

ANSWER Software Update

Ken Noble

Noble-Soft Systems, Australia

ETSAP Annex X Meeting

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ANSWER Software Update - Overview

- ◆ *Assorted enhancements previewed at Firenze ETSAP Meeting made available in ANSWER version 5.4.1 released Feb. 2005*
- ◆ *ANSWER-TIMES single-region "prototype" from 2000 updated to handle December 2004 TIMES GAMS code*
- ◆ *New "Batch Management" feature allows user to store named batches of cases to facilitate use of Batch Run feature*
- ◆ *New "smart" ANSWER Excel calibration and load spreadsheets to facilitate assembly and loading of MARKAL model data into ANSWER*

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Enhancements in ANSWER version 5.4.1

- ◆ *ANSWER now handles cross-region emission constraints and cross-region user constraints*
- ◆ *Operation of Batch Run facility greatly simplified*
- ◆ *Multi-select for various facilities, e.g. Run Model scenario select*
- ◆ *'Import Results Automatically' option for Run Model, Batch Run*
- ◆ *'Remember Case Definition' option for 'Delete Case'*
- ◆ *New 'Edit, Delete All Cases' facility*
- ◆ *Big speedups for various operations, e.g. generation of DD files*
- ◆ *Many forms now user-resizable*
- ◆ *SAGE GAMS DDs may be imported into ANSWER*

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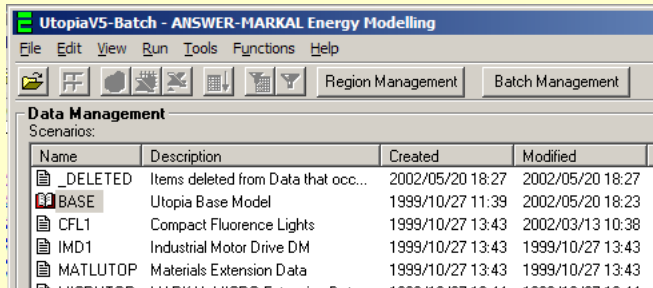
ANSWER-TIMES single-region updated

- ◆ *ANSWER-TIMES single-region "prototype" created in 2000 (Visual Basic 4, Spread 2, Access 95)*
- ◆ *ANSWER-TIMES single-region "prototype" now updated to Visual Basic 6, Spread 3, Access 2000 (same as ANSWERv5)*
- ◆ *GAMS code needed for Import TIMES GAMS DD, ANSWER-specific parts of Run Model, updated to be compatible with Dec. 2004 GAMS TIMES code*
- ◆ *Large German single-region TIMES DD imported into, and run out of, ANSWER-TIMES giving same LP matrix*
- ◆ *Latest ANSWER-TIMES available to ETSAP participants*
- ◆ *Thanks to Uwe Remme, IER*

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New Batch Management feature - 1

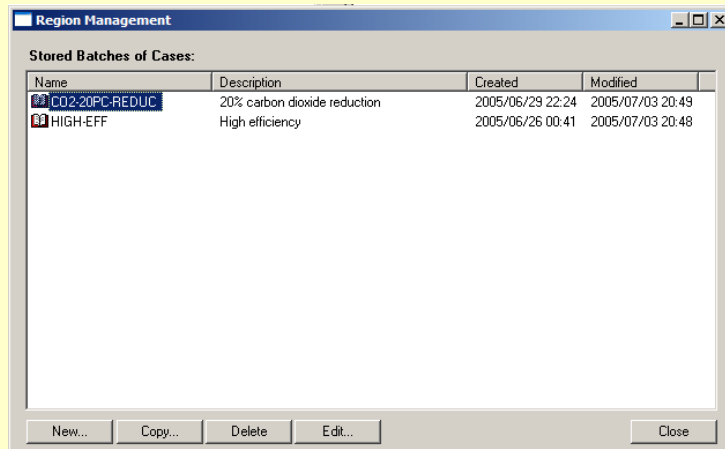
- ◆ Allows user to store Named batches of cases to facilitate use of Batch Run feature
- ◆ New “Batch Management” button on home screen



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New Batch Management feature - 2

- ◆ After clicking on “Batch Management” button:



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New Batch Management feature - 3

- ◆ After clicking “Edit...” button on “Batch Management” form:

