

INTERLOCAL AGREEMENT

This Interlocal Agreement ("Agreement") is entered into between the **Puget Sound Clean Air Agency**, (hereinafter referred to as the "Agency"), a municipal corporation of the laws of the State of Washington, and **University of Washington**, hereinafter referred to as "UW"), located at: Office of Sponsored Programs, 4333 Brooklyn Avenue Northeast, University of Washington, Box 359472, Seattle, WA 98195-9472.

WHEREAS, the Board of Directors of the Puget Sound Clean Air Agency deems it desirable to enter into an Agreement with UW for the purposes of facilitating ongoing meteorological and air quality forecasting programs for the Agency, this Agreement is intended to provide access to the Agency to operational meteorological products and data. This Agreement is also intended to provide access to scientific experts from **UW-Department of Atmospheric Sciences** (hereinafter referred to as "UW-DAS") for independent peer review and guidance of the Agency projects and new product development, to support the exchange of research findings between both parties, and to provide access for students and faculty within UW to air monitoring data and expertise within the Agency. This agreement also anticipates a future need by UW for equipment and supplies necessary to sustain the operations of the UW operational and analytical products; and

WHEREAS, the parties enter into this Agreement pursuant to RCW 39.34 et. seq.

NOW, THEREFORE, the Agency and UW mutually agree as follows:

1. **Purpose and Scope of this Agreement.**

The purpose of this Agreement is to facilitate ongoing meteorological and air quality forecasting programs for the Agency. This Agreement is intended to provide access to the Agency and UW to operational meteorological products and data. This Agreement is also intended to provide access to scientific experts for independent peer review and guidance of the Agency projects and new product development, to support the exchange of research findings between both parties, and to provide access for students and faculty within UW to air monitoring data and expertise within the Agency. This agreement also anticipates a future need for equipment and supplies necessary to sustain the operations of the UW operational and analytical products.

Specific details of work to be completed by the parties and funding agreements for this work will be set forth in a separate scope of work, known as Attachment A, agreed to by the parties. Attachment A, and revisions thereto, are hereby incorporated into this Agreement. Attachment A will be updated as needed, and at least annually, by the parties, and will be made effective by signature of both parties.

Attachment A shall include the following elements: a statement of work (SOW) listing specific products and objectives for the mesoscale prediction system and facility during the applicable funding period; a detailed budget describing personnel time, student support, benefits, equipment, and supplies needed to achieve these specific aims; a budget justification; and a time table for expected tasks and activities.

A. Duties of Agency

The Agency annually shall prepare an updated scope of work (attachment A). As needed, the Agency shall provide to UW a list of equipment and supplies intended to be paid for by the Agency pursuant to this Agreement.

B. Duties of UW

1. **Budget.** UW shall develop and submit to the Agency Project Manager by March 1st each year, a budget to support mutually agreed tasks and procurements contained in Attachment A.
2. **Site location and administration.** The mesoscale prediction facility (hereinafter "Facility") shall be located within UW at a site selected for the convenience of both parties and shall have the capacity to meet mutual operational requirements reasonably needed to perform this Agreement. The Facility shall be operated under the supervision of a Facility director appointed by the UW-DAS chair.
3. **Facility operational requirements.** UW shall develop a list of the operational requirements for the Facility that will serve the needs of the parties and support the goals of the Agency. UW shall submit this list of operational requirements to the Agency Project Manager for review by May 31 of each year, if applicable.
4. **Quality control.** UW shall develop a quality control plan for the Facility to meet UW's and the Agency's goals and requirements. UW shall develop, maintain and improve a performance verification system to show model skill and to support future improvements and research needs. UW shall submit this quality control plan to the Agency Project Manager for review by May 31 of each year.
5. **Material tracking.** UW shall maintain a written record of incoming and outgoing equipment and non-expendable items such as instruments, computers and software (costing over \$2,000 each) purchased with the Agency funds authorized in this Agreement. Ownership of such items will vest in UW, but shall be used for this work as long as this Agreement is in force. UW shall retain this record for 3 years after termination of this Agreement and shall make the record available to the Agency Project Manager upon request.

6. **Grant Reporting.** UW shall cooperate with the Agency in providing to the Agency all necessary information to comply with all grant reporting requirements.

C. Shared duties of the Agency and UW

1. **Efficient data exchange.** UW and the Agency agree that sharing and transfer of data from the Facility's activities is desirable and necessary for both parties. Upon request, each party shall provide copies of data collected in electronic form to the other party in a timely manner. When needed to facilitate Agency operations, a written data-sharing plan for specific tasks shall be specified in Attachment A.

2. **Communications program.** UW and the Agency agree that they have a significant mutual interest in communicating Facility activities with the public. The parties agree to work together to produce reports describing these activities; to document products such as scientific papers, reports, abstracts, posters, presentations or other summaries; and to make recommendations for workshops, education materials, staff training or other educational tools that would enhance the effectiveness of the mesoscale modeling Facility and would support the Agency's mission.

2. **Compensation.** The total amount paid by the Agency for satisfactory performance of the work under the full term of this Agreement, including the amounts set forth in Attachment A, shall not exceed \$250,000. Subject to paragraph (C) of this section, annual funding shall be specifically established each year of the Agreement in Attachment A.

