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# **2018 ESOO Input Data Package and Model**

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**August 2018**

A Guide to the Input Data and Model of the 2018  
National Electricity Market Electricity Statement of  
Opportunities

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# Important notice

## PURPOSE

AEMO has prepared this document to assist stakeholders in interpreting and using the input data produced for the purposes of modelling the National Electricity Market (NEM).

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## VERSION CONTROL

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Version	Release date	Changes
1	24/08/2018	

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# 1. Configuring the 2018 NEM ESOO Model

This chapter contains the steps needed to set up the 2018 ESOO PLEXOS market model, including configuration of the input data package used in the simulation model.

The step by step guide is documented below.

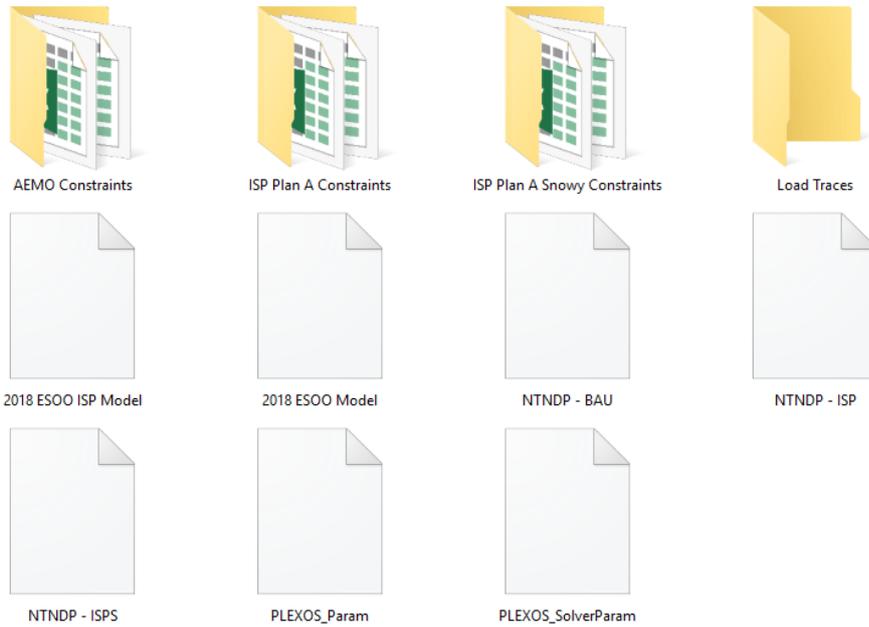
1. Download the zip files from AEMO's 2018 Electricity Statement of Opportunities (ESOO) webpage. The list of zip files is summarised in Table 1.

**Table 1** Zip files from AEMO's 2018 ESOO webpage

No	File	Description
1	2018 ESOO Model.zip	Contains model files, constraint equation workbooks, and associated parameter files.
2	2018 Large Scale Solar Traces.zip	Contains half-hourly generation traces for named solar projects.
3	2018 REZ Solar Traces.zip	Contains half-hourly generation traces for solar in ISP REZ zones.
4	2018 REZ Wind Traces.zip	Contains half-hourly generation traces for wind in ISP REZ zones.
5	2018 Wind Traces.zip	Contains half-hourly generation traces for named wind projects.
6	2018 Zonal Solar Traces.zip	Contains half-hourly generation traces for solar in NTNDP zones.
7	Constraint Ratings.zip	Contains half-hourly line ratings for Victorian transmission lines.
8	OP_Underlying_NES_Trace.zip	Contains half-hourly regional demand traces for underlying demand (demand before the impact of rooftop PV).
9	OPSO.zip	Contains half-hourly regional demand traces for operational demand (demand after the impact of rooftop PV).
10	PV Traces.zip	Contains half-hourly regional generation traces for rooftop PV.

2. Unzip the file *2018 ESOO Model.zip*. This will generate the 2018 ESOO Model folder. The contents of the 2018 ESOO Model folder are illustrated in Figure 1.

**Figure 1** Contents of 2018 ESOO Model folder



3. Open the Load Traces folder.
4. Extract the other nine zip files into the Load Traces folder, as listed in Table 1.
5. The Load Traces folder should then contain the following folders, as shown in Figure 2.