Name	Description	Scenarios
BASEUTOP	Utopia Base Model	BASE
MATLUTOP	Materials Extension Data	BASE+MATLUTOP
MICRUTOP	MARKAL-MICRO Extension Data	BASE+MICRUTOP
STOCUT-1	Stochastic Extension Data	BASE+STOCUTOP

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New Batch Management feature - 4

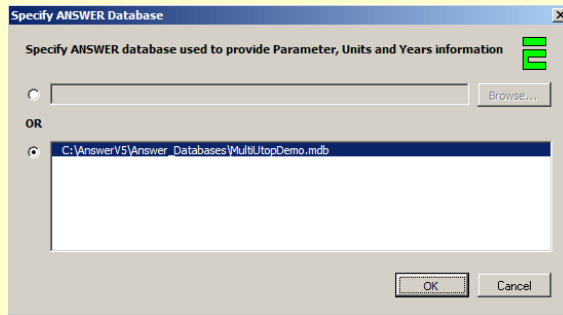
- ◆ New “Load Batch” and “SaveBatch” buttons on “Run Batch” form:

Name	Description	Scenarios
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New ANSWER "smart" Excel spreadsheets - 1

- ◆ Gary Goldstein request to facilitate assembly and loading of MARKAL model data into ANSWER
- ◆ Link to ANSWER database to assist with Units, Set Memberships, Parameters specification



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New ANSWER "smart" Excel spreadsheets - 2

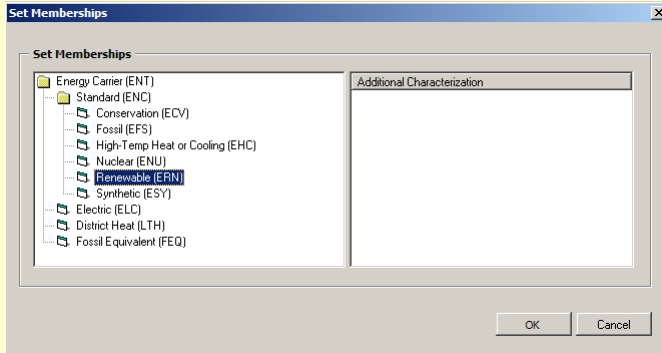
- ◆ Special Commodities, Technologies, Constraints sheets with "smart" buttons:

	A	B	C	D	E
1	Commodities	UTOPIA			
2					
3					
4	Check Sheet				
5					Energy Sets Material Sets
6					CommUnit Demand Sets Emission Sets
7		CommName	CommDesc	CommUnit	Set Memberships
8					
9		CSV	Conservation	PJ	ENT,ENC,ECV
10		GSL	Gasoline		ENT,ENC,EFS,LIQ
11		DSL	Diesel		
12		OIL	Oil		
13		ELC	Electricity		ENT,ELC
14		HCO	Coal		ENT,ENC,EFS,SLD
15		HYD	Hydro Power		

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New ANSWER "smart" Excel spreadsheets - 3

- ◆ After clicking on "Energy Sets" smart button and selecting Renewable (ERN):



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New ANSWER "smart" Excel spreadsheets - 4

- ◆ Special Commodity Data, Technology Data, Constraint Data sheets with "smart" buttons:

Microsoft Excel - DraftCalibSheet12.xls

File Edit View Insert Format Tools Data Window Help

B21

	A	B	C	D	I
1	CommData	UTOPIA			
2					
3					
4	Chk Sheet	CommName, CommDesc, CommUnit			
5	Parameter				
6	Qualifier				
7		CommName	CommDesc	Units	
19		RH	Residential Space Heating	PJ	
20		RL	Residential Lighting	PJ	
21					

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New ANSWER "smart" Excel spreadsheets - 5

- ◆ After clicking on "CommName, CommDesc, CommUnit" smart button and selecting TX (Automobile Transport):

Select Commodity (Name, Description, Unit(s) will be transferred to CommName, CommDesc, Unit(s) columns)

