



## National Broadband Plan: National Purposes Update

Commission Meeting  
February 18, 2010

27 days until Plan is due

# The National Purposes mandate

## American Recovery and Reinvestment Act, §6001(k)(2)(D):

“a plan for use of broadband infrastructure and services in:

- advancing consumer welfare
- civic participation
- public safety and homeland security
- community development
- health care delivery
- energy independence and efficiency
- education
- worker training
- private sector investment
- entrepreneurial activity
- job creation and economic growth
- and other national purposes.”

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*Discussed in:*

**Innovation and Investment**

**Inclusion**

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Healthcare

Education

Energy and  
the environment

Government performance  
and civic engagement

Public safety and  
homeland security

Economic opportunity

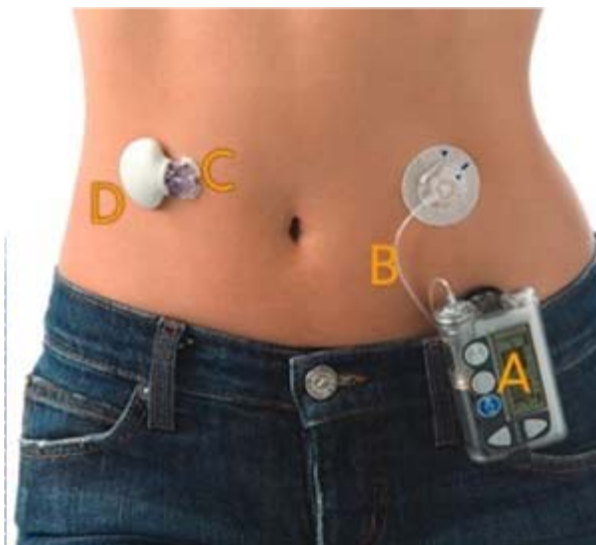
## A vision for “high performance America”

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- Make government more effective, efficient, and transparent
- Ensure that public investments are aligned and forward-thinking
- Create the conditions for innovation and America’s competitive advantage in key strategic areas
- Unlock the value of data for new applications and research

