NEW CREDIT LIMIT PROCEDURE TRAINING

PRESENTED BY SETTLEMENTS AND PRUDENTIALS

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

AGENDA

1. Overview
2. MCL Calculator
3. Example 1 – Load
4. Example 2 – Load and Generation
5. Example 3 – Load, Generation and Reallocations

OVERVIEW – TRAINING OBJECTIVES

- Training Objectives
  - Provide comprehensive understanding of the MCL calculator
  - Ensure participants can use the MCL calculator to forecast their credit support requirements

OVERVIEW – NEW CREDIT LIMIT PROCEDURE

- New Credit Limit Procedures (CLP)
  - New Prudential Standard and Framework took effect on 1 November 2012
  - First MCL review made in accordance with the new CLP will be effective on 28 November 2013 (season: summer 2014)

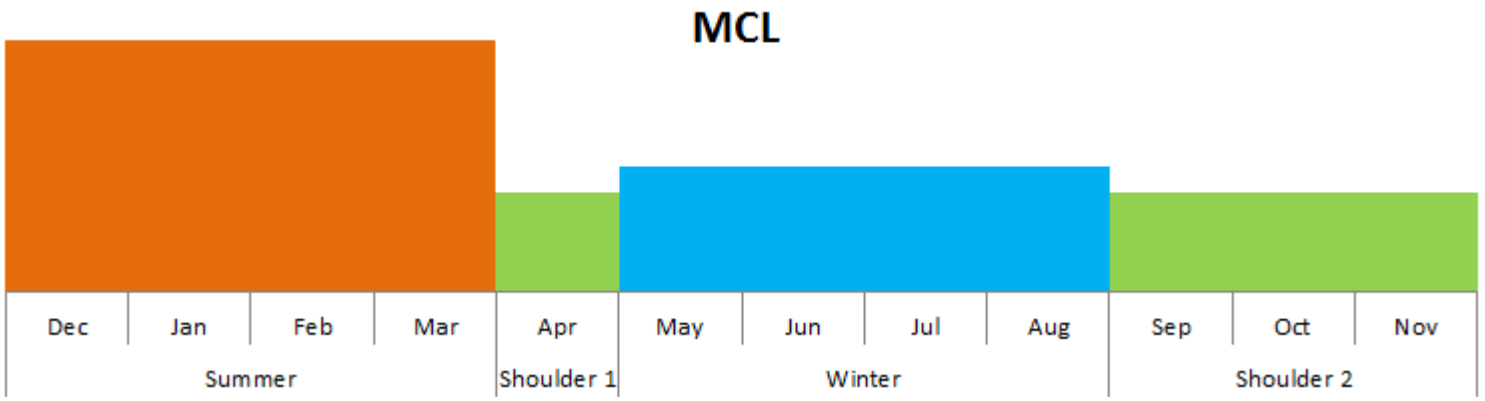
OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Review Seasons

    Summer: December ~ March

    Shoulder: April & September ~ November

    Winter: May ~ August



OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:

  - Time Periods

    Outstanding limit time period (T_{OSL}): 35 days

    Reaction period (T_{RP}): 7 days

    * Reduced MCL (28 days credit period) is not available in the CLP.

  - Maximum Credit Limit (MCL)

    MCL = Outstanding Limit (OSL) + Prudential Margin (PM)

OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Approach to calculate OSL and PM considers:
    - Regional parameters determined following previous like season:
      - ✓ Volatility factor ($VFOSL_R$ and $VFPM_R$)
      - ✓ Average price (P_R)
    - Participant parameters reflect participant's individual trading behaviour:
      - ✓ Estimate of future load, generation and reallocations
      - ✓ Participant risk adjustment factor ($PRAF_{L,R}$, $PRAF_{G,R}$, $PRAF_{R,R}$ and $PRAF_{R,R,C}$)

OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - ➢ The methodology to determine PM is based on similar components to the OSL with the following key differences:

	OSL	PM
Offsets	• Generation offset load • Credit reallocations offset debit reallocations • Generation offset debit reallocations • Credit reallocation offset load	• Generation offset load • Credit reallocations offset debit reallocations • Generation offset debit reallocations* • Credit reallocation offset load* * Note: effective from 30 November 2017
Flooring	• May be negative • Negative value is not less than the absolute value of the PM	• Can not be negative
Assessment Period	• 35 days	• 7 days

OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - OSL

    Value of Load

    $= DailyLoad_R \times P_R \times VFOSL_R \times PRAF_{L,R} \times T_{OSL} \times (GST+1)$

    Value of Generation

    $= DailyGeneration_R \times P_R \times VFOSL_R \times PRAF_{G,R} \times T_{OSL} \times (GST+1)$

  - PM

    Value of Load

    $= DailyLoad_R \times P_R \times VFPM_R \times PRAF_{L,R} \times T_{PM} \times (GST+1)$

    Value of Generation

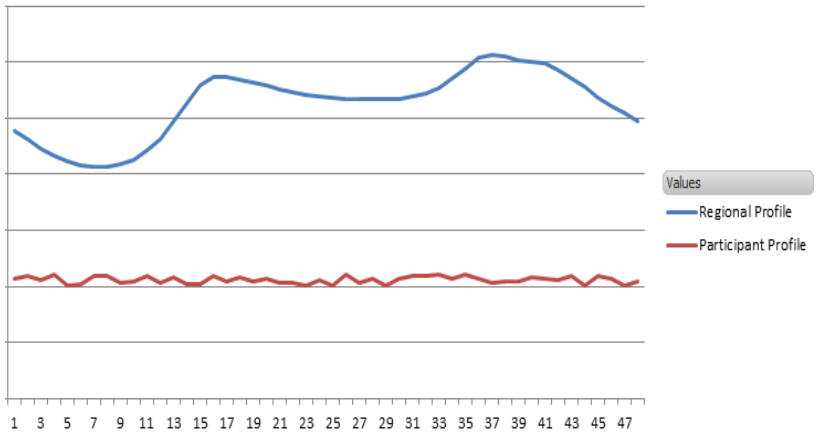
    $= DailyGeneration_R \times P_R \times VFPM_R \times PRAF_{G,R} \times T_{PM} \times (GST+1)$

* Parameters in **purple** colour are participant specific parameters. Other parameters are the same for all participants in a given region.

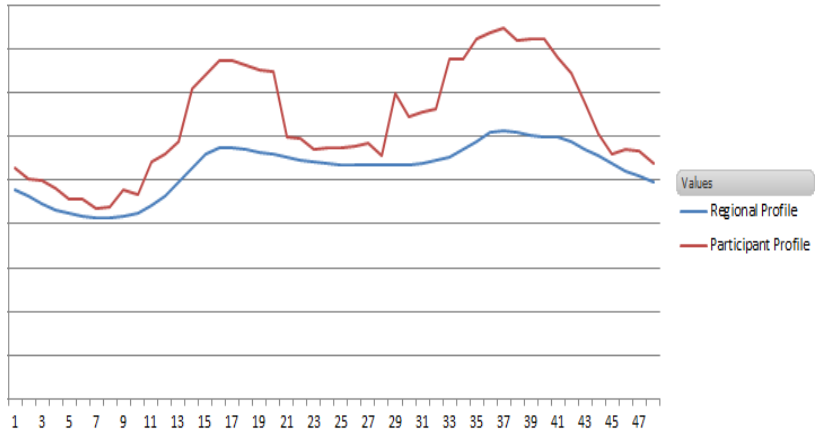
OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - ➢ PRAF

PRAF < 1:



PRAF > 1:



OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Rounding
    - ✓ OSL

      Rounded up to the nearest $1,000.
    - ✓ PM

      Rounded up to the nearest $1,000.
    - ✓ MCL

      Rounded up to the next multiple of $10,000 for values up to $250,000.

      Rounded up to the next multiple of $100,000 for values over $250,000.

    Examples:

	Original Value	Rounded Value
OSL	$15,359	$16,000
PM	$3,111	$4,000
MCL	$18,470	$20,000
	$518,243	$600,000

OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Inter-regional Adjustment

    Excess credit in a region is valued with an VFOSL of 1.

    Excess debit in a region is valued at regional VFOSL.

    For a company operating in multiple regions this ensures that credit in one region is not valued assuming volatility when it is offset against debit in another region.

