Impact of Changes to the Allocation of Capacity Credits to Intermittent Generators

Presentation to the IMO Market Advisory Committee

12 December 2012

COLLGAR
WIND FARM

Overview and objectives

RC_2010_25 has significantly impacted Collgar's business

- Capacity Credits (**CC**) reduced by 69.9MW ($8.6m) = a 78% reduction
  - 8.6 times all other wind farms combined
  - Annual financial impact of $8.6m assuming a 2014-15 price of $122k/MW
    - 250% more than Sapere's estimates of total system financial impact*
  - Collgar sees this as contrary to Market Objective (c)
    - *"to avoid discrimination against particular energy options and technologies"*

- Suggest the process be reviewed and a more equitable solution found
  - Significant amount of new data now available
  - Original process did not include Collgar's data, resulting in a sub-optimal outcome not in line with original intentions
  - Recommend the use of more intervals
  - Recommend adjustment / reconsideration of the use of Load for Scheduled Generation (**LSG**)

(Sapere Table S3 and p. 22-23 estimates a total system cost of $5.2m based on a CC price of $186,000 . Using this pricing the impact to Collgar is $13.0m, more than 250% than Sapere's total system impact)*

Impacts on Collgar

Annual financial impact of $8.6m on 2014-15 prices

- Collgar significantly more impacted than other wind farms

Wind Farm	CC 2013-14	CC 2014-15	Difference (MW)	Difference ($m)	2014-15 % of nameplate capacity
Collgar	**90.00**	**20.10**	**(69.90)**	**(8.56)**	**9.8%**
Alinta	39.05	27.48	(11.57)	(1.42)	30.8%
Emu Downs	28.63	22.35	(6.28)	(0.77)	27.9%
Mumbida (Verve)	14.75	18.19	3.44	0.42	33.1%
Albany (Verve)	6.57	10.36	3.79	0.46	48.0%
Grasmere (Verve)	4.48	6.15	1.67	0.2	43.9%
Blair Fox, Mt Barker, Sky Farming, Kalbarri	3.09	3.91	0.82	0.1	n/a
Total	**186.58**	**108.54**	**(78.04)**	**(9.55)**	

Source: IMO and Collgar calculations

- Largest renewable energy facility in WA
  - — Providing Synergy with a significant REC portfolio to meet MRET targets
  - — Significant equity investment and backed by Australia's largest banks

Why re-open the process?

Sapere's analysis does not account for Collgar's data

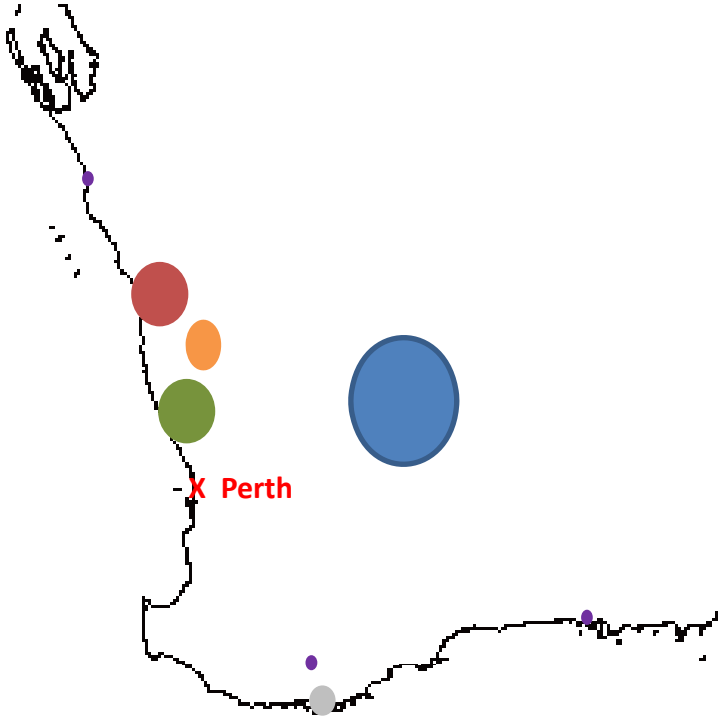
- Assumptions on which Sapere's analysis is based have changed materially and far more rapidly than envisaged
  - —Collgar alone has doubled the SWIS's renewable generation and is an inland facility
  - — Impact to Collgar has been far greater than any estimations
  - — Approximately 12 months of operational Collgar data now available

