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Organization for Energy Planning

Project Description

Project No. 2 -- National Energy Analysis

prepared by

Energy and Environmental Systems Division
Argonne National Laboratory

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Organization for Energy Planning

Project No. 2 - National Energy Analysis

Table of Contents

		Page
Project Summary		1
Task 1	Development of Network Energy Tracking System	3
Task 2	Data Base Assembly	7
Task 3	Energy Planning Model Evaluation	11
Task 4	Initial Energy Model Implementation	15

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OEP PROJECT DESCRIPTION

OEP PROJECT NO. 2

National Energy Analysis

Objectives

The objective of this project is to establish within OEP the first stages of an energy analysis capability. The focus will be on the development of an energy consumption data base including both supply and demand information and to choose the initial set of energy planning analysis tools for OEP to use.

Anticipated Outputs

The expected outputs of this project are:

1. A Network Energy Tracking System that describes energy flows in the country.

2. An energy supply and consumption data base that can be updated annually and that can be used to publish an annual energy use profile for Egypt.

3. An evaluation and selection of a set of energy planning analysis tools (models) to be used by OEP.

4. An initial implementation of the energy models.

Project Tasks

There are four major tasks that comprise this project:

Task 1. Development of the Network Energy Tracking System

Task 2. Data Base Assembly

Task 3. Energy Planning Model Evaluation

Task 4. Initial Energy Model Implementation

Schedule

The Network Energy Tracking System is scheduled to be completed nine months from project start.

The initial data base assembly covering data through 1982 is scheduled for completion 12 months from start, with a published statistical energy data volume three months later. This effort will be carried out annually with a statistical data volume published every year.

The evaluation of energy planning models is scheduled for completion 9 months after project start.

The initial energy model implementation is scheduled to begin 12 months after project start, with completion schedule depending on the analysis chosen but within 9 months.

Personnel:

The project will require the following personnel:

OEP staff:	52 person-months
ANL staff:	22 person-months
Contractor staff:	14 person-months

Startup Requirements

Tasks 1 and 2 will require that at least one senior OEP staff member is assigned responsibility for this activity. At least two supporting engineers and a computer programmer will also be required on a full-time basis. Task 3 will require a senior energy modeler on half-time assignment and a junior analyst on full-time assignment. A computer specialist will be required about half time. Task 4 requirements are not yet defined.

At various points in the tasks comprising the project it will be necessary for OEP to have access to computer facilities. Its own facilities would be preferable but are not absolutely necessary.

-1-

OEP PROJECT DESCRIPTION

OEP Project No. 4

Transportation Energy Conservation

Objectives

The objective of this project is the development, testing and implementation of energy conserving measures in all transportation sectors in Egypt. The goal is to achieve measurable improvements in the energy efficiency of transportation with minimal losses in the level of service. All types of transportation will be included in this project (auto, bus, truck, water, and rail--public and private). The project will attempt to establish a public awareness of the ways in which energy could be conserved and to develop recommendations on public policies that would improve efficiency in parts of the transportation sector.

Anticipated Outputs

The expected outputs of this project are:

1. An energy use data base for all transportation sectors,

2. A vehicle energy efficiency testing and maintenance program for which achievable performance goals have been established,

3. A set of recommendations for improving the energy efficiency of the transportation system,

4. A set of recommendations for waste recovery of lubricants, and

5. A set of guidelines and public policies regarding transportation investments to increase energy efficiency.

Project Tasks

There are five major tasks in this project:

Task 1 Develop Transportation Energy Consumption Data Base.

Task 2 Develop Vehicle Efficiency Testing and Maintenance Program.

Task 3 Develop Transportation System Efficiency Recommendations.

Task 4 Develop Transportation Waste Recovery Recommendations.

Task 5 Develop Transportation Equipment Investment Policy Recommendations.

Schedule

The first stage in the development of a transportation energy data base should be completed in about 6 months, but a longer term data base development effort will continue beyond the 12 month time frame for other tasks.

Vehicle testing programs will begin 9 months into the project and will continue for 15 months. More time may be required to conduct some of the testing programs. A better schedule will be developed after the testing programs are developed. A follow-up vehicle testing program may be implemented if early pilot program results are inconclusive or barriers obstruct the objectives of the study.

