GE VERNOVA

MARS EVOLUTION 4.14 TO 5.7

What Has Changed? – By Release

- V5.0 – 8 Enhancements/Additions – 3 Fixes – 5
- V5.1 – 1 Enhancements/Additions – 1 Fixes – 0
- V5.2 – 7 Enhancements/Additions – 2 Fixes – 5
- V5.3 – 1 Enhancements/Additions – 0 Fixes – 1
- V5.4 – 10 Enhancements/Additions – 3 Fixes – 7
- V5.5 – 3 Enhancements/Additions – 1 Fixes – 2
- V5.6 – 5 Enhancements/Additions – 3 Fixes – 2
- V5.7 – 3 Enhancements/Additions – 1 Fixes – 2

- Total – 38 Enhancements/Additions – 14 Fixes – 24

What Has Changed? – By Focus

- Enhancements/Additions – 14
  - Reporting – 6
  - Load Modeling – 3
  - Energy Limited/Storage Units – 2
  - New Modeling Capability – 3

- Fixes – 24
  - Energy Limited/Storage Units – 7
  - Emergency Operating Procedures – 6
  - General Logic – 7
  - Reporting – 4

ENHANCEMENT/ADDITIONS

Enhancement/Additions

Reporting

1. EL3 and ES current storage by replication and hour to H5. (v5.2)
2. Store interface flow for all margin states in H5. (v5.2)
3. Specify a start and end hour or replication for replication-level data recording to the H5. (v5.4)
4. Specify which units, interfaces, and areas send replication-level info. to the H5. (v5.4)
5. Write interface group flow in H5 with interfaces. (v5.6)
6. Added warnings for missing specifications when H5 options are set to S. (v5.6)

Enhancement/Additions

Load Modeling

1. Ability to use multiple load shapes for areas, that can be randomly selected at the beginning of each replication. (v5.0)
2. Ability to enable or disable dynamic conditions by LFU level. (v5.0)[1]
3. Increase max load levels to 50. (v5.4)

[1]Was previously in beta in 4.14

Enhancement/Additions

Energy Limited/Storage Units

1. Ability to limit how effective EL3 or ES units are for different hours of a call. (v5.0)[1]
2. Increase max number of energy storage (ES) units from 100 to 500. (v5.1)

[1]Was previously in beta in 4.14

Enhancement/Additions

New Modeling Capability

1. Added a co-located hybrid hourly modifier/energy storage type. (v5.5)
2. Allow interface groups. (v5.6)
3. Improved interface flow logic to improve run-time. (v5.7)

FIXES

Fixes

Energy Limited/Storage Units

1. Fixed issue with ES charging when all units in an area are charging proportionally. (v5.0)
2. Disabled ES charging when the unit is not installed, retired, on maintenance, or not available for a certain LFU level. (v5.0)
3. Fixed a bug that prevented ES units with cycle efficiency less than 1 from charging correctly. (v5.2)
4. Fixed a bug that caused as-needed EL3 and ES units from being dispatched under certain circumstances when they were in a dispatch group. (v5.2)
5. Fixed a bug that caused bad replication-level ES unit outputs in Linux. (v5.2)
6. Fixed a bug introduced in v5.2 that could cause EL3 and ES units to generate when they should not. (v5.4)
7. Fixed a bug that could cause ES units to not charge proportionally when Dispatch order for EL3/ES units is set to 2 in INT-ONLY. (v5.5)

Fixes

Emergency Operating Procedures

1. Corrected an issue where area only EOPs were double counting the area margin and applying 2x the deficit. (v5.4)
2. Corrected an issue where pool only EOPs were being used more than the pool deficit and thus supporting areas outside of the pool. (v5.4)
3. Corrected an accounting issue where pool and system EOPs which were triggered by the area were being accounted for as fully used even if the full capacity could not be delivered. (V5.4)
4. Raise errors for negative EOPs with hours per year, hours per day, and energy per day limits. (v5.4)
5. Raise errors for negative EOPs in dummy areas after the last negative EOP. (v5.4)
6. Raise errors if a negative EOP occurs after a positive EOP. (v5.4)

Fixes

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General Logic

1. Fixed application of cogeneration type 2 loads, when the loads are subject to load multipliers. (v5.0)
2. Fixed indexing error with hourly units. (v5.0)
3. Fixed a bug that prevented proper state transition with 3 or more states. (v5.2)
4. Fixed a bug that prevented masked binaries from working correctly. (v5.3)
5. Fixed a bug that could cause non-convergence in interface flow optimization. (v5.6)
6. Fixed a bug that could cause cases with a separate load for maintenance scheduling to give a false error. (v5.6)
7. Fixed a bug that caused random seed indexing to change on other units when hybrid units were added. (v5.7)

