Dual Fuel Unit Opportunity Cost Issue

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Background/Problem Statement

- Current approach for modeling opportunity cost ignores instances where resources are dispatched by PJM for reliability/transmission
  - Opportunity cost derivation considers commodity prices in the dispatch function. For oil units, the high dispatch cost often results in no projected runs and therefore zero OC adder.
- This approach often leads to under-recovery of actual opportunity cost for dual-fuel resources when dispatched on oil

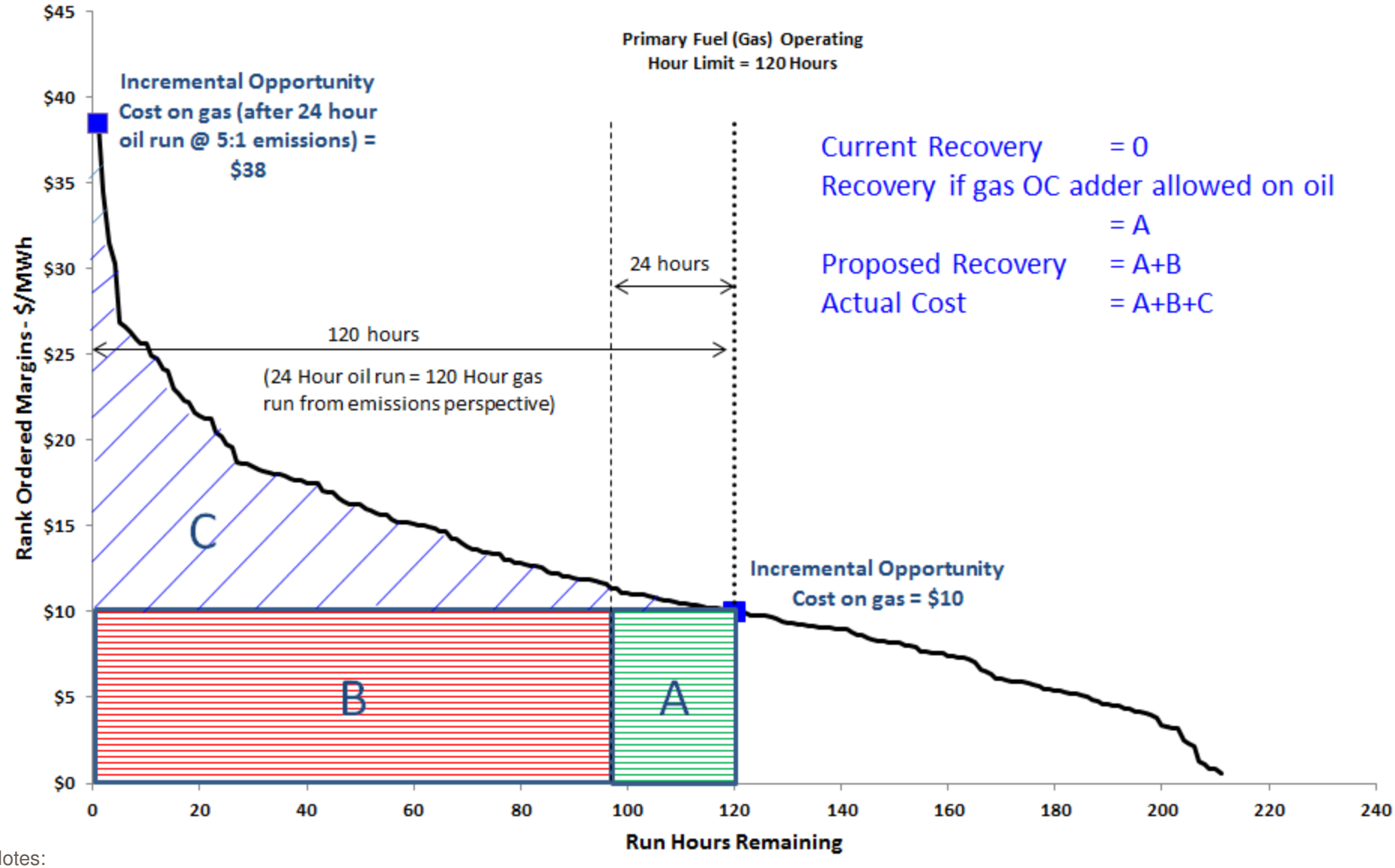
Example – Dual Fuel (Gas/Oil) Resource

- Resource has limited operating hours due to environmental permits (e.g. NOx)
  - Resource may operate up to 5 days of gas-fired operation (or 1 days of oil fired operation) within each compliance period
    - ***Higher NOx emission rate when running on oil vs. gas***
    - $10 gas-fired opportunity cost adder
    - $0 oil-fired opportunity cost adder
- Resource is dispatched on oil for a transmission constraint over a 24 hour period
  - Run out of merit order; receives make-whole payment resulting in zero energy margin
- Resource has foregone the equivalent of 5 days of gas operation at a $10+/MWh energy margin, and has less hours of operation available for future economic/reliability needs

Recommendation

- Calculate ‘secondary’ fuel opportunity cost as a function of ‘primary’ fuel opportunity cost
  - Example:
    - $10/MWh gas-fired opportunity cost (X)
    - 5 Days Gas Full Load/ 1 Days Oil Full Load per compliance period (Y)
    - Oil-fired opportunity cost = $10/MWh (X) * 5 (Y)
- More accurately reflects the actual opportunity cost of running a dual-fuel unit out of economic merit order
- Allows for more efficient utilization of limited run-hour resources and greater system reliability

Proposed Opportunity Cost Adder Results in Conservative Recovery of Actual Opportunity Cost



Notes:

1. The example assumes a 24 hour oil run.
2. The numbers in the chart are illustrative, however shape of the OC adder curve is from an actual instance.
3. The primary and secondary fuels in this example are gas and oil.