



ITRI TIMES Training Course

September 15-19, 2008

Uwe Remme, IER Germany and Ken Noble, Noble-Soft Systems Australia

Day 1 Monday September 15, Taipei

- Overview of TIMES model generator and its features
 - Differences between TIMES and MARKAL
 - Software installation (ANSWER-TIMES, GAMS, VEDA-BE)
 - Demonstration of main features of ANSWER-TIMES interface and differences from ANSWER-MARKAL
-

Day 2 Tuesday September 16, Hsinchu

- Software installation (ANSWER-TIMES, GAMS, VEDA-BE)
 - Basic elements of TIMES
 - Elements of the Reference Energy System (RES): Processes and Commodities
 - Time horizon (Milestone years)
 - Hands-on:
 - Use ANSWER-TIMES to build tiny RES specifying commodities and technologies by typical TIMES input parameters
 - Basic equations and variables and modelling flexible processes
-

Day 3 Wednesday September 17, Hsinchu

- Hands-on:
 - Using ANSWER-TIMES to model flexible processes
 - Use ANSWER-TIMES to add flexible process to tiny RES
 - Timeslices and storage in TIMES
 - Introducing timeslices and load curves
 - Storage processes – skip over
 - Peaking equation
 - Hands-on:
 - Use ANSWER-TIMES to add timeslices and load curves to tiny RES
 - Cost components of the objective function – brief treatment
 - Hands-on:
 - Analyzing costs and shadow prices in VEDA-BE
-



Day 4 Thursday September 18, Hsinchu

- User constraints in TIMES
 - Hands-on:
 - Use ANSWER-TIMES to build user constraints
 - Exercise for the participants: Participants independently use ANSWER-TIMES to build a miniature energy system model from scratch.
 - Hand-out of RES, data etc. needed to build the model
-

Day 5 Friday September 19, Hsinchu

- Exercise for the participants – continues.
- Conversion of ITRI MARKAL model to TIMES – initial considerations.
 - Show what very rough first conversion of ITRI MARKAL model looks like in ANSWER-TIMES.