Personnel

The project will require the following personnel:

OEP Staff	194	person-months
ANL Staff	13.5	person-months
Contractor Staff	75	person-months

Startup Requirements

OEP will need to assign one or two senior staff members and at least four lead technical support staff to the project. Contractor support will mainly be in the vehicle testing and maintenance task areas. Training programs will be conducted by consultants early to allow OEP to carry out these tasks.

OEP Project No. 4 - Transportation Energy Conservation

Task 1. Develop Transportation and Energy Consumption Data Base

The objective of this task is to develop a data base on energy consumption in all parts of the transportation sector. The data base will be used as a basis for developing and evaluating the potential benefits of recommendations that will be developed in tasks 2 - 5 of this project. It will include data on size, age and efficiency of transportation equipment (cars, buses, trucks, ships, locomotives) as well as the overall energy consumption by each of these vehicles. If possible, energy use by trip purpose will also be determined.

Subtask 1.1. Define data needs.

- o ANL and OEP staff will work to identify the data needs of tasks 2 - 5.
- o A transportation energy use data system structure will be developed.
- o Data elements that are easily available will be identified for short-term data collection efforts.

Subtask 1.2. Identify potential data sources.

- o ANL will work with OEP staff to develop a list of potential primary and secondary sources of the data needs established in subtask 1.1.
- o Useful data might be available from the Ministry of Transportation (Transportation Planning Authority), bus companies, City Government Planning Organizations, City Transport Authorities, Ministry of Petroleum, licensing organizations, gasoline and diesel service stations, universities, and research organizations.
- o Meet and discuss with each of these organizations to determine the availability and quality of data.
- o Identify data currently available and now being collected that could meet OEP needs.

Subtask 1.3. Identify short-term data bases.

- o On the basis of data sources developed in subtask 1.2, a short-term data base will be identified.
- o Short-term data base should address as many needs of tasks 2 - 5 as possible.

- Data quantity may be compromised or secondary data sources may be used to meet short-term data needs of tasks 2-5.

Subtask 1.4. Identify long-term data base elements and collection procedures.

- Identify data elements that require long-term data collection activities.
- Identify data collection strategies.
- Identify organizations and procedures to be used to collect data
- Develop primary survey procedures where necessary.

Subtask 1.5. Develop data base structure and handling.

- ANL will assist OEP staff in developing a data base structure for data items identified in subtasks 1.1.
- ANL will assist OEP staff in developing a computerized data base system and software that will be used for handling and processing data.
- OEP staff will prepare documentation that describes data base systems and processing procedures (data entry, modification, utilization).

Subtask 1.6. Conduct short term data collection activity.

- Gather available data from cooperating organizations.
- Extract data from previous research reports.
- Process data as it is received and document sources.
- Assemble short-term data into computerized data base.

Subtask 1.7. Conduct long-term data collection activity.

- Long-term data collection will also be part of activities in tasks 2 - 5 of this project.
- Collect data from organizations that are continually generating data over a long time period.
- Develop procedures for incorporating long-term data collection into transportation data base.

- Develop a data availablility schedule for use in tasks 2 - 5.
- Add long-term data to data base as it becomes available.

Task 1. Resource Requirements

Time Schedule	12 months (excluding Subtasks 1.7)
OEP Personnel	
Task Director	4 person-months
2 Transportation Engineers	10 person-months
Computer Specialist	6 person-months
ANL Personnel	
Task Director	1 person-month
Transportation Engineer	1 person-month
Computer Specialist	1 person-month
Contractor Personnel	
Transportation Systems	1 person-month
Transportation Engineer	1 person-month

Task 1. Development of Transportation Energy Consumption Data Base

Subtask	1984						1985					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1.1 Define data needs.												
1.2 Identify potential data sources.												
1.3 Identify short-term data bases.												
1.4 Identify long-term data elements and collection procedures.												
1.5 Develop data base structure and handling.												
1.6 Conduct short-term data collection activity.												
1.7 Conduct long-term data collection activity.												continuing

Task 2. Develop Vehicle Efficiency Testing and Maintenance Program

The objective of this task is to develop, test and evaluate vehicle maintenance programs for cars, buses, trucks, locomotives and water transport that improve the overall efficiency of energy use. Pilot study programs would be developed to assess the technical, economic, and social feasibility of alternative types of programs (policies) and to determine the potential overall energy savings that could be realized in alternative programs (policies). OEP will develop, test and evaluate pilot studies and recommend a program or policy to the Supreme Council, but the overall implementation of such a program would be carried by other governments agencies (national and/or local).

