



## STATEMENT OF AT&T CONNECTICUT

**Regarding Raised Senate Bill No. 225  
AN ACT AUTHORIZING AN UPDATED ADVANCED  
COMMUNICATIONS TECHNOLOGY STUDY  
Before the Committee on Commerce  
February 28, 2012**

**Proposal:**

Raised Senate Bill No. 225 would direct the Office of Legislative Management to contract with the Connecticut Academy of Science and Engineering (CASE), within available appropriations, to update its previous study on advanced communications technologies.

**Comments:**

AT&T strongly supports Raised Senate Bill No. 225, commends the Committee for introducing it, and urges its favorable approval.

Communications technologies have always been central to economic growth and to quality of life. That was true at the earliest days of the telephone and is even more so now in today's hyper-connected world. Connecticut's knowledge-based, post-industrial economy is particularly dependent on strong and vibrant communications networks.

In December of 2006, CASE issued its first "Advanced Communications Technologies" study; a copy of the executive study is attached to our testimony. The full report provided a comprehensive look at our state's communications infrastructure and policies affecting the infrastructure. AT&T was a willing participant along with other industry-providers in those study efforts.

There have been a great number of changes affecting the industry since the initial report was issued more than six years ago. For example, 3G wireless broadband technology had not been deployed; Smartphones were in their infancy, and wired broadband speeds were a fraction of the speeds available today. Today, 4G wireless broadband speeds are taking the place of 3G networks; and in just the last three years, AT&T alone has invested nearly \$1 billion in its Connecticut wired and wireless networks.

A recent study by NDN and the New Policy Institute demonstrated the economic impacts of wireless investments. It found that the adoption of cell phones and other mobile devices supported by a shift from 2G to 3G Internet and wireless network technologies led to the creation of nearly 1.6 million new jobs across the United States – between April 2007 and June 2011 – even as total private sector employment fell by nearly 5.3 million positions. The rapid transition from 3G to 4G mobile broadband networks should continue to stimulate new job creation in a short time frame, generating more than 231,000 jobs for every ten percentage point gain in penetration rates within a year. A copy of the executive summary of the report is attached to this testimony.

AT&T Connecticut Testimony  
Raised Senate Bill No. 225  
February 28, 2012  
Page 2 of 2

Given the importance of communications to our economy and the rapid change roiling the communications industry, AT&T strongly believes that an update to the previous CASE study would be a wise and important investment on the part of the state.

**Conclusion:**

AT&T supports Raised Senate Bill No. 225 and urges the Committee's favorable approval.



**The Employment Effects of Advances in  
Internet and Wireless Technology:  
Evaluating the Transitions from 2G to 3G and from 3G to 4G**

**Robert J. Shapiro and Kevin A. Hassett**

*January 2012*

## EXECUTIVE SUMMARY

Continuing investments to upgrade the wireless broadband Internet infrastructure, including the transitions from 2G to 3G wireless technologies, and now from 3G to 4G, had produced cascades of innovation. Based on previous advances, the current transition to 4G technologies is likely to spur significant new job creation and growth which could help the American economy restore gains in incomes and business investment. New econometric analysis set forth in this study shows that the investments and innovation entailed in the transition from 2G to 3G wireless technologies and Internet infrastructure spurred the creation of some 1,585,000 new jobs from April 2007 to June 2011. The investments being undertaken today to upgrade wireless network and Internet technologies from 3G to 4G hold comparable promise for job creation. This analysis estimates that under the current transition, every 10 percent increase in the adoption of 3G and 4G wireless technologies could add more than 231,000 new jobs to the U.S. economy in less than a year. Based on the substantial economic benefits arising from advances in wireless broadband infrastructure and the adoption of devices that take advantage of that infrastructure, national policy should actively promote the rapid deployment and broad adoption of 4G wireless broadband.

### *Wireless Advances Created Jobs Even in Recession*

Applying a unique database that provides detailed information on the ownership of mobile devices that operate on successive generations of wireless infrastructure, to state-by-state employment data, the authors of the study show:

- The adoption of cell phones and other mobile devices supported by a shift from 2G to 3G Internet and wireless network technologies led to the creation of nearly 1.6 million new jobs across the United States, between April 2007 and June 2011 – even as total private sector employment fell by nearly 5.3 million positions.
- The rapid transition from 3G to 4G mobile broadband networks should continue to stimulate new job creation in a short time frame, generating more than 231,000 jobs for every 10 percentage point gain in penetration rates within a year.

The research found that a 10 percentage point gain in penetration of a new generation of wireless technology in a given quarter leads to a 0.07 percentage-point gain in employment in the following quarter and continuing gains in subsequent quarters. These results suggest that a national job creation strategy should include or encourage appropriate measures to accelerate the deployment of 4G infrastructure.

