Load Management Task Force
Follow up on proposed changes:
GLD calculations

LMTF

April 8, 2010

Impact of proposed changes on current rules

	Proposed changes	Rules impacted by change
2	M&V – clarify Guaranteed Load Drop methods	Manual 19, attachment A eLRS system

GLD method direction

Stakeholders spent more than 1 year to develop

- Enhance existing rules & definitions
  1. Comparable Day
  2. Same Day
  3. Econ standard CBL
  4. Econ standard CBL with WSA
  5. Econ standard CBL with SSA
  6. Regression analysis
  7. Load Profile
  8. Generation Data

- Leverage economic CBL and associated alternatives:
  1. Standard CBL
  2. Standard CBL with Weather Sensitivity Adjustment
     1. Based on regression analysis
  3. Standard CBL with Symmetric Additive Adjustment
  4. Generation Data
  5. Alternative CBL if approved

Move toward less subjective and more objective calculations

Load Management M&V proposed process changes

- CSP selects appropriate M&V during the registration process and this remains in effect for delivery year and used for test, retest and emergency event compliance
  - firm service level (FSL) OR guaranteed load drop (GLD)
  - If GLD then CSP will select the specific method at point of registration (*this is different from current practice*)
    - CSP is responsible for selecting the most accurate method to determine what load would have been
    - Capacity compliance over-performance for each end use customer may not exceed the PLC (*this is different from current practice*)
      - This is consistent with capacity nomination process and associated rules

Key question

Should we maintain ability to utilize the following methods for capacity compliance?

type	Pro	Con	Status
Comparable Day	Only need to pick one day – less data needed	One day may not easily represent the load (reason for multiple days in CBL)	Under discussion
Same Day	Very simple, little data needed	Does not account for typical change (either up or down) in hourly load. Overestimation (precool).	Under discussion
Regression	More robust	More complicated, more data, and additional admin/analysis/time	To be determined
Load Profile	Based on EDC approach used for retail energy recon	Not always transparent and has not been utilized	Eliminate

PJM recommendation

- Must be clear, objective and transparent
  - Easy to reproduce and audit
- Need options to ensure load can be effectively represented
  - There is no one size fits all
- Method should be best estimate of what load would have been if site did not test or respond to emergency event
  - Non-bias (just as likely to over-estimate as under-estimate)
- Participants must be able to administer
  - Do not create a barrier to entry

Guaranteed Load Drop (enhance existing rules)

- Comparable Day (Proposed rules)
  - Non-weather sensitive customer = The non PJM event (economic or emergency) and non-holiday weekday in closest proximity to the test or emergency event day.
  - Weather sensitive customer = The non PJM event (economic or emergency) and non-holiday weekday in closest proximity to the test or emergency event day where the difference in the average daily temperature is +/- 2 degrees.
    - If you can not find a day within +/- 2 degrees then use day with closest weather conditions
  - Comparable day must be from May through September of current calendar year – may not use information from prior year.
  - Closest proximity includes the evaluation of days before or after the event.
    - If there is a tie during the evaluation between day before and day after event/test the day before will be used.

Eliminate subjectivity which will allow PJM to perform the calculation and ensure calculation is consistent.