- Collgar's size and diversity (geographic and otherwise) needs to be considered
  - — Collgar's contribution to system capacity is now significantly undervalued

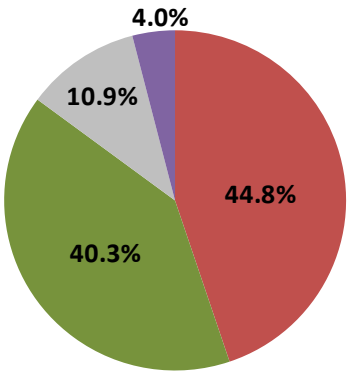
Why re-open the process? (cont.)

Collgar has materially changed the SWIS renewable generation landscape

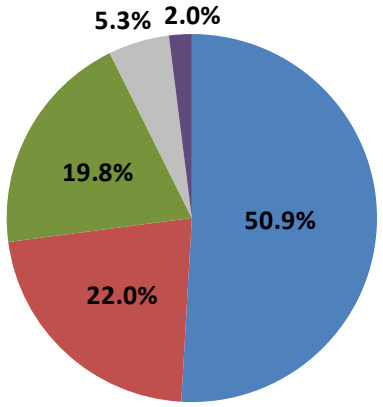
Collgar – a huge inland wind farm



Approx. Wind generation pre-Collgar



Approx. Wind generation post-Collgar



Collgar Alinta Emu Downs Albany Other

Revisitation of Rule Change

Process needs to be reviewed, inclusive of Collgar's data

- Results of RC_2010_25 materially misaligned with Sapere's analysis
  - Wind power penetration assumptions not valid and methodology not suitable for Collgar
  - Zachary and Dent (2011) based assumptions on small additions and normally distributed outputs which are not valid in Collgar's case

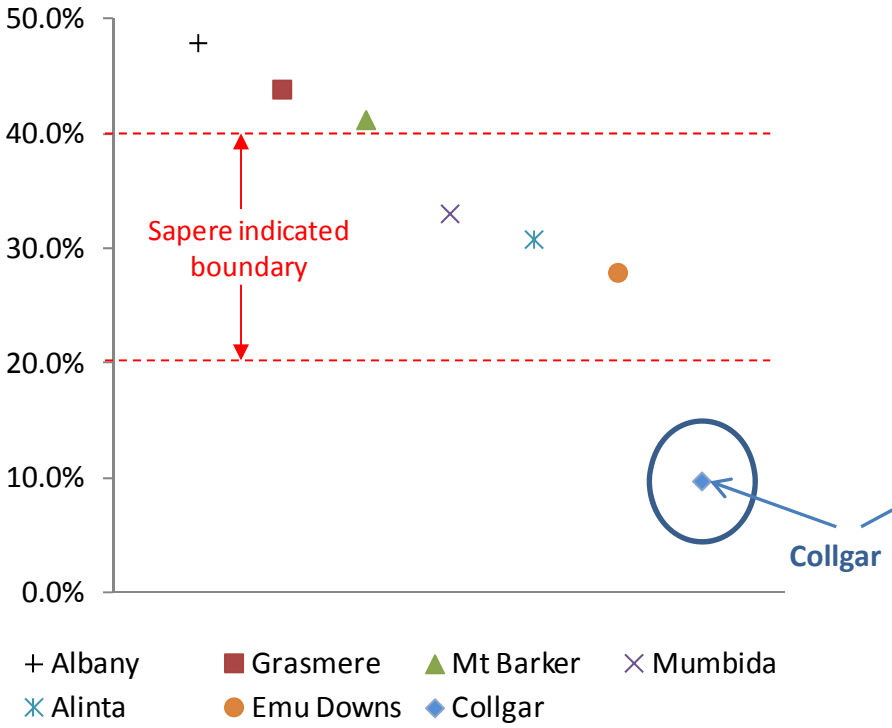
- Sapere state that:
  - *"This leads to a capacity value for the IGF fleet of around 29% (for wind farms around 25%)." (p. vi)*
  - *"A clear result is that the capacity credit valuation is lower if wind penetration is higher. Of note, in these studies the capacity credit valuation varies between 20 and 40 percent for low (<20%) wind power penetration and 5 and 25 percent for high (>20%) wind power penetration" (p. 9)*

- BUT: SWIS wind penetration is < 10% and Collgar's CC allocation is only 8.6% post-integration

Revisitation of Rule Change (cont.)

