UFIM News

Welcome

This is the third UFIM Newsletter. This newsletter is being provided by S.Chapel Associates to all UFIM users. The intended audience are active users of the Utility Fuel Inventory Model.

Current plans are to continue publishing the newsletter once a year and to cover at least the following topics:

- News
- Technical Discussions
- Training and User Support
- Software Maintenance
- Miscellaneous Items

EPRI and I welcome comments, suggestions and any other input that the active UFIM users might want to provide. You can contact me at schapel@s-chapel.com or Adam Diamant at adiamont@epri.com

News

The big new this year is that the *Electric Power Research Institute (EPRI)* will be taking an active roll in ensuring there is stable, long-term support and technical evolution of the UFIM technology. S.Chapel Associates role in providing support and training will continue through at least 2013, and will be done in close coordination with EPRI. More on the longer term plans below.

Also as some of you know I did a partial rewrite of UFIM in 2012 focusing on updating the user interface. The updated interface has been designed and the input database is being redesigned. There is more on EPRI's new involvement and the motivation for the rewrite below.

The other news is that UFIM 5.01 has been through EPRIs software QA process and will be officially released by EPRI in early 2013. The QA process resulted in some user interface changes that have resulted in a more robust system. Most users will not notice a difference when using the system.

EPRI to Expand UFIM Involvement

This coming year will be a transition year for UFIM. In January 2013, the *Electric Power Research Institute (EPRI)* is renewing its active involvement in UFIM. As part of this effort, EPRI is launching a new UFIM Software Users Group.

Next year EPRI is planning to host two formal UFIM Users Group meetings, so UFIM users can learn about UFIM applications, discuss model features and propose model modifications and enhancements. User's group members also will receive basic online software training, version 5 software "bug" fixes, modifications and enhancements, as well as basic support for model applications. Starting in 2013, UFIM users who wish to receive end–user software support will need to join the EPRI UFIM Users Group.

For 2013, Members of EPRI research programs 178 and 178B will receive a UFIM v5.01 software users license membership in the UFIM Users Group as part of their program membership. Companies that provided past financial support to EPRI to develop the current UFIM version 5.01 soon will receive a UFIM v5.01 users license from EPRI at no additional cost. These companies can join the 2013 UFIM Users Group for $7,500. Companies who do not have a UFIM users license can obtain the software and join the 2013 Users Group for a bundled price of $12,500.

In 2013, EPRI also will be exploring UFIM commercialization arrangements with one or more large engineering and IT firms. The goal of this effort is to provide UFIM users with long-term, stable software support, maintenance and enhancements that build on the support that S.Chapel Associates has provided by for many years.

During 2013, S.Chapel Associates will continue to provide software support to UFIM users who are funders of EPRI Programs 178 and 178B, and those who join the EPRI 2013 UFIM Software Users Group.

To check if your company has access to UFIM v5.01 and to inquire about joining the 2013 Users Group, please contact Mr. Adam Diamant (510-260-9105); adiamant@epri.com or the EPRI Customer Assistance Center (CAC) at 800-313-3774 or askepri@epri.com.

Technical Discussions

The big issue that emerged in 2011 / 2012 is greatly increased uncertainty in coal plant dispatch / fuel burn levels. This has been created by the availability of relatively inexpensive natural gas.

A second perannual issue concerns how to characterize burn reduction costs when generation plants, during some time periods, are needed for voltage support or other services that do not involve pure economic dispatch.

These two issues are briefly summarized here.

Plant Dispatch / Burn Uncertainty

Over the past couple of years changed fuels markets have emerged. The changed markets are characterized by very low natural gas prices, relatively high coal fuel prices and uncertainty about the future prices paths of both fuels.

Traditional use of UFIM was focused primarily on baseload plants with relatively little burn uncertainty. In this environment, the need for inventory and fuel orders was driven primarily by supply logistic events, "supply disruptions." Fuel burn variation for base load plants was relatively unimportant.

However changing fuel markets and the increased uncertainty of natural gas and coal prices is having a profound effect on the optimal fuel inventory policies of companies operating fossil fuel fired generation. Currently effective fuel inventory and fuel procurement planning requires careful consideration of fuel burn uncertainty.