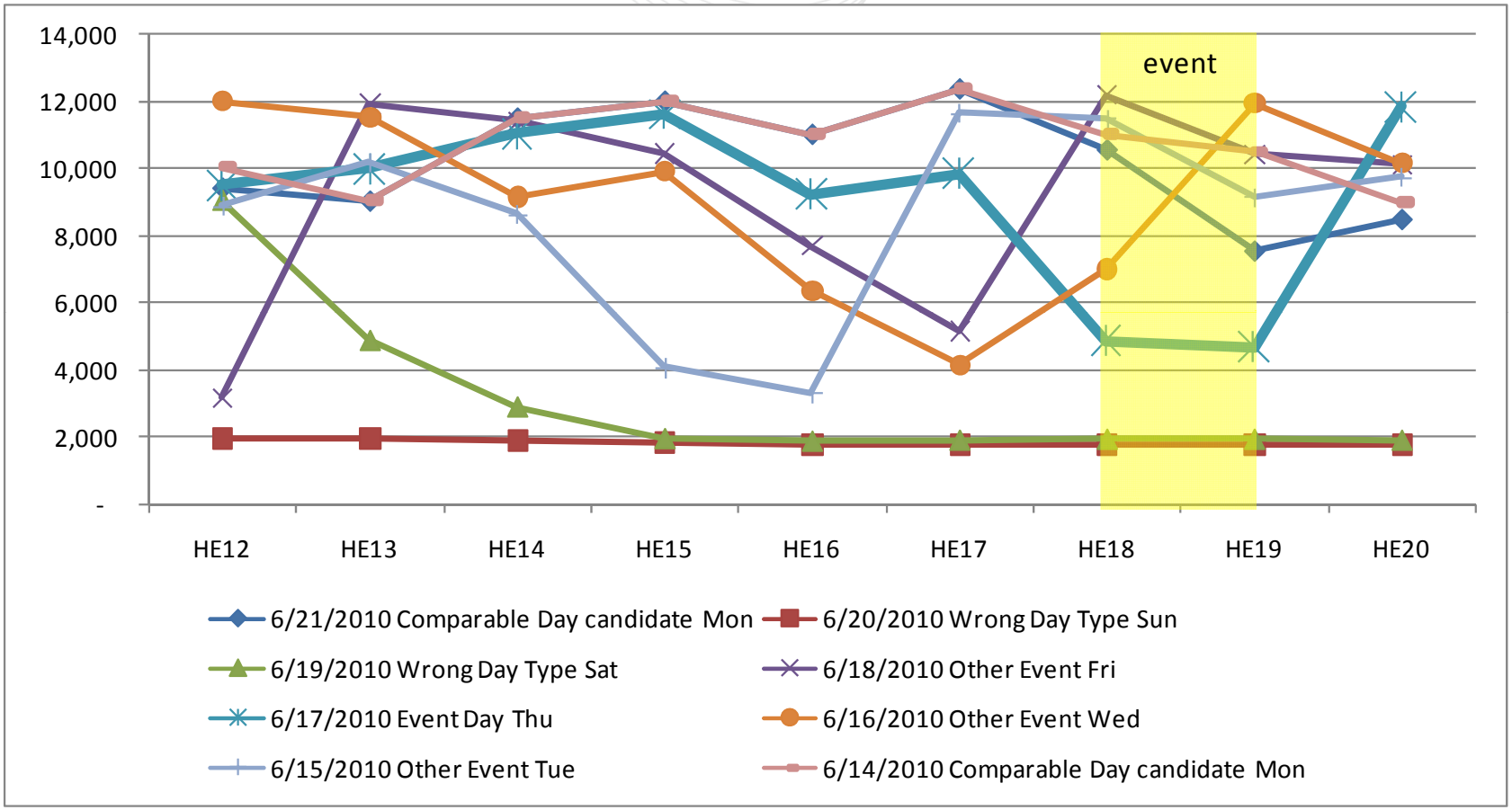
Example: GLD|Comparable Day

6/14 in closer proximity to event day so 6/21 was not selected

Date	Note	Type	HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20
6/21/2010	Comparable Day candidate	Mon	9,427	9,043	11,500	12,000	11,020	12,364	10,560	7,564	8,500
6/20/2010	Wrong Day Type	Sun	1,958	1,929	1,881	1,814	1,776	1,756	1,756	1,776	1,785
6/19/2010	Wrong Day Type	Sat	9,052	4,886	2,908	1,968	1,891	1,920	1,948	1,948	1,920
6/18/2010	Other Event	Fri	3,187	11,894	11,395	10,435	7,689	5,164	12,163	10,416	10,108
6/17/2010	Event Day	Thu	9,500	10,000	11,040	11,625	9,244	9,859	4,857	4,675	11,865
6/16/2010	Other Event	Wed	11,980	11,520	9,139	9,888	6,355	4,156	6,998	11,923	10,156
6/15/2010	Other Event	Tue	8,880	10,176	8,649	4,080	3,312	11,654	11,500	9,158	9,744
6/14/2010	Comparable Day candidate	Mon	10,070	9,043	11,500	12,000	11,020	12,364	11,000	10,500	9,000

Event Hours

Example: GLD|Comparable Day



Comparable Day Proposal – Stakeholder Concerns

Concerns	Proposed resolution
What if load will be down anyway due to high prices?	GLD should represent what load would have been on that day – if load is expected to be lower then Comparable Day should be lower.
What if resource responded to PA Act 129 event on prior day?	Use FSL or economic CBL (high 4 of 5, includes 25% usage threshold). If event is also economic then submit economic registration and settlement which will exclude the day from CBL selection.
Another weather variable may be more accurate then temperature (THI, etc.)	Open to discussion
What happens if an industrial customer's load is lower due to production on first non-event day	Use FSL or economic CBL with symmetric additive adjustment – comparable day not appropriate

Comparable Day is not reliable method unless for large portfolio of consistent weather sensitive resources like residential DLC

Comparable Day – Alternative Proposal for Weather Sensitive customers

- Step One: For a given event day, look backwards in time beginning June 1st and forwards up to September 30th of same delivery year. Eliminate all days that are weekends, holidays, or other event days, and also eliminate any hours outside of the hours of the given event day. For example, if the event day is June 25 from 2:00 to 7:00 PM, then the algorithm keeps only non-event, non-holiday weekdays from June 1st to September 30th and only those hours between 2:00 and 7:00 PM.

- Step Two: Calculate the THI for every day/hour that is included in Step One, and then compare the THI on each of those day/hours with the THI on the given event day. The difference is squared at every day/hour and then the square for each hour is summed over each day. Then the days are sorted in terms of the magnitude of the sum of squared difference. The date with the minimum sum of squared error is identified as the date with the "closest weather" to the given event day. The loads on that date are then the baseline for the GLD valuation of the event date.

- If there is a "tie" among days, choose the closest day in time to the event day (if there is still a tie, choose the closest earlier date). A tie is unlikely because the sum of squares will run to numerous decimals.

Guaranteed Load Drop (enhance existing rules)

- Same Day
  - Average hourly integrated energy consumption for 2 full hours prior to notification of event and for 2 full hours after skipping first full hour after the event.
- Example:
  - PJM notification 11:15, Resource has 2 hour lead or must be down by 13:15. Event ends at 17:35. Take the average of the following 4 hours:
    - HE10 and HE11 (represent 2 “full” hours prior to notification)
    - HE20 and HE21

Same Day Proposal – Stakeholder Concerns

Concerns	Proposed resolution
What happens if my load is higher than normal before the event (pre-cool building) – this will overstate reduction.	Average 2 hours prior to notification
Can hours before and after be used instead of just before? Concern about using hours after the event due to “rebound” effect	Average 2 hours after skipping first full hour after the event