National Park Service

US Fish and Wildlife Service

US Forest Service

FLM UPDATE

FLMs & Air Quality

"…conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."(NPS Organic Act)

"Wilderness areas…shall be administered…in such a manner as will **leave them unimpaired** for future use and enjoyment as wilderness…" (Wilderness Act of 1964)

"…**preserve, protect and enhance the air quality** in national parks, national wilderness areas, national monuments, national seashores…" (Clean Air Act as amended in 1977)

"In cases of doubt the land manager should err on the side of protecting the air quality-related values for future generations." (Senate Report No. 95-127, 95th Congress, 1977)

History

- Interagency Workgroup on Air Quality Models (IWAQM)
  - Phase 1 – MESOPUFF II
  - Phase 2 – CALPUFF
  - Phase 3 – …
- FLAG 2000 Established to provide guidance on how to use the new beast
- FLAG updated 2010

FLAG 2000 vs. 2010

http://www.nature.nps.gov/air/permits/flag/index.cfm

Table 1. FLAG 2000 vs. FLAG 2010 Analyses

	FLAG 2000	FLAG 2010
Annual emissions/Distance (Q/D) screening criteria. (Not applicable for Class I increment analyses).	None	≤10 (sum of certain pollutant emissions (TPY) divided by distance (km) from Class I area; applies to all AQRVs, not just visibility. See section 3.2.
Background Visibility Conditions.	Based on annual average natural, using NAPAP estimates.	Based on annual average natural, or 20% best natural, using EPA data from Regional Haze Rule development. See section 3.3.3.
Relative Humidity Adjustment Factor (f(RH)).	Hour-by-hour (with RH capped at 98%).	Monthly average (with RH capped at 95%). See section 3.3.3.
First Level Screening Model.	CALPUFF or CALPUFF-lite.	CALPUFF only. See section 3.3.3.
Visibility Assessment Criteria.	Maximum modeled value.	98th percentile modeled value at any receptor. See section 3.3.3.
Deposition Analysis Thresholds/ Concern Thresholds	None	Provided for nitrogen and sulfur deposition. See section 3.5.6.
Adverse Impact Determination Criteria.	"Likely to Object" if 10% threshold exceeded; regulatory factors implicitly considered.	Adverse impact determination process more explicit; considers regulatory and other factors. See sections 4.2-4.4

Also...

- Expands discussion of “Critical Loads” to reflect some significant developments in this area since FLAG 2000;
- Updates ozone sensitive species lists contained in the FLAG 2000 report, but now includes that information on individual agency websites rather than in the FLAG report;
- Replaces FLAG 2000 W126 and N100 ozone values with current information on the individual agency websites;
- Replaces the dated sulfate, nitrate, and ammonium ion concentration maps with a reference to the NADP site for current trends data.

FLAG to FLAG 2010

- Visibility analysis is a *SCREENING* technique
  - Package as a whole
  - “Refine” a piece go to refined (i.e. short-term) visibility assessment
- Clarifies the near field visibility analysis techniques for analyzing plumes or layers viewed against a background

Policy Challenges

- FLM Role
  - FLM share CAA responsibility with EPA
  - FLM have distinct CAA charge
- Notification
  - Let us know (w/in 300km)
    - Similar to BART
  - Help you screen
    - Request submission of Q/D calculations
- RH SIPs not substitute for PSD review
  - Are a factor in our review of visibility effects
- FLAG and NEPA
- Relationship between Appendix W and FLAG

NEPA and FLAG

- NEPA
  - FLAG addresses PSD, but many of techniques and concepts appropriate for NEPA
  - Regional photochemical models more commonly used (O&G)
- Federal interagency agreement for onshore oil/gas AQ/AQRV analysis
  - Promotes efficiencies
  - Use FLAG methods on FLAG agency lands
    - FLAG methods for photochemical models (coming)
  - Analysis at earliest possible phase
  - General analysis requirements
  - Reusable modeling framework

Appendix W and FLAG Relationship

- Appendix W states:
  - Section 6.1 (b) – “Although such regulatory requirements and manuals may have come about because of EPA rules or standards, the implementation of such regulations and ***the use of the modeling techniques is under the jurisdiction of the agency issuing the manual or directive.”***
  - **Section 6.2.3 (a) -** “The FLM has an affirmative responsibility to protect air quality related values (AQRVs) that may be affected, and ***to provide the appropriate procedures and analysis techniques.”***
- FLAG 2010 outlines current FLM recommended techniques and procedures for AQRV assessments

