STATEMENT OF CONSIDERATIONS

REQUEST BY UNITED TECHNOLOGIES CORPORATION FOR AN ADVANCE WAIVER OF THE GOVERNMENT'S DOMESTIC AND FOREIGN PATENT RIGHTS UNDER LBNL SUBCONTRACTS 6858345, 6857527 & 6857525; DOE WAIVER NO. W(A)2009-006

The Petitioner, United Technologies Corporation (UTC), has requested an Advance Waiver of the Government's domestic and foreign rights to inventions in the above cited research and development subcontracts issued by Lawrence Berkeley National Laboratory (LBNL). See Appendices A, B & C- UTC's Petition. Petition Answer 1.

Subject of the Subcontract

UTC is a United States corporation with recognized expertise and high quality products in many markets. UTC's wholly-owned subsidiary of Carrier is a recognized name in the HVAC equipment market and building energy management provided by Automated Logic Corporation. Another subsidiary, UTC Fire and Security, is an expert in safety and security systems. UTC supports a central research and development center, United Technology Research Center (UTRC), which supports all of UTC business units. See Appendices A, B & C, Petition Answers 5 and 6 for more information.

Through the sole source procurement process at LBNL, UTRC was selected for three projects:

A) For LBNL subcontract 6858345, UTRC was selected because Dr. Banaszuk of UTRC "has unique expertise and experience in linear and non-linear control theory that is essential to the success of this project." On September 25, 2008, LBNL and UTRC executed a subcontract to conduct a pilot feasibility study for simulation and real time estimation of building occupancy to be used for improved energy management of buildings including their HVAC and lighting systems. The project will use information from the Science and Engineering building at UC Merced to estimate theoretical energy savings potential for the entire building. See Appendix A, Petition Answer 2.

B) For LBNL subcontract 6857527, UTRC was selected because Dr. Bortoff of UTRC "has unique expertise and experience in developing system-level modeling tools for HVAC and building energy systems which is required for the success of this project." On September 25, 2008, LBNL and UTRC executed a subcontract to conduct a pilot feasibility study of model-predictive-controls (MPC) supervisory system for the Chilled Water Plant (CWP) serving the University of California at Merced campus and compare its energy and demand performance to the existing controls. This technology is expected to reduce energy consumption by 10-20% based on published simulation and experimental studies of MPC applied to CWPs with storage tanks. See Appendix B, Petition Answer 2.

C) For LBNL subcontract 6857525, UTRC was selected because Dr. Narayanan of UTRC "has unique expertise and experience in nonlinear dynamic systems methods applied to

model reduction and development that are essential to the success of this project." On September 25, 2008, LBNL and UTRC executed a subcontract to develop and demonstrate a capability to estimate, evaluate and visualize energy performance in buildings in real time using enhanced instrumentation for sub-metering and environmental measurements and physics-based models. This technology is expected to reduce energy consumption by 20% in large commercial buildings. See Appendix C, Petition Answer 2.

The Allocation of Patent Rights

UTRC has requested the worldwide rights in all inventions in these three subcontracts.

In subcontract 6858345, the total budget for the project is $261,282 where UTRC is providing $130,641 as its cost share equal to 50%. See Appendix A, Petition Answer 3. In addition, UTC has invested $1.68B to develop new technology for products in all business units. As related to this project, UTRC has been investing approximately $4M/year to develop new science and technologies applied to high performance buildings. UTRC spends 15% of the high-efficient building R&D budget funds for projects related to occupancy modeling and estimation with the objective to improve building evacuation and energy savings. See Appendix A, Petition Answer 7. UTRC has a record of investment to $1M/year for the last 5 years in the area of buildings, controls and optimization and an additional $600K/year for people detection, movement simulation and estimation with applications in building safety, security and HVAC system. See Appendix A, Petition Answer 8. This subcontract will examine the applicability of algorithms that have already been developed and tested at UTRC for a real application in UC Merced campus. By owning any inventions, UTRC will be able to further develop and bring to commercialization UTC technologies that incorporate sophisticated algorithms for improved energy savings in commercial buildings. See Appendix A, Petition Answer 10.

