

4) Connected Product Criteria:

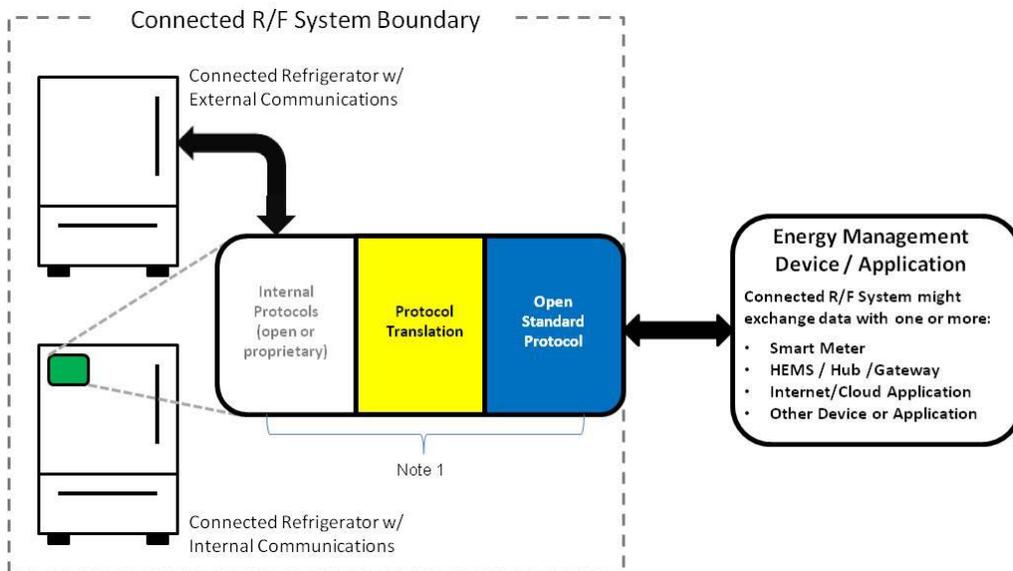
A. Connected Refrigerator-Freezer System

To be recognized as connected and to be eligible for the connected allowance, a “connected refrigerator or refrigerator-freezer system” (Connected R/F System, as shown in Figure 1) shall include the base refrigerator or refrigerator-freezer plus all elements (hardware, software) required to enable communication in response to consumer-authorized energy related commands. These elements may be resident inside or outside of the base appliance. This capability shall be supported through one or more means, as identified in section 4B2.

The specific design and implementation of the Connected R/F System is at the manufacturer’s discretion provided it is interoperable with other devices via open communications protocol and enables economical consumer-authorized third party access to the functionalities provided for in sections 4D- 4H. The capabilities shall be supported through one or more means, as identified in section 4B2. A product that enables direct, on-premises, open- standards based interconnection is the preferred option for meeting this requirement, but alternative approaches are also acceptable.

The product must continue to comply with the applicable product safety standards – the addition of the functionality described below shall not override existing safety protections and functions. The appliance must meet manufacturer’s internal minimum performance guidelines, e.g., food preservation.

Figure 1. Connected Refrigerator/Freezer System Boundary – Illustrative Example



Note 1: Communication device(s), link(s) and/or processing that enables open standards-based communication between the Connected R/F System and Energy Management Device/Application(s). These elements could be within the base appliance, and/or an external communication module, a hub/gateway, or in the Internet/cloud.

Note: In addressing connected functionality as part of this specification, EPA seeks to promote the well-proven benefits of standardization – a level playing field for manufacturers, interoperability and thus convenience for consumers, and reduced costs. Through close work with a range of stakeholders, EPA has developed connected criteria that deliver immediate consumer utility as well as the promise of greater benefit as the use of variable electricity rates increases.

In light of feedback on the Draft 3 specification, EPA has concluded that the proposed requirement for a connected R/F system to include "...at least one supported configuration that is capable of receiving and directly responding to open standards-based energy related commands "on the consumer's premises" is overly prescriptive at this early stage in the market deployment of connected functionality in refrigerator/freezers, may limit innovation and drive up costs. As an example, a connected R/F system designed to use open standards (e.g., SEP 2.0) over Wi-Fi sends those signals to an IP address. Whether that IP address is tied to a device on the premises or the cloud, an interconnecting 3rd party such as a utility would not know the difference. Given the range of possible approaches and despite some strongly held preconceptions, the Agency believes it is ultimately in the consumer's interest for the market to be free to test a range of options, constrained only by the consumer-oriented objectives the ENERGY STAR program is seeking to advance.

To this end, EPA is proposing revised language in Section 4A that stresses interoperability and the use of open protocols for all connected functionality in Section 4. While a preference is expressed for implementation in the home, alternative approaches would be acceptable as long as consumer-authorized third party access to connected functionality is provided at little or no additional cost. Taking this approach, provides the Agency a basis upon which to consider products with connected functionality as they begin to enter the market and make more prescriptive changes to the requirements, based on real-world market experience, as warranted.

EPA will play a strong role in consumer education to help further the understanding of additional savings opportunities associated with connected ENERGY STAR products, as well as how to best capture these savings (e.g. use of energy saving modes / opportunities for Smart Grid interconnection) and in what scenarios these savings will be realized.

EPA appreciates the significant stakeholder involvement that has helped to refine connected criteria for refrigerators and freezers and is seeking feedback on this potential revision.