Name	Region	Description	Set Memberships
CO2	UTOPIA	Carbon Dioxide	ENV
CSV	UTOPIA	Conservation	ENT,ENC,EVCV
DSL	UTOPIA	Diesel	ENT,ENC,EFS,LIQ
ELC	UTOPIA	Electricity	ENT,ELC
GSL	UTOPIA	Gasoline	ENT,ENC,EFS,LIQ
HCO	UTOPIA	Coal	ENT,ENC,EFS,SLD
HYD	UTOPIA	Hydro Power	ENT,ENC,ERN
LTH	UTOPIA	Low-Temperature Heat	ENT,LTH
NOX	UTOPIA	Nitrous Oxide	ENV
OIL	UTOPIA	Oil	ENT,ENC,EFS,LIQ
RH	UTOPIA	Residential Space Heating	DM,DM_RES,DM_NDFTDIS
RL	UTOPIA	Residential Lighting	DM,DM_RES,DM_NDFTDIS
TX	UTOPIA	Automobile Transportation	DM,DM_TRN
URN	UTOPIA	Natural Uranium	ENT,ENC,ERN

OK Cancel

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New ANSWER "smart" Excel spreadsheets - 6

- ◆ CommData sheet with CommName (and CommDesc) linked via cell references to Commodities sheet:

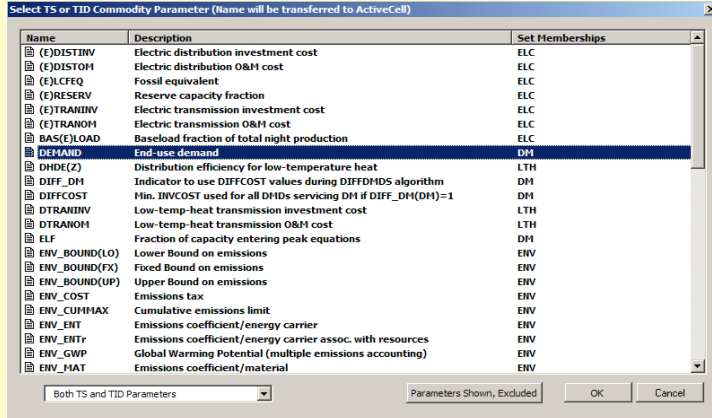
B21 fx =Commodities!\$B\$23

	A	B	C	D	I
1	CommData	UTOPIA			
2					
3					
4	Chk Sheet	CommName, CommDesc, CommUnit			
5	Parameter				
6	Qualifier				
7		CommName	CommDesc	Units	
19		RH	Residential Space Heating	PJ	
20		RL	Residential Lighting	PJ	
21		TX	Automobile Transportation	PJ	

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New ANSWER "smart" Excel spreadsheets - 7

- ◆ After clicking on "Parameter" smart button and selecting DEMAND parameter:



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New ANSWER "smart" Excel spreadsheets - 8

- ◆ After clicking on "Parameter" smart button and selecting FR(Z)(Y) parameter:

	A	B	C	D	I	J	K	L
1	CommData	UTOPIA						
2								
3								
4	Chk Sheet	CommName, CommDesc, CommUnit						
5	Parameter				DEMAND	DEMAND	DEMAND	FR(Z)(Y)
6	Qualifier							TimeSlice
7		CommName	CommDesc	Units	1990	2000	2010	TID
19		RH	Residential Space Heating	PJ				
20		RL	Residential Lighting	PJ				
21		TX	Automobile Transportation	PJ				

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New ANSWER "smart" Excel spreadsheets - 9

◆ After clicking on "Qualifier" smart button:



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New ANSWER "smart" Excel spreadsheets - 10

◆ Comprehensive checking - "Check Sheet" smart button:

	A	B	C	D	H	I	J
1	CommData	UTOPIA					
2							
3							
4	Chk Sheet	CommName, CommDesc, CommUnit					
5	Parameter				ENV_COST	DEMAND	DEMAND
6	Qualifier						
7		CommName	CommDesc	Units		1990	2000
16		CO2	Carbon Dioxide	kt	0.123		
17		NOX	Nitrous Oxide	kt			
18		RH	Residential Space Heating	PJ	0.45		
19		RL	Residential Lighting	PJ			
20		TX	Automobile Transportation	PJ			
21							

ENV_COST Parameter requires Emission Item in CommName column.

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New ANSWER “smart” Excel spreadsheets - 11

- ◆ *Necessary changes to ANSWER’s “Import Model Data from Excel” facility are under way*
- ◆ *Commodity Data, Technology Data, Constraint Data column-oriented Parameter format focussed more on calibration of a new model*
- ◆ *CommData-TS, TechData-TS, ConstrData-TS format where Parameters are rows and columns are time periods will be added*
- ◆ *Substantial input from Gary Goldstein*

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