Fixes

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Reporting

1. Fixed recording on per-replication margins in the H5 file. (v5.0)
2. Fixed a bug that caused area loads to be reported incorrectly in the H5. (v5.2)
3. Fixed a bug that causes crash when writing the output H5. (v5.5)
4. Fixed a bug reporting hybrid information when unit was retired. (v5.7)


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APPENDIX
CHANGES BY VERSION RELEASE

Version 5.0

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Enhancements/Additions -

1. Ability to use multiple load shapes for areas, that can be randomly selected at the beginning of each replication. (v5.0)
2. Ability to enable or disable dynamic conditions by LFU level. (v5.0)
3. Ability to limit how effective EL3 or ES units are for different hours of a call. (v5.0)

Fixes -

1. Fixed issue with ES charging when all units in an area are charging proportionally. (v5.0)
2. Disabled ES charging when the unit is not installed, retired, on maintenance, or not available for a certain LFU level. (v5.0)
3. Fixed application of cogeneration type 2 loads, when the loads are subject to load multipliers. (v5.0)
4. Fixed indexing error with hourly units. (v5.0)
5. Fixed recording on per-replication margins in the H5 file. (v5.0)

Version 5.1

Enhancements/Additions -

1. Increase max number of energy storage (ES) units from 100 to 500. (v5.1)

Fixes -

Version 5.2

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Enhancements/Additions -

1. EL3 and ES current storage by replication and hour to H5. (v5.2)
2. Store interface flow for all margin states in H5. (v5.2)

Fixes -

1. Fixed a bug that prevented ES units with cycle efficiency less than 1 from charging correctly. (v5.2)
2. Fixed a bug that caused as-needed EL3 and ES units from being dispatched under certain circumstances when they were in a dispatch group. (v5.2)
3. Fixed a bug that caused bad replication-level ES unit outputs in Linux. (v5.2)
4. Fixed a bug that prevented proper state transition with 3 or more states. (v5.2)
5. Fixed a bug that caused area loads to be reported incorrectly in the H5. (v5.2)

Version 5.3

Enhancements/Additions -

Fixes -

1. Fixed a bug that prevented masked binaries from working correctly. (v5.3)

Version 5.4

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Enhancements/Additions -

1. Specify a start and end hour or replication for replication-level data recording to the H5. (v5.4)
2. Specify which units, interfaces, and areas send replication-level info. to the H5. (v5.4)
3. Increase max load levels to 50. (v5.4)

Fixes -

1. Fixed a bug introduced in v5.2 that could cause EL3 and ES units to generate when they should not. (v5.4)
2. Corrected an issue where area only EOPs were double counting the area margin and applying 2x the deficit. (v5.4)
3. Corrected an issue where pool only EOPs were being used more than the pool deficit and thus supporting areas outside of the pool. (v5.4)
4. Corrected an accounting issue where pool and system EOPs which were triggered by the area were being accounted for as fully used even if the full capacity could not be delivered. (V5.4)
5. Raise errors for negative EOPs with hours per year, hours per day, and energy per day limits. (v5.4)
6. Raise errors for negative EOPs in dummy areas after the last negative EOP. (v5.4)
7. Raise errors if a negative EOP occurs after a positive EOP. (v5.4)

Version 5.5

Enhancements/Additions -

1. Added a co-located hybrid hourly modifier/energy storage type. (v5.5)

Fixes -

1. Fixed a bug that could cause ES units to not charge proportionally when Dispatch order for EL3/ES units is set to 2 in INT-ONLY. (v5.5)
2. Fixed a bug that causes crash when writing the output H5. (v5.5)

Version 5.6

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Enhancements/Additions -

1. Write interface group flow in H5 with interfaces. (v5.6)
2. Added warnings for missing specifications when H5 options are set to S. (v5.6)
3. Allow interface groups. (v5.6)

Fixes -

1. Fixed a bug that could cause non-convergence in interface flow optimization. (v5.6)
2. Fixed a bug that could cause cases with a separate load for maintenance scheduling to give a false error. (v5.6)

Version 5.7

Enhancements/Additions -

1. Improved interface flow logic to improve run-time. (v5.7)

Fixes -

1. Fixed a bug that caused random seed indexing to change on other units when hybrid units were added. (v5.7)
2. Fixed a bug reporting hybrid information when unit was retired. (v5.7)