The NEPA Challenge

- NEPA for Energy Development Projects on Federally Managed Lands
  - At any given time, FLM's usually have at least 6 – 10 NEPA projects
    - Oil and gas and surface mining comprise vast majority of projects
  - NEPA air quality analyses are comprehensive, requiring addressing near-field, AQRV, and O_3/$PM_{2.5}$
    - WRF, AERMOD, CALPUFF, CMAQ/CAMx

Ongoing Technical Challenges

- Meteorology
  - What is the appropriate length of record for prognostic meteorological databases?
    - BLM has recently proposed use of 1-year of prognostic meteorology for several NEPA actions
    - Current recommendations:
      - 1 Year of Prognostic Meteorology for PGM's
      - 3 Years of Prognostic Data Per FLAG/Appendix W for Appendix A LRT model
  - Intent of pertinent guidance is to reflect need for sufficient record to properly account for inter-annual variability, and ultimately is not air quality model platform dependent.
- Near-field Deposition

Ongoing Technical Challenges

- Requirements for Model Performance Evaluations and Impact on NEPA Decision Making Process
  - Increasing use of PGM's for most aspects of NEPA, including LRT NAAQS, AQRV, and O_3/$PM_{2.5}$ modeling.
  - In a number of instances within last few years, in situations when PGM MPE statistics was outside of EPA recommended values, EPA has recommended reverting to existing Appendix A LRT model, even though model has not been approved for chemistry nor has an equivalent MPE been performed.

What's Next?

- Federal land management agencies want to progress toward better, state-of-the-science models
  - "Improvements" during regulatory actions are not a good way proceed, but is somewhat of a reality since permits are where modeling is funded
- Helping EPA with efforts with IWAQM Phase 3, leading LRT efforts

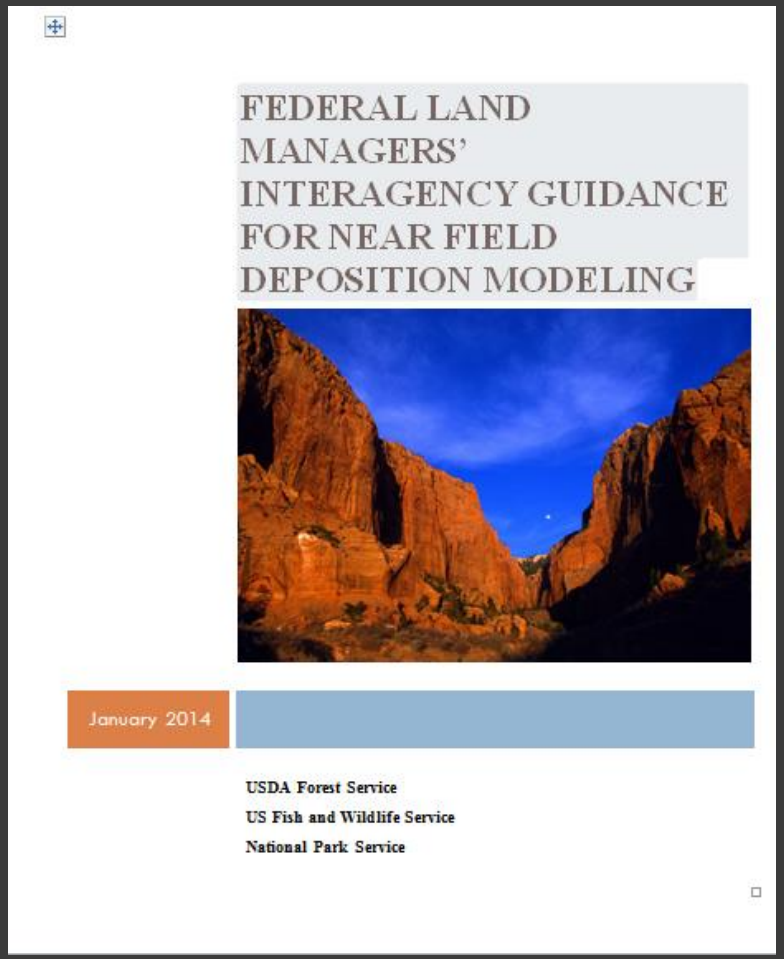
FLM Efforts

- FWS/USFS testing of PGM's for AQRV assessments
  - Building upon EPA study "*Comparison of Single Source Air Quality Assessment Techniques for Ozone, $PM_{2.5}$, other Criteria Pollutants and AQRV's*"
  - Examining source apportionment techniques for single source applications
  - Development of standardized procedures and databases to streamline process
- Evaluation of FLAG procedures for PGM assessments

