Hello,

As a former researcher (cell, molecular and micro biology) now working on sustainable lab initiatives, I can speak to users/scientists concerns as well as those of facilities groups interested in energy and maintenance.

The initial testing plan looks like a good start. I am especially interested in the future of the ULT project. For those (and –20) tests, I am especially interested in testing aspects of freezers in a more realistic user environment. For example, measuring temp changes, frost buildup and energy use for multiple door openings/closings of various durations would be very helpful in making recommendations. Also, I don't know if this is out of scope, but adding faux samples with tubes and bottles of water with the above variables could prove enlightening as well.

I'm interested in how long it takes for freezers to regain temp. equilibrium when opened/closed for various periods of time, if there are cold/warm spots under these conditions, what the comparative energy consumption is for these conditions, and an often-underappreciated factor is frost buildup. Frost can affect the performance by reducing space availability due to ice buildup, reducing air flow between shelves, and by breaking the seals on gaskets and doors through crystal formation from freeze/thaws, thus allowing air exchange with the outside environment.

Thank you,

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