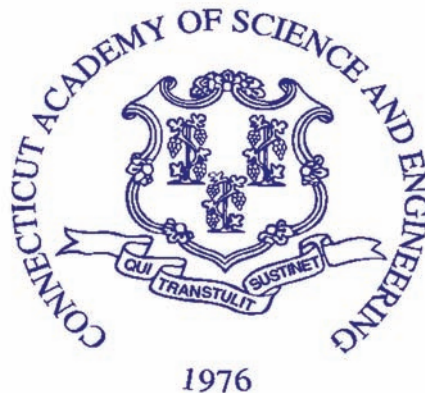


ADVANCED COMMUNICATIONS TECHNOLOGIES

DECEMBER, 2006

A REPORT BY

THE CONNECTICUT
ACADEMY OF SCIENCE
AND ENGINEERING



FOR

THE CONNECTICUT GENERAL ASSEMBLY
COMMERCE COMMITTEE
ENERGY AND TECHNOLOGY COMMITTEE

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A REPORT BY

THE CONNECTICUT ACADEMY
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ORIGIN OF INQUIRY: CONNECTICUT GENERAL ASSEMBLY
 COMMERCE COMMITTEE
 ENERGY AND TECHNOLOGY COMMITTEE

DATE INQUIRY
ESTABLISHED: JUNE 8, 2006

DATE RESPONSE
RELEASED: DECEMBER 15, 2006

This study was initiated at the request of the Energy and Technology Committee and the Commerce Committee of the Connecticut General Assembly on June 8, 2006. The project was conducted by an Academy Study Committee with the support of Zachary Morowitz, Project Study Manager. The content of this report lies within the province of the Academy's Communication and Information Systems Technical Board. The report has been reviewed by Academy Members Juha Javanainen, PhD, and Chandra Roychoudhuri, PhD. Martha Sherman, the Academy's Managing Editor, edited the report. The report is hereby released with the approval of the Academy Council.

Richard H. Strauss
Executive Director

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EXECUTIVE SUMMARY

STUDY OBJECTIVE

During the past several years, Connecticut has identified and implemented strategies for growing its economic base and for achieving a leadership position in the rapidly evolving global economy. As part of that effort, the Energy & Technology Committee of the Connecticut General Assembly asked the Connecticut Academy of Science and Engineering (CASE) to “conduct an assessment of the benefits of creating a world-class digital/communications infrastructure (WCCI) for businesses and individuals in Connecticut, and to identify what needs to be done to accomplish that goal.”

SUMMARY OF FINDINGS

Features of a World-Class Communications Infrastructure (WCCI)

A WCCI includes the following features:

- at least one viable option for broadband Internet connectivity for virtually all citizens and businesses
- wireless broadband access that is sufficiently available to create a business-friendly environment and to provide mobile workers and other traveling professionals access to large volumes of information
- ultra-broadband connectivity, i.e., Internet access at speeds of 100 megabits per second (Mbps) or higher, which is available and cost-effective for those businesses that want it, regardless of the size of the business
- infrastructure development process that anticipates and provides the dramatically higher residential bandwidth needs that can be expected over the next 5-10 years

Benefits of World-Class Communications Infrastructure (WCCI)

Virtually every aspect of modern life – work, school, home, entertainment and play – is becoming increasingly dependent on the creation, manipulation and transmission of digital information. The ability of Connecticut’s citizens to quickly send and receive large quantities of data from a broad variety of fixed and mobile locations will profoundly impact the state’s ability to compete and thrive in the emerging global economy.

The availability of widespread, broadband Internet access in selected geographic regions is a relatively recent phenomenon. Consequently, economists are at only the initial stages of understanding and quantifying the economic benefits of this capability, but early indications are that broadband is clearly related to economic growth and vitality.

A WCCI delivers clear benefits across a broad range of applications for business, government, education and leisure activities, including the following:

- facilitating universal participation in the full range of the Internet's benefits
- enhancing communications options such as Voice Over Internet Protocol (VoIP) that provide increased functionality at lower cost
- enabling distance learning capabilities that can reduce the student performance disparity among the state's school districts, supplement the curricula of the state's colleges, and facilitate access to Connecticut's abundant higher education resources by students both within and outside the state.
- improving the delivery of government services including public safety and transportation management
- promoting telecommuting as a means of combating transportation shortcomings
- spurring economic development by creating a business-friendly environment
- fostering the development of new commercial services and business models
- promoting new entertainment activities and services such as Internet Protocol Television (IPTV) and gaming

Developing a World-Class Communications Infrastructure (WCCI) for Connecticut

While Connecticut's level of broadband deployment is among the best in the United States, it significantly trails many other regions in the world with whom Connecticut must now compete. Given the competitive significance of widespread broadband deployment, it is suggested that the state should actively promote the development of a WCCI on an ongoing basis.

Numerous municipal broadband projects have been launched in the United States, including several in Connecticut, but they tend to lack clear objectives and well-defined metrics to measure success. Wireless coverage problems in urban landscapes have been dramatically underestimated, leading to unrealistic expectations about the usefulness of the network. While municipal fiber projects are also being explored in a number of venues, no business model has emerged to make this an economically feasible option.

Although the Study Committee believes there are no compelling reasons to suggest a major state spending plan to grow Connecticut's communications infrastructure, it is suggested that there are many actions that state government can and should consider to accelerate the development of WCCI.

Most of these actions involve creating a regulatory and legislative environment that promotes investment on the part of private enterprise. These actions would lower the barriers to investment and make Connecticut a location for businesses that could take advantage of the WCCI. A WCCI could also encourage start-up companies and new enterprises to be created and grow in Connecticut to take advantage of these networks and services, or to develop them.

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The Study Committee believes that implementation of its suggested actions properly positions the state for the present. However, the rapid pace at which these technologies are evolving makes it critical that the state periodically revisit this subject. The on-going development of a WCCI is essential to Connecticut's continuing economic development and competitiveness.