    $OSL = \Sigma_R \, MAX(OSL_{R,I} , OSL_{R,U})$

    $OSL_{R,U} = (VEL_R + VRD_R + RD\$_R) \times T_{OSL} - (VEG_R + VRC_R + RC\$_R) \times T_{OSL}$

    $OSL_{R,I} = (VEL_R + VRD_R) \times T_{OSL} / VFOSL_R - (VEG_R + VRC_R) \times T_{OSL} / VFOSL_R + (RD\$_R - RC\$_R) \times T_{OSL}$

    - Price in a region is assumed to be independent of other regions
    - Net positive (debit) position region
      - $OSL_{R,U}$ is greater than $OSL_{R,I}$
    - Net negative (credit) position in a region
      - $OSL_{R,I}$ is greater than $OSL_{R,U}$
      - Inter regional adjustment
      - Credit amounts are valued with a $VFOSL_R$ of 1

OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Inter-regional Adjustment - Example

Load Only:

$OSL_{R,U} = VEL_R \times T_{OSL} = \$2,000$

$OSL_{R,I} = VEL_R \times T_{OSL} / VFOSL_R = \$1,000$

No Adjustment:

$OSL_{R,U} > OSL_{R,I}$

OSL based on $OSL_{R,U} = \$2,000$

Generation Only:

$OSL_{R,U} = VEG_R \times T_{OSL} = -\$2,000$

$OSL_{R,I} = VEG_R \times T_{OSL} / VFOSL_R = -\$1,000$

Adjustment:

$OSL_{R,U} < OSL_{R,I}$

OSL based on $OSL_{R,I} = -\$1,000$

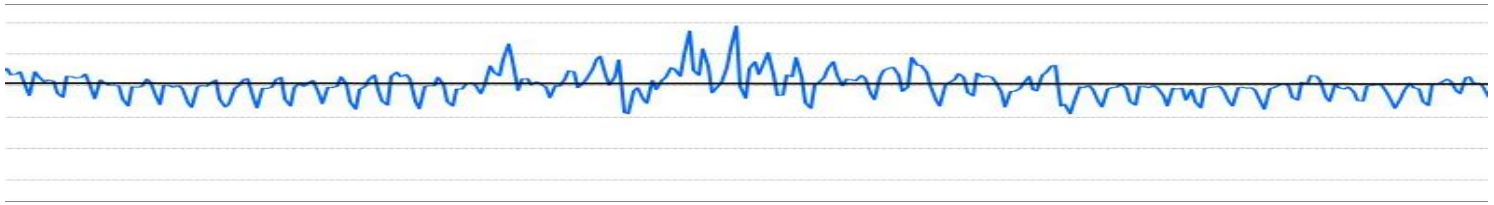
Credit against other regions valued at a $VFOSL_R$ of 1

	Region A	Region B
$VEL_R \times T_{OSL}$	$2000	
$VEG_R \times T_{OSL}$		-$2000
$VFOSL_R$	2	2
$OSL_{R,U}$	**$2000**	-$2000
$OSL_{R,I}$	$1000	**-$1000**
OSL	$2000 - $1000 = **$1000**	

