

Some comments have been inserted by Dr. E.  
Triantaphyllou on February 8, 2023



(solvers/index.html)

## NEOS Interfaces to BARON

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# BARON (<http://archimedes.cheme.cmu.edu/?q=baron>)

The NEOS Server offers BARON (<http://archimedes.cheme.cmu.edu/?q=baron>) for the solution of mixed integer nonlinearly constrained optimization problems and global optimization problems. Problems for BARON can be submitted on NEOS in AMPL or GAMS format.

BARON is a computational system for solving nonconvex optimization problems to global optimality. Purely continuous, purely integer, and mixed-integer nonlinear problems can be solved with the software. The *Branch And Reduce Optimization Navigator* derives its name from combining constraint propagation, interval analysis, and duality in its reduce arsenal with enhanced branch and bound concepts as it winds its way through the hills and valleys of complex optimization problems in search of global solutions.

BARON was developed and is currently maintained by Nick Sahinidis (<http://archimedes.cheme.cmu.edu/>).

Availability of BARON on the NEOS Server is possible thanks to the generosity of The GAMS Development Corporation and the providers of software for the solution of the LP and NLP subproblems solved by BARON.

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## Using the NEOS Server for BARON/GAMS

The user must submit a model in GAMS (<https://www.gams.com/>) format to solve an optimization problem. For security purposes, the model submitted must adhere to the following conventions:

- It must be self contained, i.e., no \$include or \$batinclude statements.
- It may not execute external programs, i.e., no \$call or execute statements.
- No file creation, i.e. no put files or \$echo except for a file named 'results.txt'. Other files created in the GAMS model file will be deleted.

If you are unfamiliar with GAMS, the GAMS Documentation (<https://www.gams.com/latest/docs/>) includes a GAMS Tutorial ([https://www.gams.com/latest/docs/UG\\_Tutorial.html](https://www.gams.com/latest/docs/UG_Tutorial.html)) and User's Guide ([https://www.gams.com/latest/docs/UG\\_MAIN.html](https://www.gams.com/latest/docs/UG_MAIN.html)). Examples of models in GAMS format can be found in the GAMS model library ([https://www.gams.com/latest/gamslib\\_ml/libhtml/](https://www.gams.com/latest/gamslib_ml/libhtml/)).

By default, the NEOS Server limits the amount of output generated in the listing file by turning off the symbol and unique element list, symbol cross references, and restricting the rows and columns listed to zero. This behavior can be changed by specifying the appropriate options in the model file. See the documentation on GAMS output ([https://www.gams.com/latest/docs/UG\\_GAMSOutput.html](https://www.gams.com/latest/docs/UG_GAMSOutput.html)) for further information.

You may optionally submit an options file if you wish to override the default parameter settings for the solver. Currently, the NEOS Server can only use **optfile=1** with GAMS input. Therefore, any model that specifies a different options file will not work as intended.

Please see the GAMS/BARON webpage ([https://www.gams.com/latest/docs/S\\_BARON.html](https://www.gams.com/latest/docs/S_BARON.html)) for more information.

## Web Submission Form

### Model File **On the field below insert the file name with the GAMS program**

Upload the GAMS model file.

First\_Exam...ata\_VerA1.txt

**Comment inserted by  
Dr. E. Triantaphyllou**

### Options File

The solver options file is optional. If provided, the statement `<modelName>.optfile = 1 ;` is required before the solve statement in your model file. Only `optfile = 1` is supported, however, options also may be specified within the model input file (see the GAMS documentation).

No file chosen

### Parameters File

A secondary parameters file may be uploaded to NEOS. This file is optional. Note that some settings are overwritten by NEOS default settings. (See GAMS Call and CL Parameters ([https://www.gams.com/latest/docs/UG\\_GamsCall.html](https://www.gams.com/latest/docs/UG_GamsCall.html)) for more details.)

No file chosen

### GDX File

Optional GDX file for inputs. This file will be renamed to "in.gdx". The model must include "\$GDXIN in.gdx" to load this file.

No file chosen

### GAMS Restart File

A GAMS restart file can be submitted to NEOS. (See GAMS Save and Restart ([https://www.gams.com/latest/docs/UG\\_SaveRestart.html](https://www.gams.com/latest/docs/UG_SaveRestart.html)) for more details.)

No file chosen

### Return GDX output

Check the box to have the solver return a compressed GDX file that contains all of the symbols in the model.

☐ Return GDX output

### Return GAMS listing file

Check the box to include the GAMS listing file in returned output.

☐ Return GAMS listing file

### Return log file

The log file contains information generated by the algorithm during a solve. Checking the box will cause the log file to be included in the output returned.

☐ Return log file

### Comments

Enter any additional comments here (e.g. to identify the data for your own information). These comments will be returned with your results.

**Additional Settings**☐ Dry run: generate job XML instead of submitting it to NEOS☒ Short Priority: submit to higher priority queue with maximum CPU time of 5 minutesE-Mail address: **This box was checked to expedite execution.****Insert an email address here to receive the output file.***Please do not click the 'Submit to NEOS' button more than once.*

Submit to NEOS

Clear this Form

By submitting a job, you have accepted the Terms of Use (termofuse.html)

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