

Measurement and Verification for Variable DR Economic Resources

DRS

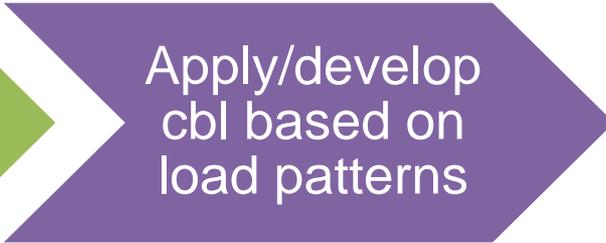
5/1/2013



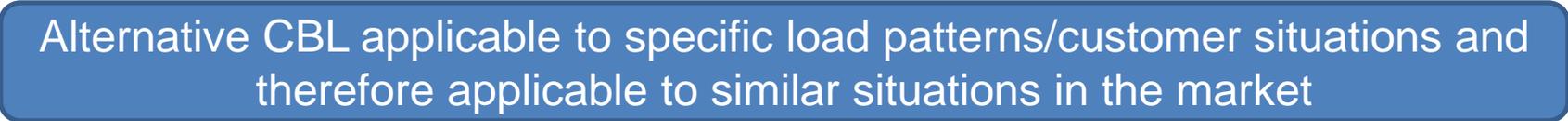
Run RRMSE
test for CBL



Analyze errors
for patterns



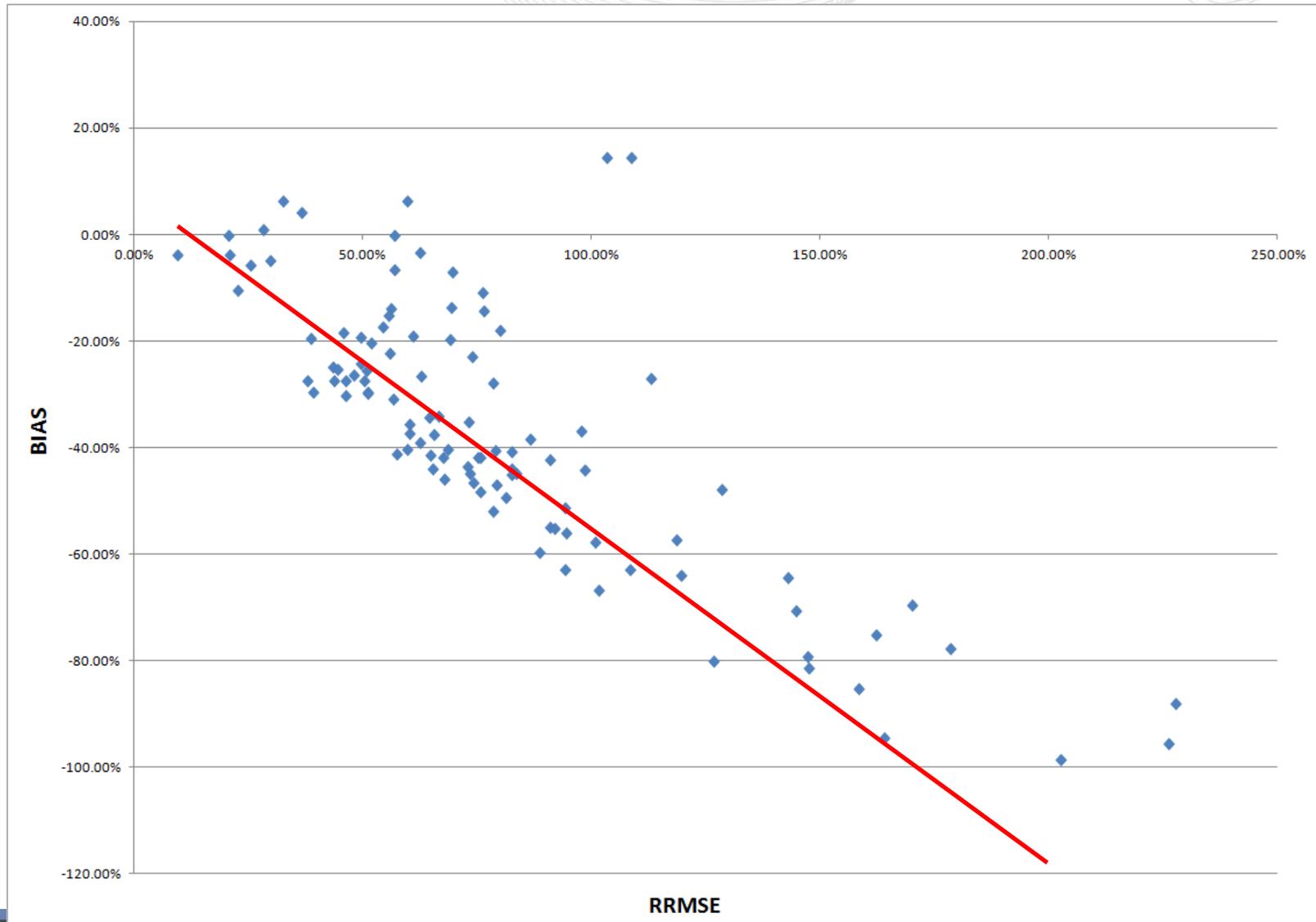
Apply/develop
cbl based on
load patterns