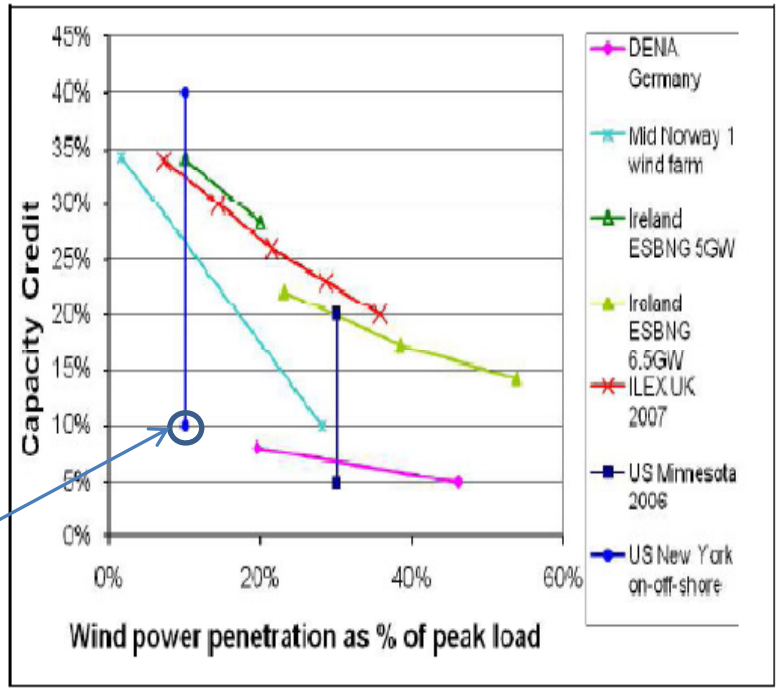
Impacts not in line with Sapere analysis and predictions

Wind farm CC allocation as % of nameplate capacity



Source: IMO and Collgar calculations

Capacity value of wind power: Summary of studies



Source: Sapere Report p. 9

Revisitation of Rule Change (cont.)

Sapere report recognises the need to revisit their analysis as new data becomes available

- Sapere report recognises a number of now realised issues:
  - — Issue of volatility / clustering via use of too few trading intervals (p. 20)
  - — Need to consider financial impact on generators (p. 22-23)
  - — Need to consider appropriate transition relief options for generators (p. 23)
  - — Alternatives to the LSG approach should be examined (p. 19 and p. 21)

- Sapere recommend reviewing their analysis to consider:
  - — Issue of correlation between output of separate IGFs (p. 19-20 and p.26)
  - — Altering how trading intervals are selected, noting accuracy may be improved by using a different number of intervals (p. 20-21 and p. 26)
  - — Use of alternate techniques (e.g. regression analysis) where IGF penetration is significant (p. 26)
  - — Appropriateness of LSG methodology (p. 21)

Preliminary recommendations (1)

