

Landfill Gas to Electric Status

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Background

- There are currently approximately 40Mw of landfill gas to electric (LFGE) suppliers scheduled through the NYISO.
 - Estimates (from DEC and EPA data) would put the future potential maximum NYISO scheduled LFGE capacity at 50 – 70 Mw.
- The NYISO has reviewed exempting LFGE units from penalties due to fuel supply volatility.
 - This would be consistent with the NYISO's treatment of all resources which are intermittent and not controllable.



Unit Characteristics

- LFGE generators are large internal combustion engines that burn the methane that is about 50% of the gases produced by the landfill.
- These units in NYCA range in size from 1 to 17 MWs.



Unit Characteristics

- Factors affecting methane content of input gas are precipitation, landfill vacuum, temperature, barometric pressure and variations in gas quality and quantity produced by the landfill operation itself such as:
 - well shutoffs for daily filling operations,
 - adjustments to meet LF regulatory or contractual commitments such as odor and other emissions not controlled by the generator owner,
 - well shutdowns and adjustments periodically during the day to manage water condensation.
- Landfill operators do not pre-schedule their activities with the LFG generator operator.
- The effect on methane content of such landfill operations is not predictable with sufficient accuracy to avoid penalties nor is the effect of weather changes.



Typical Unit Daily Variations

Days	One		Two		Three	
Deviation from mean	Above	Below	Above	Below	Above	Below
4MW Unit	13%	18%	12%	28%	14%	44%
16 MW Unit	4.5%	5%	4.5%	9%	3.5%	12.1%

 Current market rules allow maximum deviations from schedule without penalty of 3% of UOL.



Recommendation

- As the previous table illustrates the LFGE units cannot control the quality or quantity of their fuel supply sufficiently to keep their energy output within current NYISO performance limits.
- The causes of fuel supply variations are not predictable in time frames that would permit RT offer adjustments.
- NYISO proposes LFGE generators should be added to the list of intermittent units in the tariff which are exempt from performance penalties and paid for all energy produced.



Tariff Change Recommendations

- Definitions Services Tariff Volume 2
 - 2.77a Intermittent Power Resource
 - Capacity resources that depend upon wind, solar energy or landfill gas for their fuel.
 - 2.23a Compensable Overgeneration See attached tariff sheets:
 - New York Independent System Operator, Inc. <u>Seventh Revised Sheet No. 30</u>
 - Superseding First Revised Sheet No. 30A



Tariff Change Recommendations

- Rate Schedule 3 Services Tariff Volume 2
 - 3.0 Exemptions (to undergeneration penalties) See attached tariff sheets:
 - <u>New York Independent System Operator, Inc.</u>
 - Seventh Revised Sheet No. 28
- Section 5 Services Tariff Volume 2
 - 5.26 UCAP (No changes, information only)
 - See attached tariff sheets:
 - <u>New York Independent System Operator, Inc.</u>
 <u>Sixth Revised Sheet No. 135B</u>



Clarification

- Finally, the NYISO proposes to add the phrase "offering energy in that interval" in the definition of Compensable Overgeneration and in Section 4.5, Real-Time Market Settlements, to indicate those rules apply to generators that have offered their energy to be scheduled.
- This is a slight adjustment from the recommendation made to MIWG to account for re-entry as an energy supplier after a period of non-delivery (*e.g.* hydro production after a rainstorm). Non-delivery of energy after several intervals results in rejected bids and no schedule. Intention is not to preclude immediate settlement when fuel becomes available again; requiring an offer rather than a schedule resolves the issue.



The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for the state's bulk electricity system.

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