**Figure 2** Contents of Load Traces folder



6. The 2018 ESOO modelling has been performed under three core scenarios and two ISP development sensitivities. These scenarios and sensitivities contain varying outlooks for future supply and demand. The three core BAU scenarios are Neutral, Fast change and Slow change while the two development sensitivities are ISP without Snowy 2.0 and ISP with Snowy 2.0. These sensitivities are modelled using different sets of constraints workbooks and are setup in two separate model files.
  - a. The core BAU scenarios are set up in 2018 ESOO Model.xml.
    - i. To run the core scenarios, copy and rename NTNDP – BAU.XML to NTNDP.XML.
  - b. The ISP development sensitivities are set up in 2018 ISP ESOO Model.xml.
    - i. To run the ISP without Snowy 2.0 sensitivity, copy and rename NTNDP – ISP.XML to NTNDP.XML.
    - ii. To run the ISP with Snowy 2.0 sensitivity, copy and rename NTNDP – ISPS.XML to NTNDP.XML.

## 2. 2018 NEM ESOO Model Naming Convention

A set of naming conventions is developed in the 2018 NEM ESOO to shorten the model names in order to comply with the maximum number of characters allowed in naming models in PLEXOS. Table 2 describes the model naming convention used in the 2018 NEM ESOO. The jobsets populated in this model reflect this naming convention.

For example, the jobset “\_tESOO\_sN\_y1828\_p10\_r1718\_dBAU” represents the following assumptions:

- Neutral demand scenario.
- A model horizon between 2018-19 and 2027-28.
- The POE10 peak demand forecast
- The 2017-18 reference year.
- The ESOO BAU scenario that assumed only existing and committed projects.

**Table 2 2018 NEM ESOO Model naming convention**

Descriptor	Prefix	Options	Description
<b>Project</b>	_t	ESOO	2018 NEM ESOO
<b>Scenario</b>	_s	N, S, W	N = Neutral economic conditions (Neutral pace of change) S = Strong economic conditions (Fast pace of change) W = Weak (Slow pace of change)
<b>Year</b>	_y	1828	Financial years starting from 2018-19 to 2027-28
<b>Probability of Exceedance</b>	_p	10, 50	10 = 10% POE 50 = 50% POE
<b>Reference Year</b>	_r	1011 to 1718	Eight reference years on which Demand, Solar and Wind traces are based (2010-11 to 2017-18)
<b>Sensitivity</b>	_d	BAU ISP ISPS	BAU = Business as usual ISP development plan without Snowy 2.0 ISP development plan with Snowy 2.0

# 3. Further details

The model is populated with the settings that were used in the 2018 ESOO modelling which was run using custom results extraction tools on a cloud simulation platform. Desktop applications may require changes to settings to reduce the size of simulations and allow for results to be produced in other forms.

Two separate model files are provided.

- 2018 ESOO Model.xml – this contains the BAU scenarios for Neutral, Strong (Fast change) and Weak (Slow change)
- 2018 ESOO ISP Model.xml – this contains the neutral BAU ISP development plan sensitivities for with and without Snowy 2.0

PLEXOS 7.500 R02 x64 Edition was used to create and run the 2018 ESOO scenarios.

Each model was run using a Split Execution with the number of splits equal to the number of samples.

The ESOO was run with the OpenPLEXOS NEMConstraints assembly applied. This allows the application of transmission constraint equations contained in the constraint workbooks provided.

Both the PLEXOS software and the OpenPLEXOS assemblies are available from Energy Exemplar. The models can be run without the OpenPLEXOS assembly but would not incorporate the impact of transmission constraint equations.

The constraints workbooks represent the constraints that are relevant for assessing reliability. These constraint sets do not account for all transmission limitations in the NEM. The constraint sets applied are focused on constraints that impact reliability outcomes.

The constraints workbooks also include outage constraint sets which are triggered based on outage variables specified in the model. These constraints should be ignored if simulating for another purpose, or when transmission outages are not considered.

The constraints workbooks also change depending on the model run (BAU, ISP, ISPS). These are controlled through the NTNDP.xml file.