Alternative CBL applicable to specific load patterns/customer situations and therefore applicable to similar situations in the market

- 1 or 2 odd days have big impact on results.
 - CSP should analyze results through eLRS report.
- CSP did not run current alternative CBLs (7 day type) – simply ran standard and then defaulted to MBL
- Load a function of non-weekly cycles (ie: 3 day cycles and therefore daytype not relevant)
 - Use regression approach to determine

- Max Base Load (MBL)
 - Developed to accommodate random load which can not be forecast.
 - Dynamic FSL type approach to determine quantifiable load reductions
- 3 Before + 2 After (3+2) - testing approach
 - Developed to capture intra-day variation where daily usage is fairly consistent but hourly usage is variable
- 7 Day Types (3 day average)
 - Developed to capture reasonably consistent inter-day variation
 - Monday is fairly consistent but different than Tuesday



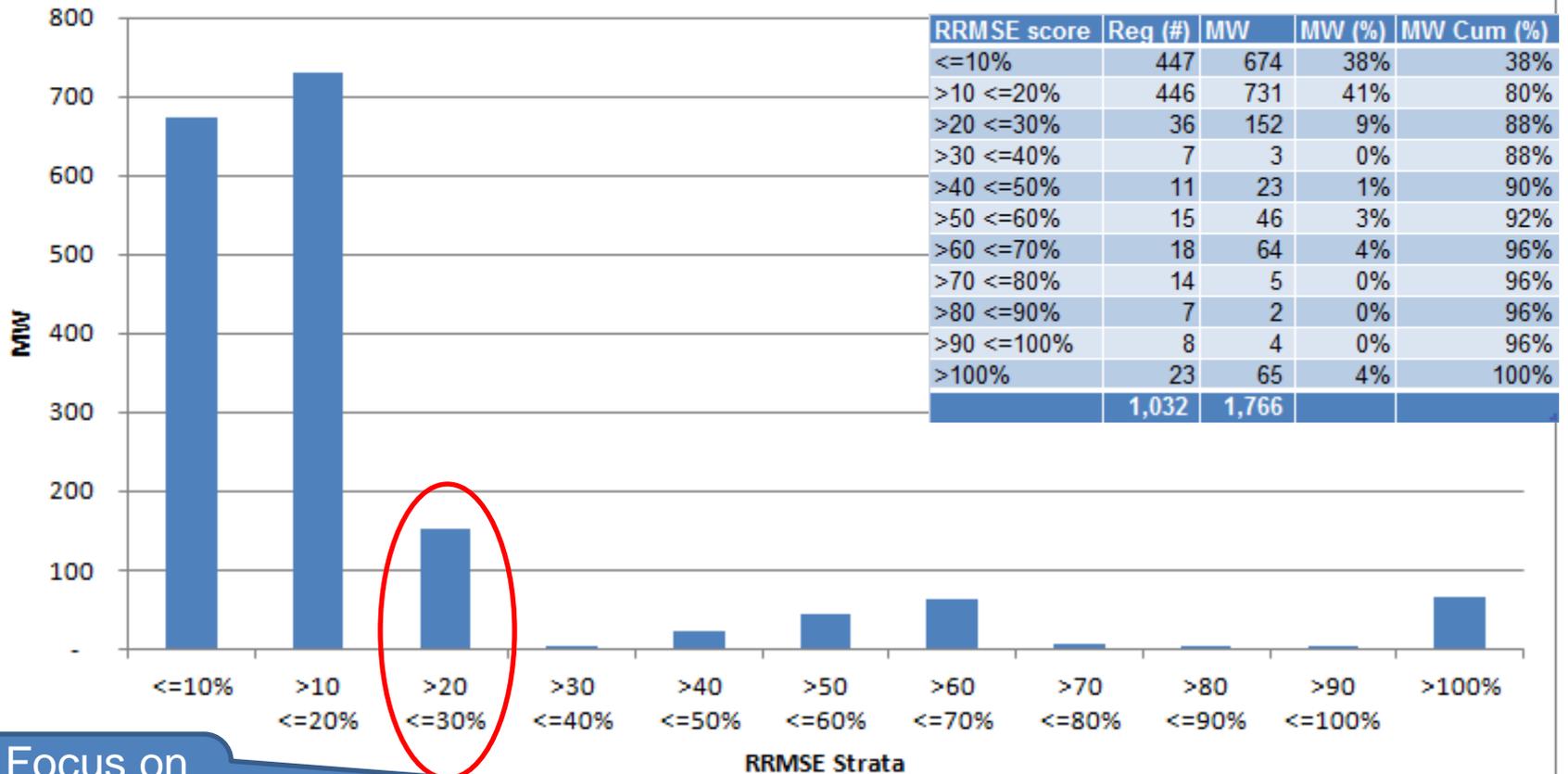
- Widely applicable to variable loads
- Logical relationship between unpredictable load and negative bias.
 - The more unpredictable the load the higher the negative bias
- Proposed changes
 - Resource must be available to clear in 4 contiguous hours or be dispatched in 4 contiguous hours
 - Registrations with positive bias or low accuracy with low bias may not be permitted to use (e.g.: 100% RRMSE with – 20% bias)