This greater fuel market uncertainty is creating a forecasting problem for fuel planners and UFIM users. In the current environment historical fuel burn data are not very useful for characterizing future fuel burn levels. New forecasting methods are needed. Specifically fuel inventory planning and month to month fuel procurement decisions require the use of structure models and uncertainty assessment techniques for characterizing the price paths of natural gas and coal and the implications of the possible price paths for gas and coal demand at specific generating stations.

Related to the burn uncertainty problem, a minor technical development was undertaken in 2012. It is an analytical technique for converting fuel burn probability distributions into the discrete characterizations required for UFIM input This was developed by working jointly with Duke Energy. I am currently implementing this as an Excel Add-In and it will be available in January 2013.

Specifying Burn Reduction Costs

Several users called during the year with questions centered around specifying burn reduction costs during both normal times and disruptions. As discussed above, because of reduced prices for natural gas the burn requirements at coal plants can be very uncertain – on a pure economic dispatch basis coal plants can be more expensive than gas fired plants. Yet because of the nature of the transmission system and the location of plants, many coal plants are needed to provide energy for such services as frequency regulation and voltage support. In these cases the issue is what is the meaning of the *Burn Reduction Costs,* an key input required in UFIM model?

Here is the way I think about this problem: If for at least part of the time a plant is needed for transmission related services, the cost of reducing burn at the plant during such periods will be very high - perhaps $1000 or more per MWH. The questions then are (1) what percent of the time will the plant be needed for transmission related services and (2) what percent of the time will the plant be competitive, from a energy point of view, with other plants and fuels. The answers to these two questions determine the model inputs for both fuel demand and burn-reduction costs.

A hard assumption in UFIM is that plants are dispatched only when it makes economic sense to do so. Many times transmission related services make dispatch economic when otherwise the plant would not be dispatched.

Training and User Support

During the past year I have answered UFIM modeling questions for a number of companies – The Technical Discussions section above illustrates some of the support issues. In addition web–based user training has been provided to new users at two companies, Duke Energy and Southern Company.

The web–based training works very well. The training is done over several sessions of 1 to 2 hour each. The topics include (1) introduction to model mechanics, (2) first principles of fuel inventory analysis, (3) preparation of inputs and running cases, and (4) development and analysis of company specific inventory cases.

Software Maintenance Issues

Software Issues

I have posted a list of know software issues on the UFIM Forum . You can access the forum from www.schapel.info

Rewrite of the User Interface

I am about half way through a rewrite of the UFIM User Interface using the latest Microsoft software development tools (Visual Studio .NET). The motivation for the effort is the following:

The current version of UFIM (5.0) works on Windows 7 and Windows Vista. However it is difficult to maintain. With the upgraded interface maintenance will be much less time consuming.

The computations in UFIM are written in C++ and this part of the model should not become obsolete for a very long time. The user interface is a different story. The current user interface was written in 2002 in Visual Basic 6. Since 2002 Microsoft has transitioned to the .NET environment and no longer officially supports VB6 development software. The VB6 compiler only works on Windows XP (not Vista or Windows 7).

Miscellaneous Items

UFIM Forum

I have moved the UFIM Bulletin Board over to my updated web site, from www.schapel.info. The board is now labeled *UFIM Forum.*

The purpose of the forum is to encourage user sharing of insights and information and to provide a place to post relevant information related to the model. Current post topics include technical topics related to the model, known UFIM bugs and a list of current users. The forum is a place where you can post your own question and observations and seek comments by other users.

If you register as an official user of my web site you can post topics to the forum and comment on existing posts.

List of Current UFIM Users

1. Jeff Jones and Jamie Loomis, Ameren
2. Paul Lesner, Duke Energy
3. Tim Scanlon and Jose Guerrero, Exelon
4. Gail Varner, East Kentucky Power Coop
5. Ed Blunk, KCLP
6. Howard Hales and Bruce Fogg, Nevada Power Company
7. Kevin Lee, OG&E
8. Mike Oaks and Keith Harrison, Southern Company
9. Leonard Muzyn, TVA

Reference Materials

Link to UFIM 5.01 User Manual

Link to UFIM Basic Concepts Manual

Link to UFIM Tips and Traps

Link to Fuel Inventory Management Paper

Link to UFIM Web–Based Training Curricula

Link to UFIM Bulletin Board