Subtask 2.1. Identify and design alternative pilot vehicle testing and maintenance studies.

- o Review programs used within Egypt and internationally.
- o Evaluate the success of each of these programs from several perspectives (technical, social, cost, implementation) and evaluate their relevance to Egypt.
- o Pilot studies should have clearly defined and measurable objectives.
- o Using data developed in Task 1, identify alternative pilot studies that meet the following criteria:
  - technically feasible.
  - minimize cost.
  - cooperate with potential implementing organizations.
  - performed in a rather short period of time.
  - provide data that can determine the technical and social feasibility and measure potential energy savings.
- o Separate studies will be developed for each mode of transport and more than one type of pilot program may be instituted (e.g. auto, bus).
- o Pilot studies must be carefully designed to ensure they will meet specified goals and will develop a cooperative relationship with any potential implementing organizations.

Subtask 2.2. Select pilot studies

- o Pilot studies should be selected primarily on the basis of potential for energy savings and simplicity.
- o Pilot studies should be selected to gather the maximum amount of data with a minimum of training and testing. For example, the installation of a simple flow meter inserted in the fuel line coupled with odometer readings, simple

driver questionnaires and a tune-up program could be fairly inexpensive and yield good estimates of potential energy savings in autos.

- o Equipment should be simple and require minimum skill and training.

- o A multi-stage pilot study may be a viable option if the investment is small (For example, 10 vehicle program, then a 200 vehicle program). The multistage approach would permit an evaluation of the procedures before committing to a large scale effort.

Subtask 2.3. Develop schedule and resource requirements for pilot studies.

- o Develop an implementation schedule for pilot studies selected in subtask 2.2.

- o Resource requirements (equipment and staff) should be estimated.

- o Pre-study training requirements should be identified.

- o Roles of OEP staff, other organizations, and consultants should be identified.

- o Agreements should be reached with cooperating organizations involved in the pilot study on follow up implementation.

Subtask 2.4. Conduct vehicle testing and maintenance pilot studies.

- o OEP staff and contractor(s) will conduct pilot studies.

- o At least one car and one bus study should be implemented since these are major fuel consumers.

- o Procedures should be followed and data reported at various time periods in standard formats.

- o Periodic evaluation of pilot studies should be performed to assess whether the objectives are being achieved and whether the study is being carried out correctly.

- o Additional or alternative pilot studies may be conducted if the first round of studies are not achieving the desired objectives or more information is needed.

- o Quantitative study results will be reported in a computerized data base.

Subtask 2.5. Evaluate pilot studies and recommend vehicle testing and a maintenance program.

- Pilot studies will be evaluated on the basis of their ability to achieve objectives and the potential for energy savings. Any difficulties encountered in conducting the pilot studies should be identified to determine its effect on any large scale policy or program.

- Large scale programs or policies will be developed from the results of pilot studies and other research conducted within Egypt or internationally.

- A program (policy) would be recommended for each mode of transport evaluated in previous tasks for which data has been generated from other research.

- Recommended programs (policies) must:

  - quantitatively identify the benefits (measured energy saved)
  - contain an implementation plan that includes training and clearly describes the roles of implementing organizations.
  - describe in detail the cost for both the implementing organizations and user (e.g. auto owner) and show a benefit/cost ratio much greater than one when using world energy prices for fuels.
  - identify institutional and social changes (perhaps legislation) and describe mechanisms for implementing those changes.