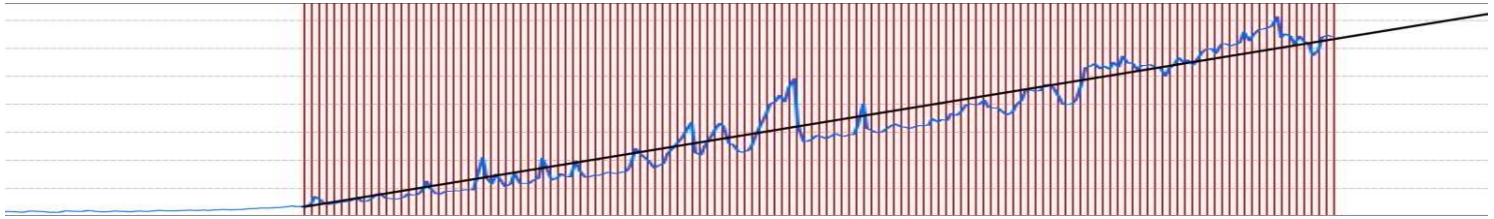
OVERVIEW – BASIC CONCEPTS IN CLP

- Basic concepts in CLP:
  - Energy Pattern Analysis Methods

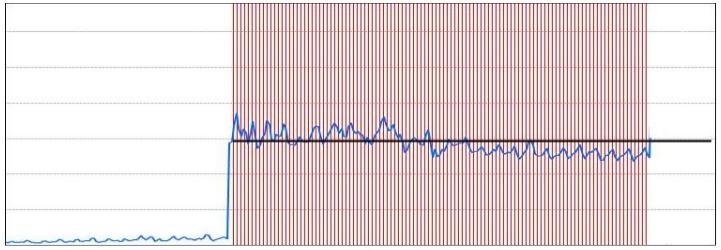
Default Analysis:

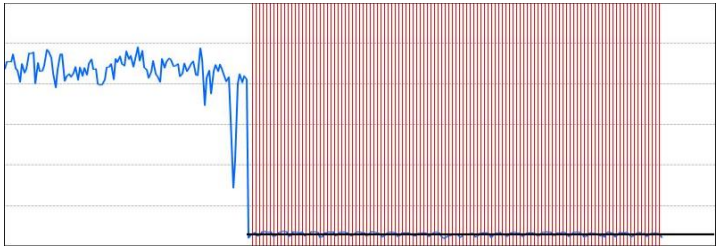


Trend Analysis:



Reduced Period Analysis:





MCL CALCULATOR

- Worksheets in MCL Calculator
  - MCL
  - Regional Data
  - Participant Data
  - Version History

- The Regional Data and Participant Data worksheets are editable by participants. All other worksheets are for display only.

- In the Regional Data and Participant Data worksheets, the cells in orange colour are editable by participants. All other cells are read-only.

MCL CALCULATOR - MCL

Summary page:

- Market data
  - Number of days in outstanding period (T_{OSL})
  - Number of days in reaction period (T_{RP})
  - Goods and services tax (GST)

- Market regional data
  - Estimate seasonal average prices for all regions (P_R)
  - Outstanding limit volatility factors for all regions ($VFOSL_R$)
  - Prudential margin volatility factor ($VFPM_R$)

- Participant regional data
  - Outstanding limit for all regions (OSL)
  - Prudential margin for all regions (PM)
  - Maximum credit limit for all regions (MCL)

MCL CALCULATOR – REGIONAL DATA

Detailed page with market regional data:

- Average daily regional load (ERL_R)
- Average half hourly regional price (P_R)*
- Regional load weighted price ($RLWP_R$)
- Regional load weighted price for cap value C ($RLWP_{R,C}$, C=100, 200 and 300)
- Outstanding limit volatility factors for all regions ($VFOSL_R$)*
- Prudential margin volatility factor ($VFPM_R$)*
- Half-hourly profiles for all regions
  - Half hourly regional profile ($ERL_{HH,R}$)
  - Half hourly regional price profile ($P_{HH,R}$)
  - Half hourly regional price profile for cap value C($P_{HH,R,C}$, C=100, 200 and 300)

* The value of this parameter is editable by participants. The values of the other parameters are read-only.

MCL CALCULATOR – PARTICIPANT DATA

Detailed page with participant specific regional data:

- Estimate load (EL_R)
- Estimate generation (ER_R)
- Debit energy/swap/cap reallocations (RD_R, RDS_R, $RDC_{R,C}$, C=100, 200 and 300)
- Credit energy/swap/cap reallocations (RC_R, RCS_R, $RCC_{R,C}$, C=100, 200 and 300)
- Debit $ reallocation ($RD\$_R$)
- Credit $ reallocation ($RC\$_R$)
- PRAFs
- Half hourly profiles

MCL CALCULATOR – VERSION HISTORY

Summary page with version history:

