



Supply Chain Assessment

Special Edition - Life Sciences | Freezers

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Energy Efficient Vaccine Distribution and Delivery

Operation Warp Speed calls to produce and broadly deliver a safe and effective vaccine by January 2021. The success for distributing and delivering this vaccine is dependent on the Cold Chain.

Utility and Program Administrators are uniquely positioned to support the Cold Chain locally and regionally, where laboratory-grade cold storage equipment is required for the vaccine’s journey.

Below is Energy Solutions’ overview of laboratory-grade cold storage equipment as it relates to Operation Warp Speed. We see an unprecedented opportunity to meet demand and offer a midstream program model to drive high-efficiency equipment adoption, energy savings, and environmental savings at scale.

Overview of COVID-19 Vaccines and Cold Storage Requirements

Below is an overview of the three leading companies developing COVID-19 vaccines and a brief description of the equipment required to meet their vaccine’s cold storage needs.

	Pfizer / BioNTech	Moderna, The National Institute of Allergy and Infectious Diseases	AstraZeneca, University of Oxford
Storage Temperature	-70° C / -94° F	-20° C / -4° F	2°-7° C / 36°-46° F
Demographic Market Suitability	Urban areas	Rural areas and pharmacies that don’t have specialized freezers	All; Comparably easier to distribute and administer in much of the world

What is the “Cold Chain”?

“A Cold Chain is a temperature- controlled supply chain that includes all vaccine-related equipment and procedures. The Cold Chain begins with the cold storage unit at the manufacturing plant, extends to the transport and delivery of the vaccine and proper storage at the provider facility, and ends with administration of the vaccine to the patient.”

Source: CDC <https://www.cdc.gov/vaccines/pubs/pinkbook/vac-storage.html>

Shelf-life	GPS-tracked coolers have been created and filled with dry ice for distribution purposes. Once thawed, the undiluted vial can be kept in a refrigerator for only five days. A diluted vial can be kept for only six hours before it must be discarded.	Keeps for a month at refrigerator temperatures	Keeps for up to six months at refrigeration temperatures
Doses by end of 2020^A	50 million	20 million	200 million

^A Source: American Council on Science and Health

Overview of Laboratory-Grade Cold Storage Equipment

Equipment	Description	# Manufacturers	Average Energy Savings Per Unit – ENERGY STAR vs Non-ENERGY STAR
Ultra-Low Temperature Freezer (ULT)	A freezer designed for laboratory application that is capable of maintaining set point storage temperatures between -70 °C and -80 °C (-94 °F and -112 °F).	9	5,737 kWh
Laboratory Grade Freezer (LGF)	A refrigeration cabinet used for storing volatile reagents and biological specimens at set point temperatures between -40 °C and 0 °C (-40 °F and 32 °F), typically marketed through laboratory equipment supply stores for laboratory or medical use. ¹	12	728-1,984 kWh dependent on cubic feet
Laboratory Grade Refrigerator (LGR)	A refrigeration cabinet used for storing non-volatile reagents and biological specimens at set point temperatures between 0 °C and 12 °C (32 °F and 53.6 °F), typically marketed through laboratory equipment supply stores for laboratory or medical use. ¹	20	606 – 1,163 kWh dependent on cubic feet

¹ EPA-ENERGY STAR lists two types which differ by how well they address peak temperature variation: High Performance, General Purpose.

Midstream Potential

Laboratory-grade cold storage equipment is in high demand from the research market, namely research institutions, universities, and laboratories, as well as biotech and hospital market segments. Point-of-sale discount incentives from midstream foodservice programs are well suited to the grant funding mechanisms and capital budgets of the research market, and present an opportunity to provide cost-effective, energy-savings measures.

Midstream Realization

Energy Solutions has partnered with national manufacturers and distributors of cold storage equipment to deliver quick launch midstream programs. We currently offer midstream cold storage equipment incentives across 6 states, enabling clients to respond quickly to demand and capture this unprecedented opportunity for their portfolios. Interested? Reach out to learn about your area’s market potential and to determine which fit is best for you:

Midstream Program Addition: Expand your existing Foodservice or HVAC program to offer Ultra-Low Temperature Freezers, Laboratory Grade Freezers, and/or Laboratory Grade Refrigerators.

Midstream Express Program: Set up a new program quickly. Midstream Express narrows in on key manufacturers and distributors and equipment measures tailored to your service territory, so it can be rolled out in two weeks or less.

Disclaimer: The COVID-19 pandemic is an evolving situation, and this report reflects our best estimate at this time with the information available. This update is dated so you can know at what time they apply.

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