

**DECISION**



**THE COMPTROLLER GENERAL  
OF THE UNITED STATES**  
WASHINGTON, D. C. 20548

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**FILE:** B-208776, B-208776.2 **DATE:** June 8, 1983

**MATTER OF:** R & H General Contractors, Inc.; Reynolds Aluminum Building Products Company

**DIGEST:**

Requirement which limits potential offeror's freedom to propose products it believes are suitable to meet agency's needs is an undue restriction on competition where record shows only that restriction is based on unsupported conclusions, without consideration of all relevant factors which demonstrate that restriction is needed to satisfy agency's minimum needs.

R & H General Contractors, Inc. (R&H), and the Reynolds Aluminum Building Products Company (Reynolds) have filed protests against invitation for bids (IFB) No. DTCG26-82-B-00684, issued by the United States Coast Guard (USCG), for 54 evacuated tube-type domestic solar hot water heating systems on USCG family housing units at West Hampton Beach, New York. Reynolds contends that this specification, which excludes the flat plate solar systems manufactured by Reynolds, was unduly restrictive of competition. R&H contends that it would have competed for this contract had it been able to offer the Reynolds system.

The protests are sustained.

Both flat plate and evacuated tube solar hot water heaters generally operate by circulating a liquid through a device known as a "solar collector," where the circulating liquid is heated by the sun, to a radiator-like device known as "heat exchanger," where this heat is transferred to the house hot water supply. The terms "flat plate" and "evacuated tube" refer to two different types of solar collectors. Flat plate collectors resemble glass-covered trays through which the circulating liquid (Reynolds uses a solution of water and glycol for antifreeze protection) is trickled. Evacuated tube collectors are essentially racks of glass pipes, each pipe comprised of an inner and outer glass tube separated by a vacuum. In this type of collector, the

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circulatory liquid flows through the inner tube; the vacuum functions as an insulator to limit heat loss due to convection and/or conduction. The IFB specified an evacuated tube system using plain water as the circulating liquid; this type of system employs a "drain-down" tank into which the circulatory water is drained during freezing conditions, requiring additional plumbing and valves beyond that needed for antifreeze-protected systems.

Reynolds states that this application is a "garden variety" solar hot water project for which flat plate solar systems are not only appropriate, but the most widely used. Reynolds asserts that "at least 90%" of the solar hot water installations in the northeastern United States use flat plate systems and also points out that standard industry directories show many manufacturers of flat plate systems, but identify few manufacturers of evacuated tube systems. As evidence that flat plate systems are appropriate for this project, Reynolds has provided both a supporting statement by an independent consulting engineer and an analysis of the performance of Reynolds-produced systems based on the "Wisconsin Solar Energy Laboratory F-Chart 3.0," which Reynolds states is widely used to predict solar system performance. This analysis indicates that at least two of Reynolds' systems, the 2-1555, with a 95-square-foot collector, and the 4-1505, with a 127-square-foot collector, could meet or exceed the USCG's requirement for an 80-percent annual solar energy contribution. Reynolds also asserts that flat plate systems require less maintenance than evacuated tube systems because they are flat and, therefore, less likely to accumulate snow and leaves, for example, and also because they have less plumbing and valving than do drain-down evacuated tube systems.

The USCG concedes that Reynolds has established that its flat plate system "is capable of producing hot water in accordance with that portion of the specifications" by using a 95-square-foot collector instead of the 56-square-foot collector specified, but contends that this additional collector area would put a significant additional burden on the mounting systems and the housing units in hurricane or high wind conditions. The USCG also states that the production of hot water is only one facet of the specifications and does not take into consideration local weather conditions, annual maintenance requirements or overall system

reliability. In this regard, the USCG contends that evacuated tube-type systems are more appropriate for the relatively cloudy and windy conditions experienced at this site because of greater efficiency and lower heat loss. The USCG also notes that the evacuated tube system specified is "capable of being repeatedly drained when outside conditions are insufficient to produce useable heat" and contrasts this, apparently favorably, with what the USCG contends is a need to test the glycol solution in a flat plate system device semiannually. The USCG also states that an evacuated tube system can remain operational while one of the glass tubes is being replaced, while a flat plate system must be shut down in order to repair or replace the surface glass. The USCG also states that flat plate systems require the use of costly double-walled heat exchangers to preclude possible glycol contamination of the domestic hot water supply. The USCG summarizes its evaluation as an honest "attempt to provide the Coast Guard with an acceptable degree of technology, efficiency, performance, maintainability and economy \* \* \* based on engineering evaluations and experiences with both flat plate systems and evacuated tube systems."