Task 2 Resource Requirements

Time Schedule	24 months
OEP Personnel	
Task director	24 person-months
Transportation Engineers	24 person-months
Technical Support	24-48 person-months
ANL Personnel	
Transportation Engineer	3 person-months
Contractor Personnel	
Task Director	12 person-months
Transportation Engineers*	24-36 person-months
Other Organizations Contributing* to pilot studies	

Equipment

Testing equipment will be required.

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*Depends upon size and number of pilot studies and contributions made by cooperating organizations.

Task 2. Develop Vehicle Efficiency Testing and Maintenance Program

Subtask.	1984		1985				1986		
	JUL	OCT	JAN	APR	JUL	OCT	JAN	APR	JUL
2.1 Identify and design alternative pilot testing and maintenance studies.									
2.2 Select pilot studies.									
2.3 Develop schedule and resource requirements for pilot studies.									
2.4 Conduct vehicle testing and maintenance pilot studies.									
2.5 Evaluate pilot studies and recommend vehicle testing and a maintenance program.									

Task 3. Develop Transportation System Efficiency Recommendations

The objective of this task is to develop a set of policy recommendations for improving the transportation energy efficiency through changes in the transportation system. These recommendations differ from the vehicle efficiency recommendations in that they deal with potential system inefficiencies and not vehicle inefficiencies. This task will address such issues as the split between private vehicles and public transit, congestion impacts, and traffic controls that could improve the energy efficiency of the transportation system. It will not be the purpose of this OEP study to replace the transportation system planning responsibilities of other organizations but to use the results of their studies and evaluate alternative policies that would improve the efficiency from an energy perspective. Some primary data gathering may be required to carry out this task.

Subtask 3.1. Identify sources of information on transportation.

- o List and describe the type of information needed to assess transportation system inefficiencies.
- o Identify and discuss project with organizations (government and university) that have conducted energy systems studies and could have useful information.
- o Research international research on energy inefficiencies in the transportation system (primarily developing countries).
- o Identify ongoing research activities, within and outside Egypt, that could contribute to the objective of this task.
- o Develop a list of information and sources from which the information can be obtained.

Subtask 3.2. Gather all relevant information.

- o Gather information from Egyptian government and research organizations.
- o Obtain research reports from international sources.
- o Develop relationships with organizations conducting on-going research to obtain results as they are generated.

Subtask 3.3. Review available information and develop additional data requirements.

- o Develop a list of data necessary to conduct transportation system studies.

- o Review available information to determine what data is already collected or studies already performed that could support system studies.

- o Develop a list of data needed to complete system studies and identify potential sources.

- o Identify procedures that could be used for collecting the additional data (e.g. primary survey or traffic counts).

Subtask 3.4. Conduct additional data collection.

- o Conduct or have other organizations collect primary data such as traffic counts, surveys or transportation network studies.

- o Review data to establish quality as it is collected.

Subtask 3.5. Develop alternative transportation system policy recommendations.

- o Develop alternative policies that would improve the energy efficiency of the transportation system.

- o Alternatives should be developed with other implementing organizations.

- o Alternative policies could be short-term study recommendations (e.g. commuter bus lanes) or overall long term policies (e.g. increased bus service).

- o Alternatives should have clearly defined objectives and identified means of implementation.

- o Develop a detailed implementation plan for each alternative.

Subtask 3.6 Evaluate alternative policies and make recommendations.

- o Evaluate policies on the basis of:

  - overall benefit to energy savings

  - institutional changes necessary to implement

  - degree of complexity or implementation

  - social changes required

  - level of service changes

  - environmental effects (positive or negative)

- Alternative policies should be evaluated that are aimed at the same objective.

- Study and list recommendations that should be presented to decision making bodies.

- Recommendation report should identify the benefit/cost relationships for the policy, required concurrences for implementation, potential risks, political boundary problems, the time required for implementation and the expected fuel savings over time.

Task 3 Resource Requirements

Time Requirements	18 months
OEP Personnel	
Task Director	18 person-months
Transportation Systems	9 person-months
Technical support	18 person-months
ANL Personnel	
Task Director	3 person-months
Transportation Systems Engineer	12 person-months

Task 3. Develop Transportation System Efficiency Recommendations

Subtask	1984			1985					
	JUL	SEP	NOV	JAN	MAR	MAY	JUL	SEP	NOV
3.1 Identify sources of information on transportation.									
3.2 Gather all relevant information.									
3.3 Review available information and develop additional data requirements.									
3.4 Conduct additional data collection.									
3.5 Develop alternative transportation system policy recommendations.									
3.6 Evaluate alternative policies.									