- Version number
- Description of changes
- Date of changes

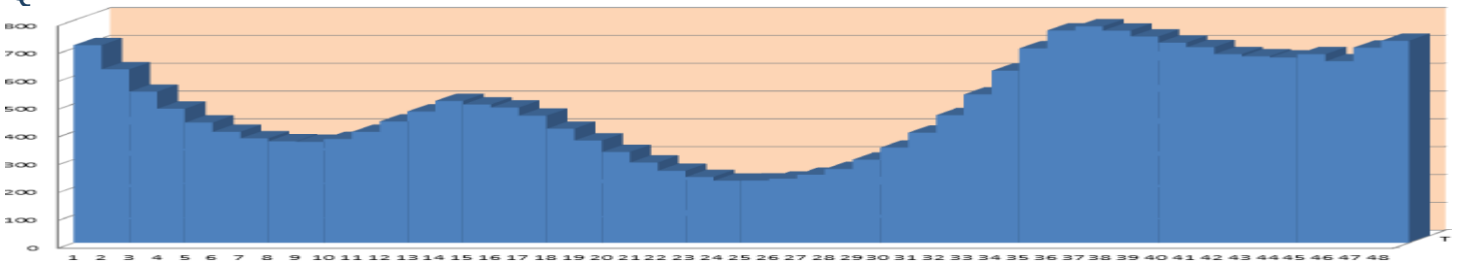
EXAMPLE 1 – LOAD

- Participant with load only
  - Estimate load

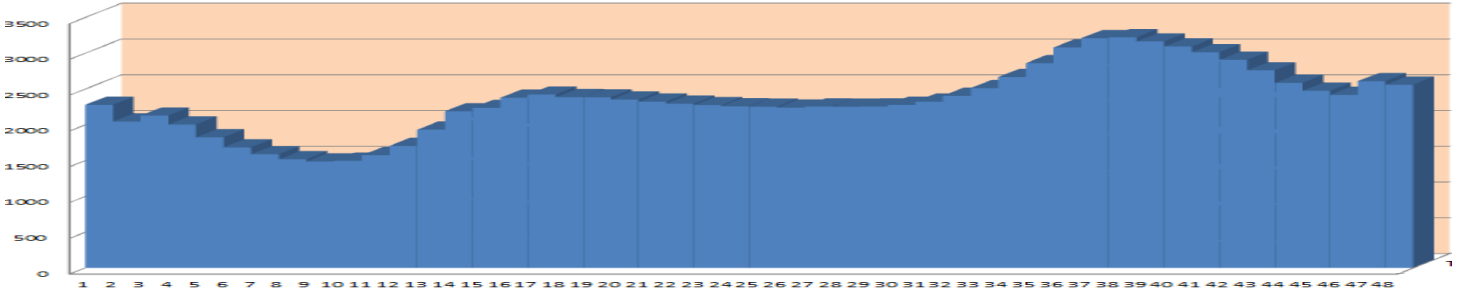
    EL_{QLD} = 425

    EL_{VIC} = 193
  - Half hourly load profiles

    QLD



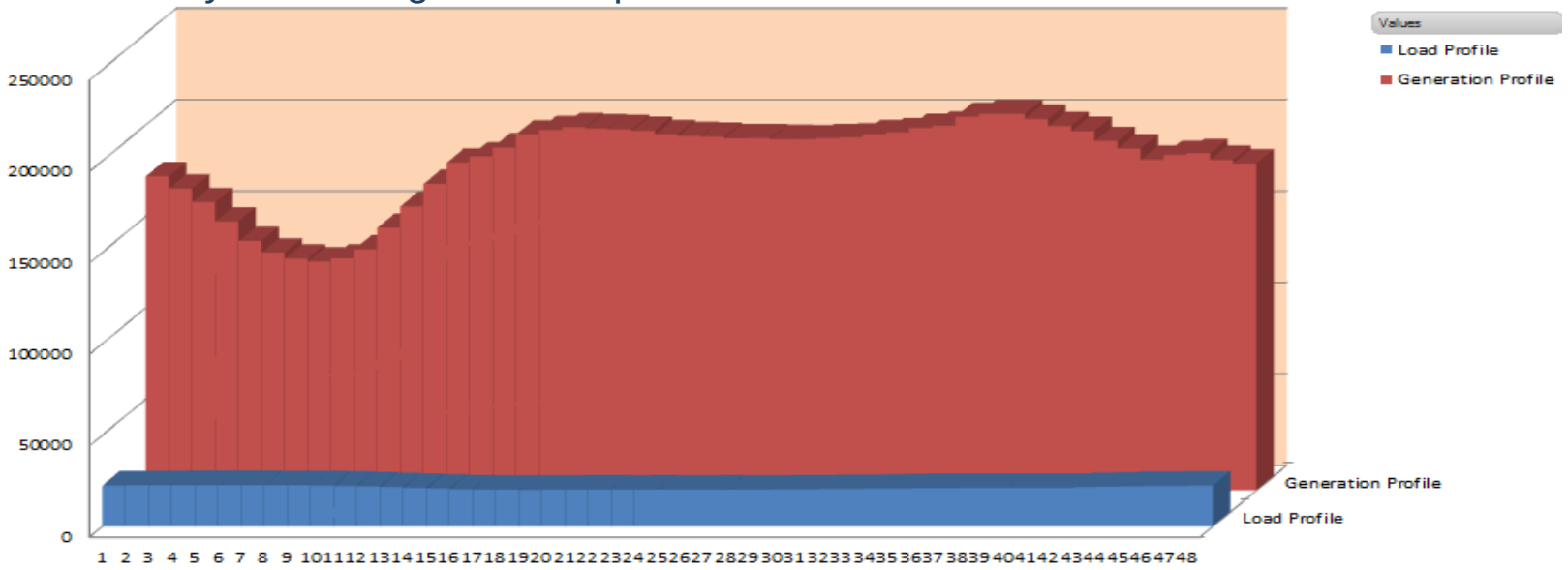
    VIC



* All numbers in the examples are for demonstration purpose only.

EXAMPLE 2 – LOAD AND GENERATION

- Participant with load and generation
  - Estimate load and generation
    EL_{NSW} = 2205
    EG_{NSW} = 18611
  - Half hourly load and generation profiles