In subcontract 6857527, the total budget for the project is $289,638 where UTRC is providing $144,819 as its cost share equal to 50%. See Appendix B, Petition Answer 3. In addition, UTRC spends 30% of its high-efficient building R&D budget for funding projects relating to building controls. See Appendix B, Petition Answer 7. This subcontract will examine the applicability of algorithms that have already been developed and tested at UTRC for a real application in UC Merced campus. By owning any inventions, UTRC will be able to further develop and bring to commercialization UTC technologies that incorporate sophisticated algorithms for improved energy savings in commercial buildings. See Appendix B, Petition Answer 10.

In subcontract 6857525, the total budget for the project is $291,000 where UTRC is providing $145,500 as its cost share equal to 50%. See Appendix C, Petition Answer 3. As related to this project, UTRC has been investing approximately $4M/year to develop new science and technologies applied to high performance buildings including analysis of energy flows and improvement of energy utilization in buildings. See Appendix C, Petition Answer 7. In 2004, UTC acquired Automatic Logic Corporation, a leader in Building Management Systems that provide products and service to monitor, visualize and control buildings and building systems. See Appendix C, Petition Answer 8.

Due to UTC's established presence as a leader in this field, it is important for UTRC to own, maintain and commercialize any inventions under these subcontracts. This will assist in advancing the US market and economy since UTC is a US company with manufacturing facilities in the United States. The patent rights waiver is subject to the retained government-use license, march-in rights, reporting requirements, 35 U.S.C. 204, and following DOE's standard U.S. Competitiveness provision (which UTRC has agreed to by email):

> U.S. Competitiveness
> The waiver recipient agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States, unless the waiver recipient can show to the satisfaction of DOE that it is not commercially feasible to do so. The waiver recipient further agrees to make the above condition binding on any assignee or licensee or any entity otherwise acquiring rights to any waived invention, including subsequent assignees or licensees.

Conclusion

UTRC was sole source selected as the most qualified U.S. company capable of performing the tasks under these subcontracts. The technology being developed in the subcontracts is closely aligned with UTC's business and extensive research in this field. Furthermore, UTC is providing 50% cost share in each of these subcontracts. Therefore, the Government believes that the inventions created under these subcontracts should be owned by UTRC for commercialization by its parent company UTC and its subsidiaries as being best to commercialize the technology and advance their products in this field.

For the foregoing reasons, and in view of the objectives and considerations set forth in 10 CFR 784, all of which have been considered, it is recommended that the requested waiver be granted.

[redacted]

Date: 6/12/09

Gary Drew
Assistant Chief Counsel for Intellectua. Property
DOE Chicago Office

Based on the foregoing Statement of Considerations, it is determined that the interests of the United States and the general public will best be served by waiver of the United States' domestic and foreign patent right as set forth herein, and therefore, the waiver is granted. This waiver shall not apply to a modification or extension of the UTRC subcontract where, through such modification or extension, the purpose, scope or DOE cost of the subcontract has been substantially altered. This waiver shall not affect any waiver previously granted.

CONCURRENCE:

[redacted]

Date: 7-27-09

John Lushetsky
Acting Deputy Assistant Secretary
for Energy Efficiency
EE-2A

APPROVED:

[redacted]

Date: 7-27-09

Paul Gottlieb
Assistant General Counsel
for Technology Transfer and Intellectual Property

Department of Energy
Washington, DC 20585

JUL 1 2009

John Lushetsky
Acting Deputy Asst. Secretary
for Energy Efficiency

SUBJECT: REQUEST BY UNITED TECHNOLOGIES CORPORATION FOR AN ADVANCE WAIVER OF THE GOVERNMENT'S DOMESTIC AND FOREIGN PATENT RIGHTS UNDER LBNL SUBCONTRACTS 6858345, 6857527 AND 685725; DOE WAIVER NUMBERS: W(A)2009-006, W(A)2009-007 AND W(A)2009-008

Enclosed are a Statement of Considerations, Waiver Petition and Abstract, for the subject waiver request recommending grant of the requested waiver. The reasons supporting this recommendation are set forth fully in the Statement of Considerations.

Please signify your concurrence by signing the attached Statement of Considerations and returning it to this office.

Should you have any questions feel free to contact Linda Field at 586-3440

Paul A. Gottlieb
Assistant General Counsel
for Technology Transfer
and Intellectual Property

Enclosures