Task 4. Develop Transportation Waste Recovery Recommendations

The objective of this task is to evaluate the potential energy savings from waste recovery in transportation and develop policy recommendations for any measures that could save significant amount of energy. The overall thrust of this activity is to quantify the waste (oil and lubricants) in the transportation sector and evaluate the technical and institutional feasibility of recycle. Cost analysis would be performed using world oil prices.

Subtask 4.1. Identify and characterize sources of waste from transportation.

- All modes of transportation would be evaluated.
- Quantify the amount of oil products used by each mode of transport on an annual basis.
- Identify the methods by which waste (lubricants) are disposed.
- Develop a systems diagram (network) that shows the flows of energy (lubricating oils) from origin to waste disposal and identify the typical handling and lifetimes at each step.

Subtask 4.2. Review waste recover technologies and programs.

- Evaluate waste recovery technology (lubricating oil recycle) available internationally.
- Evaluate the success and failures of waste recovery programs worldwide.
- Determine the costs associated with waste recovery systems (investment and operation).
- Identify institutional or social difficulties associated with waste recovery programs.

Subtask 4.3. Develop alternative waste recovery programs for Egypt.

- Extended life for lubricants is an alternative.
- Develop programs that will address the most significant waste in Egyptian transportation.
- Several different systems may be required.
- Develop a technical scope, identifying processes or technology to be used, and construct a systems diagram that describes all major steps in the process.

OEP Project No. 2: National Energy Analysis

Task 1. Development of Network Energy Tracking System (NETS)

The objective of this task is to develop an automated system for monitoring and displaying energy flows in Egypt. It will include all forms of energy (oil, gas, coal, biomass, hydro, solar, etc.). The network will become the basis of future energy planning studies. It will be used to issue a national energy supply and consumption statistical yearbook. It may also be used to produce the statistical information transmitted to international agencies (e.g. World Bank, United Nations).

Subtask 1.1 Develop Preliminary Energy Network

- o ANL will prepare a preliminary version of the Egyptian energy system based on available information. This will be used only to initiate the activity. It is intended for extensive modification.
- o The preliminary network will be prepared by ANL in Chicago.

Subtask 1.2 Conduct Short Course on Energy Networking

- o ANL will prepare a short course (2-4 days) on energy network conventions, units of measure, etc.
- o OEP will identify participants in course. Primarily aimed at those who will do the work on NETS, although others may attend.
- o Course will be held in Cairo. Primarily working sessions rather than formal lectures.
- o Lecturers will be from U.S. institutions and possibly international institutions (e.g. World Bank, U.N.).

Subtask 1.3 Develop Revised Network and Conventions

- o ANL team will remain in Cairo after short course to work out modifications to the network and to select conventions.
- o OEP team will be assigned to this on a full time basis.
- o A revised energy flow network will be developed.
- o Conventions and definitions of terms will be decided.

Subtask 1.3 continued...

- Data to be included in the tracking system will be identified (e.g. energy flows, energy prices, imports, exports).

- Prior to leaving, the ANL team will leave a list of issues to be decided.

- The OEP team will follow up on the issues and make a set of revisions.

- The ANL team will return to review the revisions and to assist in the development of a final set of revisions.

Subtask 1.4 Develop Computer Code for Tracking Flows

- Using the preliminary network and conventions, ANL will begin the development of the NETS computer code.

- Specifications for the code will be developed.

- The code will be designed for maximum flexibility.

- As revisions are developed by the OEP team, these will be incorporated.

- Adequate instructional information and documentation will be prepared.

Subtask 1.5 Implement NETS on OEP Computer

- The NETS code will be delivered to Egypt and installed on OEP computers.

- Training courses for OEP technical and computer staff will be held.

- Modifications will be made to reflect changes that have occurred in the network design, the conventions selected, and the data to be tracked.