* All numbers in the examples are for demonstration purpose only.

EXAMPLE 3 – LOAD, GENERATION AND REALLOCATIONS

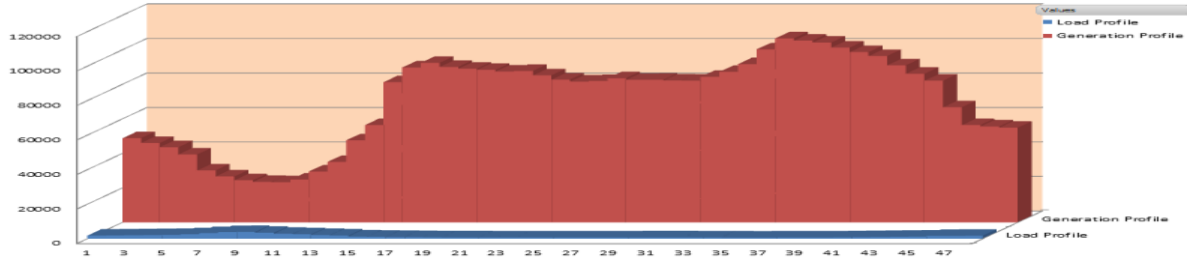
- Participant with load, generation and reallocations
  - Estimate load, generation and reallocations

    EL_{NSW} = 141

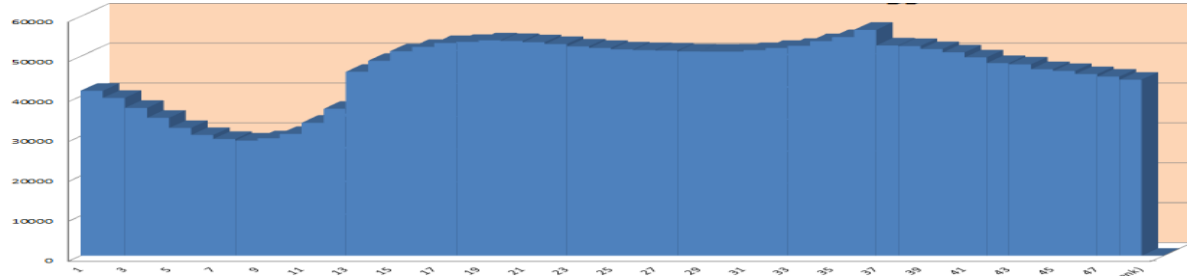
    EG_{NSW} = 8312

    RD_{NSW} = 4200
  - Half hourly load, generation and reallocations profiles

    Load and generation



    Reallocation



* All numbers in the examples are for demonstration purpose only.

THANK YOU FOR YOUR ATTENDANCE