A solicitation provision which limits potential offerors' freedom to propose products they believe are suitable to meet an agency's needs is an undue restriction on competition unless the contracting authority can establish a prima facie basis for the requirement. Data Card Corporation, Orbitran Division, B-202782, October 8, 1981, 81-2 CPD 287; Federal Energy Regulatory Commission--Reconsideration, B-198448.3, June 24, 1981, 81-1 CPD 523; Memorex Corporation, B-195053, April 7, 1980, 80-1 CPD 253. Contracting agencies may impose restrictions on competition only if it can be shown that after careful consideration of all relevant factors, the restriction is deemed necessary to meet the agency's actual needs, since the benefit of competition, both to the Government and the public, in terms of price and other factors is directly proportional to the extent of the competition. We examine the adequacy of the agency's position not simply with regard to the reasonableness of the rationale asserted, but by examining the analysis given in support of those reasons. Constantine N. Polites & Co., B-189214, December 27, 1978, 78-2 CPD 437. The USCG's justifications here fail this test.

Initially, we note that the USCG has offered nothing which persuades us that this is anything other than the "garden variety" solar application which Reynolds asserts it to be, and we take particular note that the USCG concedes that Reynolds' flat plate system could provide adequate hot water. Given this, we find little or no analysis in the record supporting the USCG's conclusions concerning the relative merits of the two technologies which persuades us of the reasonableness of the USCG's exclusion of flat plate solar systems.

The USCG's suggestion that tube-type systems are more appropriate for the conditions at West Hampton Beach is contradicted in the record. USCG admits that Reynolds has established that flat plate systems can meet the hot water requirements of the solicitation because the "Wisconsin Solar F Chart," on which Reynolds relies, takes prevailing local weather conditions into account. Also, the USCG's claim that tube-type systems are more easily maintained because they are "capable of being repeatedly drained when outside conditions are insufficient to produce usable heat" means, translated, that whenever it gets too cold, someone has to manipulate the valves on all 54 systems, drain them, and then restore them when it warms up. We find no basis for the USCG's apparent surmise that this process, performed on a schedule established at the whim of the weather, is easier than scheduling the routine semiannual antifreeze check, which USCG asserts is needed for flat plate systems. Also, the USCG fails to respond to Reynolds' assertion that tube-type systems require more complex plumbing (to support the "drain-down" feature), with more valves and potential failure points, and are also, because of their "rack of tubes" shape, more likely to accumulate leaves and trash requiring cleaning than are flat plates. Moreover, despite urging upon us that it is easier to make glass repairs on a tube-type system, the USCG provides no evidence that glass breakage is a significant problem.

The USCG also offers as a justification for restricting the competition to tube-type systems the fact that flat plate systems which use glycol as antifreeze require "costly double walled heat exchangers" in order to prevent glycol

contamination of the domestic water supply. This argument confuses technical and competitive considerations. The USCG has provided no technical reason for excluding this device. Whether acceptable technology is too expensive should be determined as part of the competitive process; the mere possibility that it might be costly is no basis to exclude it from the competition. And, last, the USCG's concern that the added area required for flat plate collectors might be a significant hazard in high winds is belied by the USCG's modification of the solicitation to delete the 56-square-foot requirement to which the USCG alludes; in its final form, the solicitation placed no restriction on collector surface area even though it appears to us that a tube-type configuration might exceed 56-square feet.

In sum, on the record before us, we find the USCG's justification to be based on conclusions without supporting analysis. In these circumstances, we find that the USCG has failed to satisfy the threshold requirement of establishing that these specifications reflect its minimum needs. We conclude, therefore, that these specifications are unduly restrictive of competition.

The protest is sustained. However, because performance is substantially complete, we do not find that it would be in the Government's interest to recommend that the contract be terminated and recompeted.

*Milton J. Arosler*  
for Comptroller General  
of the United States