Task 1 Resource Requirements

Time Schedule	9 months
OEP Personnel:	
1 Senior Staff Engineer	4 person-months
2 Support Staff Engineers	9 person-months
ANL Personnel:	
1 Task Director	2 person-months
2 Energy Planners	2 person-months
1 Computer Specialist	3 person-months
Other Contractors:	
1 Lecturer for Short Course	1 person-month

Task 1. Development of Network Energy Tracking System (NETS)

Subtask	1983			1984									
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1.1 Develop preliminary network													
1.2 Conduct short course on energy networking													
1.3 Develop revised network and conventions													
1.4 Develop computer code for tracking flows													
1.5 Implement NETS code on OEP facility													

Task 2. Energy Supply/Consumption Data Base Assembly

The objective of this task is to compile an initial data base on energy supply and consumption. The data base is designed to be comprehensive and cover all forms of energy. It will focus on information for the most recent year for which complete statistics are available (possibly 1982) and will include a number of prior years for historical reference. This task will result in the publication of an annual energy statistics yearbook that will be updated regularly.

This is closely connected with Task 1 in that the data collected will be assembled into the Network Energy Tracking System (NETS) for analysis.

Subtask 2.1 Conduct short course on energy supply/consumption data.

- o ANL will prepare a short course (2-4 days) on energy supply and consumption.
- o Course will be held in conjunction with energy networking short course (Task 1.2).
- o Course should be attended by the same people who attend the networking course.

Subtask 2.2 Select initial data set and identify sources.

- o After the course, an OEP and ANL team will identify the information to be included in the data base.
- o Examples of information include: crude oil production by field, natural gas production, exports of crude oil, refinery throughput, electricity generation and sales, coal imports, solar system sales, biomass production and use, energy prices by consumer and by region.
- o Sources of the information will be identified. This includes an indication of what data are currently collected and what will need to be assembled.
- o The OEP team will identify organizations and individuals from whom the information can be gathered.

Subtask 2.3 Establish communication links and data transfer procedures.

- o OEP will make contact with the information sources identified in Subtask 2.2.

Subtask 2.3 continued...

- o Discussions will be held on the appropriate form of information transfer. Mechanisms for transferring the information (e.g. via regular reports, via computer tape) will be identified. The mechanisms will cover information transfer for the initial data set and will provide for regular update of the information.

- o OEP will enter into agreements with appropriate organizations to carry out the data transfer. The agreements may be formal or informal as the case warrants.

Subtask 2.4 Develop procedures for data assembly.

- o In connection with the design of the Network Energy Tracking System (NETS) of Task 1, the procedures for assembling the available data will be designed.

- o This will be carried out by an ANL and OEP team that involves both energy planners and computer specialists.

- o The procedures will specify how the data gathered from other agencies can be transferred into a form appropriate for the NETS.

Subtask 2.5. Assemble data for base year and other historical years.

- o A base year will be chosen to reflect the most complete set of data.

- o OEP will request data from the participating organizations (Subtask 2.3) for that year and any prior historical data.

- o The OEP and ANL team will assemble the collected information into the formats defined (Subtask 2.4).

- o For this cycle of data collection, emphasis will be placed on assembling what is already available from other agencies. Little or no new primary data gathering (i.e. surveys) will be undertaken.

- o Some gaps may exist in what was identified as desired information (Subtask 2.2) and what can actually be assembled. These will be filled in following annual surveys.

- o The data will be compiled into the NETS.

Subtask 2.6 Prepare first edition of energy statistics.

- o An outline of the statistical volume will be developed by the OEP and ANL teams.
- o The information available will be reviewed to determine what portions of the volume can be completed.
- o A draft statistical volume will be prepared and circulated by OEP to appropriate agencies for review and comment.
- o Modifications to the draft will be made as appropriate.
- o The first edition will be published.

