

**Notes from AiRPACT-4 Breakout Session**  
**NW-AIRQUEST Annual Meeting 2012, June 6-8, 2012, Pullman, WA**  
**Facilitated by Bob Kotchenruther**

**This breakout session basically went over and ratified the following Appendix A Work Plan of the Contract for funding WSU to develop and maintain AIRPACT-4.**

## **APPENDIX A WORK PLAN**

**Project title: NW-AIRQUEST Regional Air Quality Modeling System: AIRPACT-3 and AIRPACT-4**

**Project Duration:** July 1, 2012 – June 30, 2013

**Description and scope of project:** To provide support for the Northwest International Air Quality Environmental Science and Technology Consortium (NW-AIRQUEST) for operation, enhancement, and evaluation of the AIRPACT-3 and AIRPACT-4 regional air quality model forecast systems. The AIRPACT system accessed at <http://lar.wsu.edu/airpact/> currently operates year-round on a daily basis to produce detailed maps of pollutant concentrations for a domain that includes Idaho, Oregon, Washington, and portions of southern British Columbia and Alberta.

### **Goals/Direction:**

The following items describe the overall goals and directions for project development as expressed by the air directors of Washington, Oregon and Idaho. This section is intended to provide an understanding as to areas of interest and concern from an air quality policy perspective. These are goals, not specific deliverables expected during the contract period.

1. Improve model performance so that model trend predictions provide useful guidance for air quality forecasting.
2. Maintain ambient air monitoring data streams from AIRNow.
3. Make available at least two years of web-based graphical displays of model outputs.
4. Ensure each gridded model output file remains accessible for at least one week.
5. Discussions with NW-AIRQUEST shall lead to identifications of enhancements or additional graphical products that will be provided.

## **Work Plan:**

Washington State University will implement the following improvements and enhancements to the AIRPACT modeling system:

1. Complete the development work associated with running AIRPACT-4 at a 4-km resolution and deploy on a daily basis the hourly forecast product.
2. Add a 'ClearSky-type' AIRPACT-4 run to include scenarios of prescribed agricultural burns. The exact scenarios and carryover of agburn emissions into the main AIRPACT-4 predictions should be discussed with stakeholders first.
3. Implement emissions inventory improvements in the AIRPACT-4 system, including:
  - updating the mobile emissions model from Mobile6.2 to MOVES,
  - re-establishing treatment of wildfire forest burning by means of acquiring SMARTFIRE fire detects through operation of the BlueSky FRAMEWORK and plume rise by local SMOKE processing,
  - improve the characterization of woodstove emissions in AIRPACT-4, including working with Ecology, IDEQ and ODEQ to update housing surrogate from 2000 Census to 2010 Census, exploring allocating supplementary/recreational burning emissions to total households, and primary burning to primary wood heat households,
  - evaluate spatial surrogates for the 4 km AIRPACT-4 grids to insure continued adequacy and appropriateness,
  - updating to most current version of SMOKE that is functional with the version of CMAQ being used, and
  - updating the emissions inventory in collaboration with the EI workgroup to better represent the forecast period.
4. Form a workgroup within NW-AIRQUEST to discuss methods of evaluating and improving PM2.5 performance in AIRPACT-4. Provide quarterly model performance statistics using data from quality assured databases like EPA's AQS and that of the IMPROVE program. Provide real-time verification statistics of AIRPACT-4 accuracy by pollutant, by month, and provide for user access to AIRPACT-4 results and monitoring data for user-defined periods for download and user analysis.
5. When and if practical, update model code to CMAQ v.5.0 and extend AIRPACT-4 model run to 36 or 48 hours.
6. Specify cost of hardware improvements required for AIRPACT-4 implementation in project budget.

Washington State University will continue performing the following AIRPACT related activities:

7. Provide on a daily basis hourly forecasts of air quality for the three state region covering ID, OR and WA that can be used as guidance in daily air quality management. Continue to run the 12-km AIRPACT-3 model in parallel with 4-km AIRPACT-4 until such time as the 4-km solution is satisfactorily stable, with reliability measures comparable to those required of the 12-km product.
8. Continue improvements to web graphical display and glossary.
9. Maintain the “Change Log”, posted on the AIRPACT web site.

**Deliverables:**

1. Provide a suite of air quality predictions in graphical form via the AIRPACT project website. Products will be updated and posted to the website at <http://lar.wsu.edu/airpact/> by 6 am local standard time.
2. These products will be produced and updated to the website every day with a reliability measure of 95%, pending availability of WRF model output.
3. Archive the daily model output and hourly model solutions and provide access to same upon requests from users.
4. A semi-annual report must be provided to Project Sponsor for the period ending December 31, 2012. The semi-annual report must be submitted no later than 45 days after the end of the reporting period and can be delivered in the form of a presentation at the February NW-AIRQUEST/Modeling Consortium meeting. The semi-annual report will include:
  - a. description of the project status
  - b. status of specific deliverables and scoring for performance measures
  - c. description of obstacles or problems encountered, and
  - d. amount billed on the project to date.
5. Provide an annual “state of the model” report detailing progress made against specific deliverables, status of performance measures, problems encountered and or resolved, and future direction/recommendations. The report shall include a description of model validation protocols used and validation results developed to date. This report will also include updates, as appropriate, on related projects involving incorporation of satellite products within AIRPACT, improvements in AIRPACT web graphics, including use of GIS tools, and capabilities and results from ongoing analysis of AIRPACT deposition output. This report must be provided to Project Sponsor for the contract period ending June 30, 2013. Annual report must be submitted no later than 30 days after the end of the reporting period, by July 30, 2013.

**What is the environmental outcome?** Daily operation of this modeling system will improve our ability to make knowledgeable decisions to manage air quality in the Pacific Northwest and protect public health.

Who will benefit from this project? This project directly benefits air quality managers in Washington, Oregon and Idaho and the population of the three states who breathe the air.

Project Period: July 1, 2012 through June 30, 2013.

Project Sponsor: Bruce Louks, Idaho Department of Environmental Quality.

Project lead or technical lead/number: Dr. Brian Lamb, Washington State University.