FLM Efforts

- FLM Guidance on the Application of Near-Field Air Quality Models for Deposition
- Integration of Critical Loads into AQRV analyses

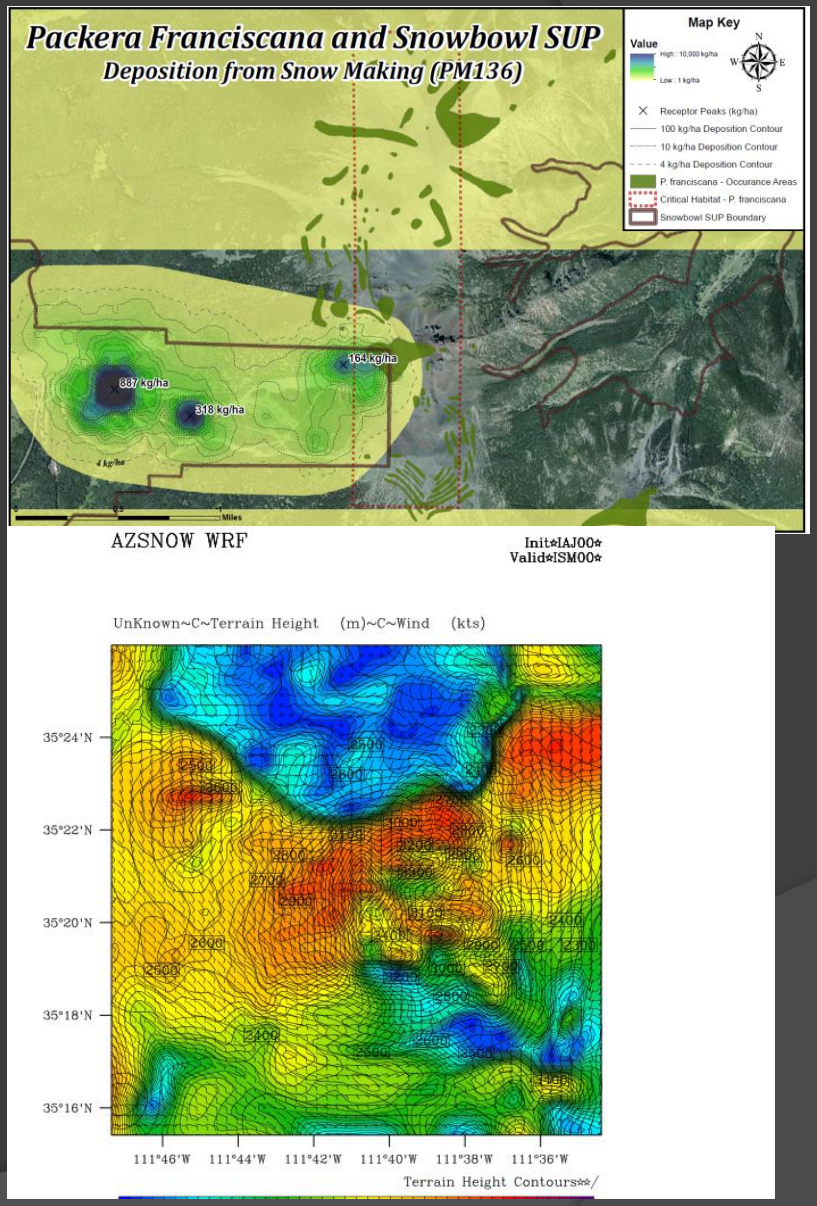
Deposition Modeling Guidance



- Addresses technical requirements for completing near-field deposition modeling requirements under PSD and NEPA.
- Initial draft released for internal review in January 2014.
- Tiered screening approach designed around existing models.

Arizona Snowbowl

- Nitrogen deposition modeling project. Simulation of deposition from artificial snow making operations.
- WRF-LES modeled to 200-m resolution over slope of mountain for two month period.



Contact us with your ideas

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