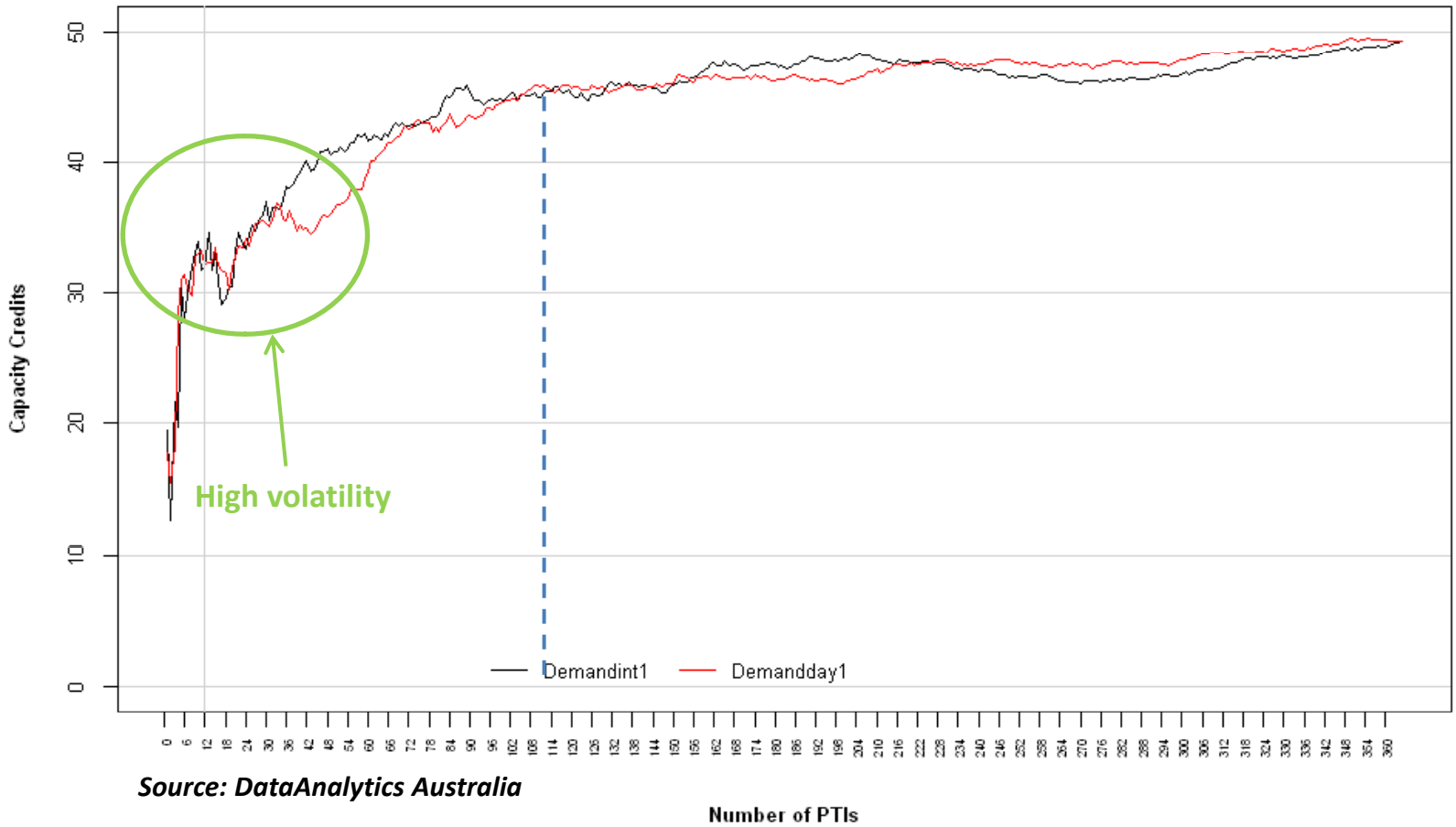
1. Consider a greater number and diversity of selected intervals

- Too few intervals introduces significant uncertainty and volatility
  - Analysis suggests data from at least 24 trading days per year for 5 years is recommended
- Use of intervals across several days avoids clustering effects
- System requirement for capacity often extends beyond one interval

Preliminary recommendations (1)

Use of too few intervals introduces material volatility of results

Collgar CC vs no. selected trading intervals (selected by peak demand)



Source: DataAnalytics Australia

Preliminary recommendations (2)

2. Reconsider application of Load for Scheduled Generation

- LSG inherently discriminates against IGF capacity contributions
  - Use of LSG discounts intervals where IGF generation is greatest (by definition)
  - The larger the facility the greater the discrimination
    - Collgar's capacity contribution materially devalued relative to other generators
  - Contrary to market objective (c)
- LSG introduces interdependency of output among IGFs
  - Inconsistent with treatment applied to other capacity classes (DSM, scheduled generation)
  - Introduces significant volatility and prevents effective forecasting of CC valuations
- LSG has not gained industry acceptance
  - Several industry participants opposed the introduction of LSG
  - Use of peak demand intervals may be considered to be more appropriate

Summary and next steps

Rule Change process to be reviewed given new data

- RC_2010_25 has materially affected Collgar and its stakeholders
  - — Impact is far in excess of estimations and compared with other participants
  - — Materially discriminates against large inland wind farms, contrary to Market Objective (c)

- Availability of new data warrants review of process
  - — Process should include analysis conducted by MMA, Sapere and DataAnalytics Australia
  - — Sapere recommended methodology clearly unsuitable for an IGF of Collgar's size (by its own observation)

- Further statistical analysis and industry consultation required
  - — Number of trading intervals and how they are selected
  - — Is the use of LSG appropriate and matched to system requirements?

Questions and Discussion