A. For ongoing involvement and Agency funding support of UW mesoscale modeling system activities in FY 2011, the Agency and UW agree that the Agency shall pay no more than to a fixed indirect cost rate of 25% for all activities and non-equipment related budget items as set forth in Attachment A.

B. To obtain payment, UW shall submit invoices monthly to the Agency. Submitted invoices shall show time and material information. Charges shall be broken down by the hour showing task and/or subtask performed, shall include the name of the person who performed the work, the cost per hour and the specific number of hours spent within a given billing period.

UW shall submit invoices to the Agency's Manager of Finance and Purchasing. Invoices shall be paid within thirty (30) days after review and approval by the Project Manager. The final invoice for each Attachment A budget must be submitted no later than ten (10) working days after the end date shown on that Attachment A version.

C. Annual funding for this Agreement expires each year on June 30. Funding for work to be conducted after June 30th each year is contingent upon approval of funding

by the Agency Board of Directors and satisfactory performance by UW. UW shall not proceed to perform any work under this Agreement after June 30th each year until so authorized by the Agency Project Manager.

3. **Term.** The effective date of this Agreement is July 01, 2010. No payments in advance or in anticipation of services or supplies to be provided under this Agreement shall be made by the Agency. Any costs incurred prior to the effective date of this Agreement will be at the sole expense and risk of UW. The termination date of this Agreement is June 30, 2015.

4. **Communications.** The following persons shall be the contact person for all communications regarding the performance of this Agreement.

UW	Agency
Clifford Mass	Project Manager: Erik Saganic
University of Washington	Puget Sound Clean Air Agency
Dept of Atmospheric Sciences Box 351640, Seattle, WA 98195	1904 Third Avenue, Suite 105 Seattle, WA 98101
Phone: 206 685 0910	Phone: 206 689 4003
Fax: 206 543-0308	Fax: (206) 343-7522
E-mail address: cliff@atmos.washington.edu	E-mail address: eriks@pscleanair.org

5. **Changes.** The parties may, from time to time, require changes in this Agreement, including Attachment A. The parties shall mutually agree to the changes by written amendment to the Agreement.

6. **Early Termination.** Either party may terminate this Agreement at any time with or without cause by giving a thirty day (30) written notice of such termination and by specifying the effective date of the termination; provided that the termination shall be preceded by a face-to-face meeting between UW and the Agency. Upon termination of this Agreement, the Agency, in addition to any other rights provided in this Agreement, may require UW to deliver to the Agency any property specifically produced or acquired for the performance of such part of this Agreement as has been terminated.

7. **Subcontracting.** Neither party, nor any subcontractor of either party, shall enter into subcontracts for any of the services or work contemplated under this Agreement without obtaining prior written approval of the Agency. In no event shall the existence of any subcontract operate to release or reduce the liability of UW to the Agency for any breach in the performance of UW's duties.

8. **Assignment.** The work provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party, in whole or in part, without the express prior written consent of the other party.

9. **Indemnification.** Each party to this agreement shall be responsible for its own negligent acts and/or omissions and those of its officers, employees and agents. No party to this agreement shall be responsible for the acts and/or omissions of entities or individuals not a party to this agreement.

10. **Compliance with All Laws and Regulations.** The parties shall comply with all applicable local, state, and federal laws, regulations and standards necessary for the performance of this Agreement.

THIS Agreement is executed by the persons signing below, who warrant they have the authority to execute this Agreement.

**PUGET SOUND
CLEAN AIR AGENCY**

**UNIVERSITY OF
WASHINGTON**

*Robin Mendenhall
Grant and Contract Administrator
Acting for Lynn Chatterbox*

By: *Paul Roberts*
Paul Roberts
Board of Directors, Chair

By: *Roberta L. Mendenhall*
Lynn Chatterbox
Executive Director
Office of Sponsored Programs

Date: 9-8-10

Date: August 24, 2010

Read and Understood by:

Clifford F. Mass
8-24-2010

Clifford F. Mass
Principal Investigator,
Professor, Atmospheric Sciences

Attest:

By: *Craig Kenworthy*
Craig Kenworthy
Executive Director

Date: 9/1/10

Approved as to Form:

By: *Laurie Halvorson*
Laurie Halvorson
Director of Compliance and Legal

Date: 8/30/10

Attachment A

Effective July 1, 2010 to June 30, 2011

Project Title: Mesoscale Meteorological Prediction System

Short title: WRF/MESOSCALE

Project PI: Clifford F. Mass

UW shall provide the following services:

1. Services- Continuing

A) Provide a suite of meteorological analyses and forecast products to the Agency created from twice daily, operational runs using the current and future regional versions of the University Of Washington, Mesoscale Environmental Prediction System (formally MM5).

B) Provide and maintain a website for accessing all products and data resulting from the project.

C) Create twice-daily (0000Z/1200Z) forecast, skew-t diagrams, and meteograms and time-height cross-section graphic products valid at 3-hour increments from initialization through 72 hours. These products will be for both the 12 and 4-km (through 72-h) domain. Add additional sites as provided by the Agency.

