Rubber-tired gantry crane (other industrial equipment)
- Landscaping and maintenance equipment

WSF gasoline-powered "Dock Bulls", used to move dead cars and trash on and off the ferries, are not included in current estimates, and may be excluded, as will the on-site emergency generator as their emissions are very small relative to the vessels.

Onroad Trucks

Diesel powered trucks, such as stake-bed, container, tanker, refrigerated, and bobtail (no-trailer) trucks are the main sources of highway mobile source emissions near maritime facilities, although buses, delivery, construction, and personal commuter vehicle activities can also be significant. Travel demand modeling is most appropriate for estimating emissions from maritime-related activity on public roadways beyond its terminal property limits, and to maintain consistency with previous regional travel planning activities. Therefore the emissions inventory will leverage existing maritime and regional government transportation studies, Metropolitan Planning Organization (e.g., the Puget Sound Regional Council [PSRC]) studies and information, and other environmental documentation associated with maritime related on-road sources. It should be noted that off-road trucks (for example, terminal tractors) are included in the non-road task.

On-terminal highway truck activity is typically developed from in-out gate transactions. Trucks either have a single loading event (loading or unloading) or a double event (unloading and loading). Operational measures that will be utilized to compile on-terminal and near terminal emission estimates include, but are not limited to:

- Entry queue time (idle or creep-ahead)
- Travel to the loading area
- Loading and unloading (engine idling or engine off)
- Travel to the exit gate
- Drayage trips to nearby rail yards
- Travel on roadways in the immediate vicinity of terminals

Locomotives

Locomotives are grouped into switchyard and line haul engines. Switch engines generally stay within the local area moving rail cars to and from rail yards and terminals. Line haul engines are used to transport rail cars or trains to locations well outside the local area.

Locomotive lines in the area include:

- Union Pacific
- Burlington Northern-Santa Fe
- Tacoma Beltlines
- Other locomotives related to maritime operations

The Consultant will interview locomotive operators and estimate both switch and line haul locomotive emissions associated with the movement of maritime cargoes. The Consultant will ask for locomotive recorder data from locomotive operators.

For both on-road trucks and locomotives the work will be coordinated with regulatory agencies through the TWG to avoid "double counting" maritime related emissions and to agree on methodology to estimate their emissions in the region. To avoid double counting these emissions and the methodology may be discussed in the narrative, but not included in the inventory. If available and resources permit, truck and locomotive origin and destination data related to cargo will be included. The level of detail and approach for off-terminal emissions of on-road trucks and locomotives will also depend on availability of resources as the details of the work plan are prioritized.

Special Sources

The following sources have been included in other inventories and should be reviewed to determine if each participating maritime organization wants to include them.

- Existing construction projects such as dredging, dock construction, and terminal expansions are handled on a case-by-case basis and are reported separately from port operation air emissions.
- Emissions from passenger vehicle traffic associated with cruise ship operations, ferry terminals, and other marine operations will be included for facilities where they are significant
- Heavy-load cargoes such as giant gantry cranes will be flagged.
- U.S. Coast Guard and military activities may or may not be included, depending on national security issues. These may involve large vessel movements such as for military exercises.

TASK 3: COORDINATION WITH TECHNICAL WORKING GROUP AND STEERING COMMITTEE

The Consultant will coordinate with the Project Manager on a regular basis and provide support as directed to the TWG and the Steering Committee. This coordination will be significant during the development of the approved TA document and then again upon development of the final report. During the time in between these two tasks, the Consultant will hold regular update meetings with both groups to provide a status update on the progress of the data collection, emission estimates, report section development, and other updates, as needed. The Consultant will also participate in development of the Communication Plan by the Steering Committee and support development of communication tools and events.

TASK 4: DEVELOPMENT OF DRAFT AND FINAL REPORTS

The Consultant will develop a draft table of contents and a list of what is to be included in the appendices that will be reviewed and approved by the Project Manager prior to submittal TWG and the Steering Committee for review and comment. The Consultant will then prepare a draft report that will include technical appendices for review and comment by both the TWG and the Steering Committee. The Consultant will incorporate comments and a final document with appendices will be provided. The Consultant will provide the report in Word, Excel, and Adobe PDF formats and provide a camera ready final report for printing by the Port of Seattle Print Shop.

The Consultant will prepare intermediate emissions estimates and reports as needed to support grant and other reporting needs related to the project.

TASK 5: INTEGRATION SUPPORT FOR DATABASE DEVELOPMENT & POPULATING

Each maritime Member will develop their own database with their data incorporated into their organization's system at their own cost as desired and appropriate. To maximize time and cost effectiveness, a single database structure will be developed by the Port of Seattle. Participating maritime organizations may also choose to keep and maintain their individual data. The database structure and output formats will be developed in the Database Work Plan and specified by the Port of Seattle. Appropriate training, documentation, and support will be provided by the developer. In addition, data to support a Geographical Information System (GIS) component will be included in the inventory. Emissions inventory data is inherently geographic. Data necessary to support a GIS system will be collected with the other data. The Port of Seattle developed a database business plan in cooperation with its Information Technology group. Port of Seattle staff will develop and manage the database. Data provided by the Consultant for inclusion in the database will be provided in the format specified by the Port of Seattle. The Consultant will support development of the Port of Seattle database and the integration of the inventory data into the database which will serve as the central repository for data for the Puget Sound Maritime Air Emissions Inventory.

TASK 6: COORDINATE PARTICIPANT COMMITTED RESOURCES

As part of the collaborative effort of the participants, resources such as interns, staff, and access to data sources will be provided at unprecedented levels. It will be the Consultant's responsibility to work with the Project Manager and coordinate these resources so that they are effectively integrated into the project. The coordination plan will be incorporated into Task 1.

SCHEDULE

With a baseline year of 2005 for the inventory the following schedule should be met by the Consultant:

- Task 1: Develop and Coordinate an Approved Technical Approach
  Draft Technical Approach document - 90 days after notice to proceed
  Final Technical Approach document – 15 days after receipt of all comments

- Task 2: Develop Emission Estimates for the Six Source Categories
  Data collection for all source categories completed within first 120 days of 2006
  Draft emission estimates – 240th day of 2006
  Spatial allocation of emissions – 270th day of 2006

- Task 3: Coordinate with Technical Working Group and Steering Committee
  Coordination will be throughout the entire project

- Task 4: Develop Draft and Final Reports
  Draft Table of Contents and Appendices – 120 days after Final Technical Approach document
  Draft Report – 300th day of 2006
  Final Report – 30 days after receipt of all comments

- Task 5: Integration Support for Database Development & Populating
  Integration will be throughout the entire project

- Task 6: Coordinate Participant Committed Resources
  Coordination efforts will be throughout the entire project

The emission inventory schedule for the Port of Everett will be accelerated so that the results can be incorporated into an environmental evaluation of a proposed project prior to the end of 2005. It will be important for the selected Consultant to coordinate with the Project Manager and Port of Everett to meet this requirement.