MAEP
User's manual v.0

Universidad de los Andes

Electrical analysis and planning

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Electrical analysis and planning - MAEP

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1. First steps

1.1. Online execution

1.1.1. Platform

1.1.2. Type of users

- Administrator:
- Standard:
- Limited:

1.1.3. Input data

Table 1

Library	Description

1.2. Local execution

```
dir
├── docs
│   ├── docs_readme.txt
│   ├── manual_usuario_esp
│   └── user_manual_eng
├── Web_interface
└── MAEP_model
    ├── ConsoleMAEP.py
    ├── datasystem
    ├── __pycache__
    ├── pyomo_model.txt
    ├── reports_utils
    ├── results
    ├── savedata
    ├── scripts
    ├── setup
    ├── temp
    ├── templates
    └── utils
```

Fig. 1

1.2.1. Source code

Table 2

Library	Description

1.2.2. Development

1.3. Repository

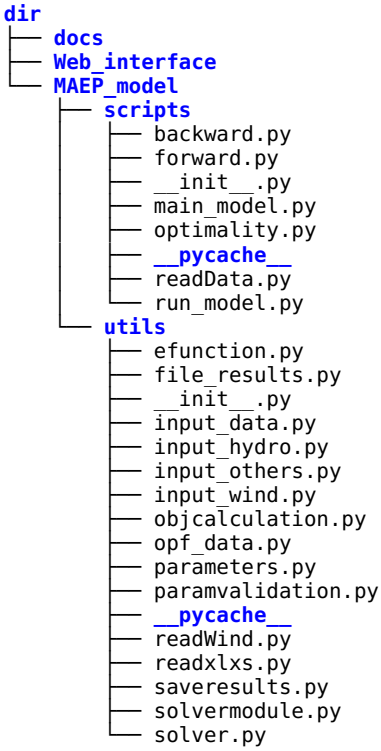

Fig. 2

2. Data library

2.1. New projects

Web interface:

Input file:

2.2. Data base

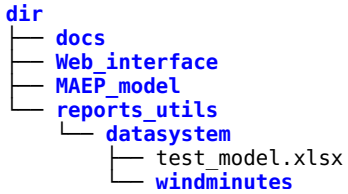

Fig. 3

2.2.1. Test files

2.2.2. Shared information

3. Forecasting resources

3.1. Hydro inflows

Table 3

Parameters	Units	Description	Status

3.2. Wind speed

Table 4

Parameters	Units	Description	Status

Note:

Note:

4. Generation units

4.1. Thermal plants

4.1.1. Configuration

Table 5
Techno-economics parameters of thermal plants.

Parameters	Units	Description	Status
name		Name of plant.	
capacity	MW	Installed capacity.	
entrance		To indicate if the unit exists (E), it has a defined entrance date (month-year), or without a defined entrance date(NE).	
fuel type		Type of fuel use for electricity generation.	
area/node		Location of the power plant.	

4.1.2. Expansion capabilities

Note:

4.1.3. Fuel

Note:

4.2. Hydro plants

4.2.1. Configuration

4.2.2. Expansion capabilities

Note:

4.2.3. Hydro chains

4.3. Small plants

4.3.1. Configuration

4.3.2. Expansion capabilities

Table 6

Parameters	Units	Description	Status

Table 7

Parameters	Units	Description	Status

Table 8
Techno-economics parameters of hydro plants.

Parameters	Units	Description	Status
name		name of plant	
initial_storage	Hm3	Storage water at the beginning of the planning horizon	
min_storage	Hm3	Minimum volume for the reservoir at any stage	
max_storage	Hm3	Maximum volume for the reservoir at any stage	
capacity	MW	Installed capacity	

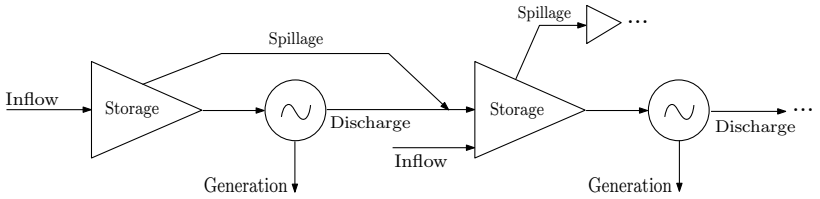

Fig. 4

Note:

4.4. Wind power plants

4.4.1. Configuration

4.4.2. Expansion capabilities

Note:

4.4.3. Wind speed intensities

Note:

- *Experimental module:*

4.4.4. Practical models

Wind power model M2

Note:

4.5. Storage units

4.5.1. Configuration

4.5.2. Expansion capabilities

Table 9

Parameters	Units	Description	Status

Table 10

Parameters	Units	Description	Status

Table 11

Parameters	Units	Description	Status

Table 12

Parameters	Units	Description	Status

Table 13

Parameters	Units	Description	Status

Table 14

Parameters	Units	Description	Status

Table 15

Parameters	Units	Description	Status

Table 16

Parameters	Units	Description	Status

Table 17

Parameters	Units	Description	Status

Table 18

Parameters	Units	Description	Status

Note:

5. Power system model

5.1. Electrical areas/nodes

Table 19
Area/node definition.

Parameters	Units	Description	Status
name		bus of the system	

Note:

5.2. Interconnection

Table 20

Parameters	Units	Description	Status

5.2.1. Expansion of transmission network

Table 21

Parameters	Units	Description	Status

Note:

5.2.2. Optimal power flow

5.2.3. Security constraints

Table 22

Parameters	Units	Description	Status

Note:

5.3. Demand

Note:

Table 23

Parameters	Units	Description	Status

Table 24

Parameters	Units	Description	Status

5.4. Rationing

Note:

5.5. Blocks

Table 25

Parameters	Units	Description	Status

5.5.1. Load curve

Table 26

Parameters	Units	Description	Status

5.5.2. Storage systems restrictions

Table 27

Parameters	Units	Description	Status

Note:

6. Parameters

6.1. Type of parameters

Table 28

Parameters	Units	Description	Status

6.2. Basic parameters

Table 29

Parameters	Units	Description	Status

6.3. Deterministic/Stochastic

6.4. Risk aversion

Table 30

Parameters	Units	Description	Status

6.5. Short-term variability

Table 31

Parameters	Units	Description	Status

7. Output files

7.1. Results

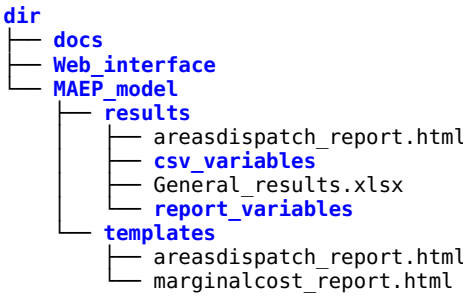

Fig. 5

7.2. Graph module

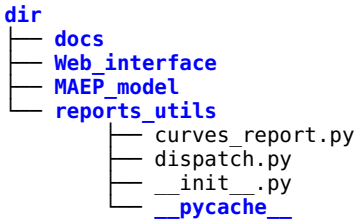

Fig. 6