D) Provide a suite of air quality relevant forecast products for predicted ventilation.

E) Provide a limited suite of air quality and meteorological extended forecast products through hour 180 from run initialization.

F) Make improvements in hardware and the modeling system to enhance forecast skill and product availability.

2. Services- New

A) Task 1: Implement and maintain a password protected archive of specified Weather Research and Forecasting Model/Global Forecast System (WRF/GFS) 12 km forecast products needed by the Agency to document and study air quality forecasts and wood smoke curtailment decisions. The archive products must be available online for the Agency use beginning October 01, 2010. Task completion date: March 31, 2011.

The list of products that shall be made available online by UW include:

BV 12hr 500m	Each run
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BV 24hr 500m	Each run
BV 12hr pbl	Each run
BV 24hr pbl	Each run
WWA wind 10m	Each run
Cross Sections (QCL)	Each run
Time Heights Meteograms Soundings	drrng.th.gif kalw.th.gif keat.th.gif kklis.th.gif kotx.th.gif ksew.th.gif kykm.th.gif ps01.th.gif ps02.th.gif ps03.th.gif ps04.th.gif ps05.th.gif ps06.th.gif ps07.th.gif ps08.th.gif ps09.th.gif ps10.th.gif ps11.th.gif ps12.th.gif ps13.th.gif ps14.th.gif ps15.th.gif ps16.th.gif ps17.th.gif ps18.th.gif ps19.th.gif ps20.th.gif ps21.th.gif ps22.th.gif ps23.th.gif ps24.th.gif ps25.th.gif ps26.th.gif ps27.th.gif

8 Replacement Sage Nodes	\$26,746	2x4node in 2 u boxes - each node dual E5620 with 24 gig, 250g drive and QDR infiniband.
Replacement SQL Cluster	\$5,150	2 systems in 1 u each with dual E5620, 6 gig, a 40g sd boot drive and a 2TB drive
Replacement RAID (clr or sage)	\$7,651	2x quad core / 12gig with 9x2TB drives with room to expand to 24
Infiniband cards for Sage Blades	\$1,848	Mellanox Infinihost Blade Mezzanine HCA
Infiniband cables	\$1,670	QSFP (QDR) 4X Cable 2m or 3m
Infiniband card for Sage	\$585	Qlogic QLE7340 QDR infiniband host adapter
Total	\$50,000	

The one-time funding supplied by the Agency for Task 4 in an amount not to exceed \$50,000 will be provided from a larger \$600,000 Washington State Department of Ecology Wood Smoke Capital Budget Grant, from which the other funds go to wood smoke change out programs. The funding for Section 2, Task 4 is part of the Wood Smoke Fine Particles and Ozone Work Plan.

(iii) Equipment Explanation provided by UW:

The Sage nodes are the main computational resource for the high-resolution real-time forecasts. They are now getting old, less dependable and are in need of replacement to insure continued delivery of forecast products. These procurements will not only enhance reliability, but also provide the computational resource to do 4/3 km resolution twice a day and more rapidly provide the 36-12-4 km domains for the Puget Sound region.

The SQL machine manages the main SQL database, the key repository of all regional data. It is now five years old and the potential for failure is great. It will be replaced.

The CLR RAID disk array is also near the end of its reliable lifespan and needs to be replaced.

The infiniband cards and cables will provide high-bandwidth communication among the new processors, modernizing our system to allow fast communication between nodes. This should dramatically enhance the throughput of UW's main computational nodes.

3. UW Budget Justification for Attachment A (FY 2011)

The detailed budget identified herein is for completing the specified tasks in this Attachment. A significant portion of this budget is for procurement of equipment necessary to fully implement the 1.33km domain as described in Section 2, Task 3. The remaining elements of the budget are personnel, benefits and indirect costs. Professor Clifford Mass will supervise the effort. David Ovens, Phil Regulski, and Jeff Baars are primarily responsible for creating the required products and graphics. Dave Ovens is tasked with running the critical modeling systems and for making model grids available to the others.

MEPS Air Qual 4 7/10
Clifford F. Mass
University of Washington

Detailed Budget

Start: 7/1/2010
End: 6/30/2011

Salaries:	Monthly	Mos.	
Ovens	6,730	1.00	6,730
Regulski	4,940	0.82	4,068
Baars	5,674	0.82	4,670
	Salaries		15,468
	Benefits		4,532
	Equipment		50,000
	MTDC		20,000
	Total Direct Costs		70,000
	Indirect Costs (25.0% on MTDC)		5,000
	TOTALS		75,000

4. Compensation for Attachment A Tasks in FY 2011

The Agency shall pay the UW for the work performed to accomplish the tasks and products contained in this Attachment in an amount that shall not exceed \$75,000 for the period of July 01, 2010 to June 30, 2011. The final invoice must be submitted to the Agency no later than ten (10) working days after the end of the performance period for Attachment A (June 30, 2011). As part of this Agreement and for the period of July 01, 2010 to June 30, 2011, tax and shipping costs for the hardware, if necessary, shall not exceed the Detailed Budget (above).