Task 2 Resource Requirements

Time Schedule	15 months
OEP Personnel:	
1 Senior Staff Engineer	9 person-months
2 Support Staff Engineers	21 person-months
ANL Personnel:	
1 Task Director	2 person-months
2 Energy Data Specialists	4 person-months
1 Computer Specialist	3 person-months
Other Contractors:	
2 Lecturers for Short Course	1 person-month
2 Energy Data Specialists	6 person-months

Task 2. Energy Supply/Consumption Data Base Assembly

Subtask	1983	1984											
	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
2.1 Conduct short course on energy supply/ consumption data.													
2.2 Select initial data set required and identify sources.													
2.3 Establish communication links and data transfer procedures.													
2.4 Develop formats for data assembly.													
2.5 Assemble data for base year													
2.6 Prepare first edition of energy statistics.													Apr.85

Task 3. Energy Planning Model Evaluation

The objective of this task is to review and evaluate available energy planning models for OEP use. It will include an identification of analytical needs, an evaluation of existing and new models, the procurement of selected models, the installation of these models on OEP computer equipment, and a set of training courses on model use.

Although the time frame for this task extends for 10 months, much of the activity is at a relatively low level of effort. This is to allow time for OEP to acquire the necessary staff expertise and to allow the initial round of data collection (Task 2) to be completed.

Subtask 3.1 Identify modeling needs.

- As the activities of Tasks 1 and 2 are undertaken, a set of modeling needs will be identified. These will include a listing of the types of analyses OEP will have to be capable of performing to carry out its mission.
- A series of discussions will be held with OEP and other professional staff to develop the list.
- An ANL team will take the responsibility for carrying this out.

Subtask 3.2 Review models available in Egypt.

- Meetings will be held with Egyptian agencies involved in energy and in planning to identify the types of models that currently exist in Egypt.
- A documentation of the models, their methodological approach, and their actual use to date will be prepared.
- An Argonne team will conduct the review. OEP personnel who will be involved in the modeling effort will be part of the team.

Subtask 3.3 Review other available models.

- ANL staff will review other models that have been used in energy planning in developing countries.
- Documentation of these models will be prepared.

Subtask 3.4 Select and obtain models.

- o A set of criteria will be prepared to compare the available models.
- o The models will be reviewed to determine those appropriate to OEP needs.
- o OEP and ANL will jointly come to a decision on the choice of models.
- o Arrangements will be made to procure the models. In cases where the models are proprietary, OEP will need to arrange for the necessary licensing agreements to be signed.

Subtask 3.5 Install and test models.

- o The models selected will be installed and tested on OEP computer equipment. ANL and contractor staff may be involved in this.
- o Sufficient OEP staff expertise in modeling and computer systems will be necessary for this to be carried out.

Subtask 3.6 Conduct training course(s) on models.

- o ANL will arrange for a series of training courses to be given on the models selected. This may involve other contractor support.
- o The courses will be open to all OEP staff.
- o The courses will be designed to provide operating experience with the models.

Subtask 3.7 Prepare plan for model development.

- o It may be discovered that there are model needs in Egypt that cannot be met by existing tools. A plan for the development of new tools will be prepared.

Subtask 3.8 Follow-up to model training course.

- o A follow-up to the model training program will be conducted.
- o Implementation problems will be identified.
- o Additional training needs and/or problem-solving sessions will be arranged.

Task 3 Resource Requirements

Time Schedule	9 months
OEP Staff:	
1 Senior Energy Modeler	5 person-months
1 Junior Energy Analyst	9 person-months
1 Computer Specialist	5 person-months
ANL Staff	
1 Task Director	2 person-months
1 Energy Modeler	2 person-months
1 Computer Specialist	2 person-months
Other Contractors	
Modeling and computer staff to install models and conduct training courses	6 person-months

Task 3. Energy Planning Model Evaluation

Subtask	1983 DEC	1984 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3.1 Identify modeling needs													
3.2 Review available models in Egypt													
3.3 Review other available models													
3.4 Select and obtain models													
3.5 Install and test models													continuing
3.6 Conduct training course(s) on models													
3.7 Prepare plan for new model development													
3.8 Follow-up to model training course													

Task 4. Initial Energy Analysis

The objective of this task is to conduct the first national energy analysis for Egypt using the Network Energy Tracking System data base and the energy planning models. This activity will not be undertaken until after Tasks 1-3 are completed. A more detailed plan will be prepared at a later time. As a preliminary estimate, this task can be expected to take approximately 9 months after start.