# 3SDW AQ/AQRV DATA PACKAGE DESCRIPTIONS

# Draft: 8/14/2014

The Three State Data Warehouse (3SDW) is a repository of air quality data related modeling, evaluation and visualization tools developed cooperatively by the Environmental Protection Agency (EPA) Region 8, Forest Service (FS), National Park Service (NPS), and Bureau of Land Management (BLM) and State agency offices in Colorado, Wyoming, and Utah State Offices.

The 3SDW offers pre-defined, cooperator approved, NEPA modeling data packages to support consistent AQ/AQRV Photochemical Grid Model (PGM) analysis for NEPA related projects, and the 3SDW also offers additional PGM resources for less constrained non-NEPA analysis that may support other regulatory, research or academic applications. General descriptions of air quality modeling data resources available through the 3SDW are outlined below.

# NEPA DATA PACKAGE

The NEPA air quality modeling resources and data packages have been designed, in part, to help ensure project consistency, comparability and transparency for NEPA related projects in this region. These packages have been pre-defined and cooperator approved to support NEPA AQ/AQEV air quality modeling applications (specifically CAMX and CMAQ modeling), and include:

* Base-case and future no-action model output along with Meteorological and PGM Model Performance Evaluation (MPE) reports for each scenario
* Files and processing tools to create model-ready future-case project emissions (e.g. additional O&G wells)
* Model-ready future-case emissions files for sources that do not require project level changes (e.g. boundary conditions, other anthropogenic sources and natural emissions)
* Model-ready future-case meteorological files
* Configuration instructions and additional support files to run a future-case model
* Quality assurance test instructions and bench-marching recommendations for user generated results
* Model result processing tools/scripts to enable comparison of user generated future-case modeling results with 3SDW provided base-case and future no-action results

Additional information regarding 3SDW support of a NEPA process is contained in the ***3SDW NEPA AQ/AQRV Process Outline***, and additional information about each specific NEPA data package is available through the 3SDW in package specific ***Data Manifest*** files.

# Additional NON-NEPA DATA PACKAGE resources

In addition to the pre-defined NEPA data packages, additional less constrained PGM modeling resources may be available through the 3SDW for other purposes including regulatory, research, and academic applications. Some specific resources that may be available include:

* Meteorological data processing tools (e.g. WRF and GEOSCHEM configuration and support files)
* Emissions data processing tools (e.g. SMOKE configuration and support files)

Currently, model evaluation tools only support review of the base case and future no-action case NEPA scenarios, but later versions of the 3SDW may be able to support user uploads of modeled data results, and evaluation using 3SDW visualization and summary tools.

Implementation Notes:

User must provide some information and wait for approvals.

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| --- | --- | --- |
| ***Rodger’s mock-up web form*** | | |
| **Requested Field** | **User input**  ***(selectable list/links to user profile information/text input)*** | |
| **Project Name** | Hiawatha Regional Energy Development Project (HREDP) Environmental Impact Statement (EIS) | |
| **Project Location** | Sweetwater County, Wyoming and Moffat County, Colorado | |
| **Base/Future year modeling platform** | 3SAQS 2008 CAMX Base Case/  3SAQS 2020 CAMX Future Case (2008)/  3SAQS 2011 CAMX Base Case/  3SAQS 2018 CAMX Future Case (2011) | |
| **Project Sponsor**  (Agency) | BLM/WYSO | |
| **Project Manager**  (Primary) | Charis Tuers | |
| **Company/Institution that will perform PGM** | ENVIRON | |
| **Name of Data Requestor**  (Contractor Contact) | Ralph Morris | |
| **Expected Project Start Date** | 7/23/2014 | |
| ***Additional proposed fields to integrate non-NEPA data packages*** | | |
| ***Data Package Selected***  *(NEPA or non-NEPA)* | | *NEPA/non-NEPA* |
| ***Include O3 RRF tools?***  *(prompt only for NEPA selection)* | | *Yes/No* |

Non-NEPA selection will prompt additional selectable options. Need to better define what is available, and what makes sense for “package” groupings.

| **Type** | **Description** | **Data Package Requested** | **Data Package contents** |
| --- | --- | --- | --- |
| Emissions | SMOKE Processing | Ancillary Files | Spatial Surrogates & Cross-referencing files for each domain  Temporal profile and cross-referencing files  Speciation profile and cross-referencing files  Projection files (for future year)  Land use data  Other ancillary files needed by SMOKE and changed from NEI SMOKE run  Assigns files  Log files  Documentation  Ancillary data  Gridded data |
| Run Scripts/Executables | Core run scripts  Helper scripts called by run scripts |
| Meteorological files (MCIP output) |  |
| CAMX Emissions Utilities |  |
| Boundary Conditions | GEOSCHEM?  MOZART?  ARM3? |  |
| Initial Conditions |  |  |
| 2008  Emissions | 2008 36/12 km Anthro  2008 36/12 km O&G  2008 36/12 km Natural  2008 4 km Natural  2008 SMOKE-ready | Merged and unmerged files |
| 2011  Emissions | 2011 36/12/4 km Anthro  2011 36/12/4 km O&G  2011 36/12 km Natural  2011 SMOKE-ready | Merged and unmerged files |
| 2018  Emissions | 2018 36/12/4 km Anthro  2018 36/12/4 km O&G  2018 SMOKE-ready | Merged and unmerged files |
| 2020  Emissions | 2020 36/12 km Anthro  2020 36/12 km Natural  2020 SMOKE-ready | Merged and unmerged files |
| Meteorology | WRF Processing | Input files | height & pressure: binary, 3D, daily  horizontal wind: binary, 3D, daily  temperature: binary, 3D, daily  water vapor: binary, 3D, daily  cloud & rain: binary, 3D, daily  vertical diffusivity: binary, 3D, daily |
| Configuration files | WRF source code  WRF Namelist  Makefile/configure  Scripts  Log files  Documentation  Minimum Kz Values |
| WRF Raw Output | 2008 36/12/4 km WRF output | Daily WRFOUT  ANNUAL GEOGRID |
| 2011 36/12/4 km WRF output | Daily WRFOUT  ANNUAL GEOGRID |
| WRF, CAMX-ready Output | 2008 36/12 km CAMX-ready | Source, scripts, output |
| 2011 36/12/4 km CAMx-ready | Source, scripts, output |
| PGM | CAMX Output | 2008 36/12 km CAMx 3-D output | Concentrations, Deposition, restart file |
| 2011 36/12 km CAMx 3-D output | Concentrations, Deposition, restart file |
| 2018 36/12 km CAMx 3-D output | Concentrations, Deposition, restart file |
| 2020 36/12 km CAMx 3-D output | Concentrations, Deposition, restart file |
| CAMX Configuration | Sources and Scripts | landuse: binary, 2D, static  photolysis rates: text, monthly  albedo/haze/ozone: text, 2D, monthly  chemistry mechanism parameters (chemparam): text, static  initial concentrations: binary, 3D, static  boundary concentrations: binary, 2D, daily  camx.in control file  camx source code |
| Ancillary Files | O3 map, ahomap, chem, landuse, tuv files |
| Log Files |  |
| Documentation | Modeling protocol (pdf) |