### *4G Can Help American Meet Its National Broadband Goals*

In addition to jobs gains, which the authors verify with five additional statistical tests, widespread deployment of 4G technology could help the country achieve universal broadband service by ensuring that this service becomes quickly available to many rural Americans who

currently lack high-speed connectivity. 4G-enabled mobile services also could provide a less costly way for lower- and moderate-income Americans to access broadband.

The advent of new generations of wireless technology will also enhance the overall benefits of Internet connectivity and related advances in information and communications technologies (ICT). The McKinsey Global Institute, for example, has estimated that the Internet contributed about three percent to global GDP in 2009 and was responsible for 21 percent of U.S. GDP gains over the last five years.

This study also documents how the transition from 2G to 3G enabled or promoted the development of new products, services and industries. It further examines how the current, ongoing shift to 4G wireless infrastructure may open the door to a wide range of additional applications, services, products and new industries. These developments should generate or promote economic gains at least comparable to those produced by the build-out and adoption of 3G technologies.

Investments in 4G mobile wireless technologies and infrastructure networks hold particular promise in areas such as online retail, health care, energy, and business services.

- Mobile e-commerce, for example, increased several-fold in recent years, growing from about \$1.4 billion in 2009 to between \$6 billion and \$9 billion in 2011 according to ABI Research. The shift to 4G can be expected to accelerate this growth.
- Savings from the wide use of electronic medical records created and accessed wirelessly, along with other “mHealth” apps, could total some \$15 billion a year using current wireless technologies, and those savings would also grow as 4G apps become widely available and used.
- A national Smart Grid that applied wireless technologies to the nation’s electricity networks could save \$20 billion annually by simply reducing power outages, according to the National Energy Technology Laboratory. A 4G-based Smart Grid would save an additional \$10 billion by further reducing the incidence of power failures.
- Cloud-based services, which are gaining rapidly in popularity, also would benefit from enhanced 4G wireless. Juniper Research, for example, estimates that the market for mobile-based cloud services could reach \$39 billion by 2016, assuming wide deployment of 4G infrastructure and devices.

### ***Policymakers Should Encourage Private Sector Investment in 4G Wireless Technologies***

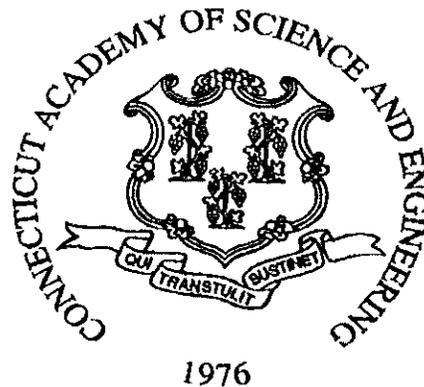
The rapid deployment of 4G technologies and the innovations that will accompany them should generate significant and widespread societal gains, including a stronger economic recovery and expansion from the recent recession. Policies to promote the full deployment of 4G, therefore, should be part of any national job creation and economic strategy.

# 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

# ADVANCED COMMUNICATIONS TECHNOLOGIES

A REPORT BY

THE CONNECTICUT ACADEMY  
OF SCIENCE AND ENGINEERING

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

**MEMBERS OF THE  
CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING  
STUDY COMMITTEE ON  
ADVANCED COMMUNICATIONS TECHNOLOGIES**

**Bill Durand**

Executive Vice President & Chief Counsel  
New England Cable & Telecommunications Association

**Niloy K. Dutta, PhD** (*Academy Member*)

Professor of Physics, University of Connecticut

**Jeanie Houghton**

Vice President of Network Services, AT&T

**Frederick J. Leonberger, PhD** (*Academy Member*)

Senior VP/Chief Technology Officer (ret.)  
JDS Uniphase Corporation  
Chairman, Academy Technology Technical Board

**Louis Manzione, PhD** (*Academy Member*), Chairman

Dean, College of Engineering, Technology and Architecture, University of Hartford  
Chairman, Academy Communications and Information Systems Technical Board

**Edmond J. Murphy, PhD** (*Academy Member*)

Chief Technology Officer, Components and Modules Product Group, JDS Uniphase Corporation

**Matthew Nemerson**

President & Chief Executive Officer, Connecticut Technology Council

**Chuck Pagano**

Executive Vice President, Technology, ESPN

**Krishna R. Pattipati, PhD** (*Academy Member*)

Professor of Electrical and Computer Engineering, University of Connecticut

**Richard Sherwin**

Chief Executive Officer, Spot On Networks

**STUDY MANAGER**

**Zachary Morowitz**

Consultant

## 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.

ADVANCED COMMUNICATIONS TECHNOLOGIES  
EXECUTIVE SUMMARY

---

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.