- 3 Before + 2 After CBL
 - Average hourly load for 3 hours before event (skip 1 hour before start) plus 2 after (skip 1 hour after)
- Only available upon PJM approval based on:
 - Must be available for dispatch or offer in DA market for at least 4 contiguous hours
 - Another method is not more accurate (including potential for regression model)
 - RRMSE >20% and <=30%
 - Daily usage fairly consistent (intra-day hourly volatility)
 - No significant pre or post change in operations that will impact CBL calculation
 - Thermal load (pre-cooling or snapback)
 - Change in typical operations (including on-site generation schedule)

- PJM to focus on registration with RRMSE $>20\%$ and $\leq 30\%$:
 - 3 + 2 with modifications
 - 7 day type
 - Limited use to date
 - Modified CBL (no SAA) – something that will not be impacted by change in normal operation on event day before or after the event period.
 - Regression ARIMA models
- MBL with some minor modifications for RRMSE $>30\%$

- Ensure load can be forecast on a reasonably accurate basis before participation
- If load can be forecast on a accurate basis then load reductions can be quantified
- Variable Customers = Hourly load can not be forecast on an accurate basis
 - Based on existing CBL methods.
- RRMSE test is objective way to determine accuracy of CBL to forecast load.

MW registered by RRMSE score strata



Focus on these customers