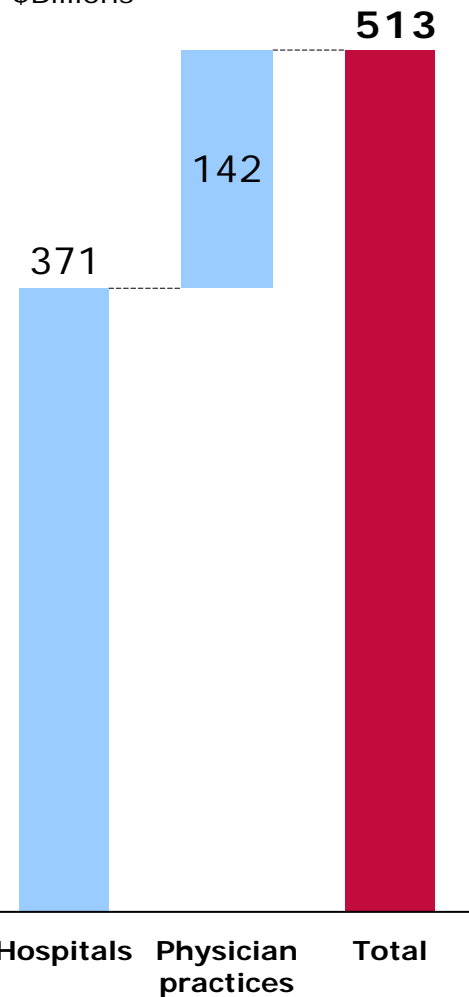
# Healthcare

# As a platform for innovation and information exchange, broadband helps improve health outcomes

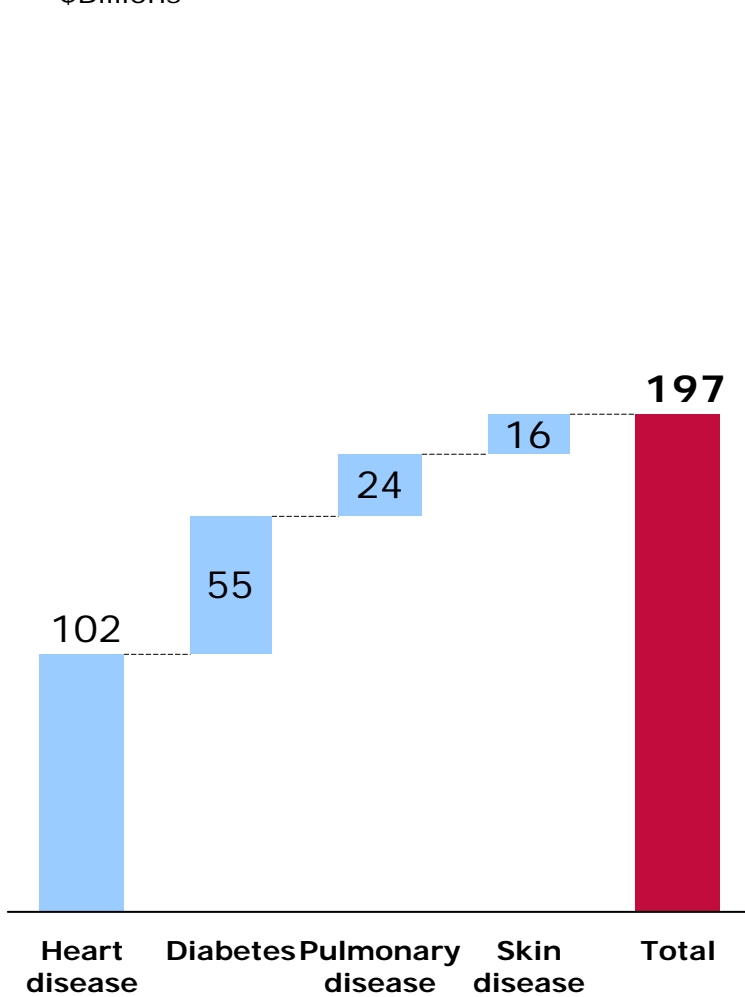


# E-care could result in significant cost savings

**Possible savings from implementation of electronic health records over 15 years**  
\$Billions



**Possible savings from implementation of remote monitoring over 25 years**  
\$Billions



**\$700B in potential net savings over 15-25 years**



# The U.S. ranks in the bottom half among developed countries on every metric used to measure health IT adoption

## *Gaps*

### Misaligned economic incentives

- Providers bear the implementation costs but do not receive proportionate benefits
- CMS reimburses about \$2 million in telehealth from a \$300B+ budget

### Outdated regulations

- Access to care is hindered by rules that limit where and how physicians can practice
- Innovation is threatened by regulatory grey area

### Lack of data and information access

- Data are often held in proprietary systems that make aggregation and exchange difficult
- Regulations limit consumer access to personal health data

### Insufficient broadband connectivity

- At least 3,600 small providers face a connectivity gap
- Providers face dramatic price differentials for connectivity
- About 90% of Indian Health Services sites have no more than a T1 line

## *Issues*

# Framework for recommendations

- 1** **Creating the incentives for broader health IT adoption and innovation**
- 2** **Modernizing regulations to increase access to care and enable health IT adoption**
- 3** **Driving innovative applications and advanced analytics**
- 4** **Ensuring all providers have access to affordable broadband**

# Creating the conditions for broader adoption and innovation

## Create incentives for adoption of e-care technologies

- Increase e-care pilots that evaluate cost savings & clinical outcomes
- Expand reimbursement for e-care under current fee-for-service model where outcomes are proven
- Provide Congress with a plan to realize the value of e-care

## Reducing regulatory barriers to increase access to care and maximize value

- Revise credentialing, privileging and state licensing requirements to enable e-care

- FC • Clarify regulatory requirements and the approval process for converged communications and healthcare devices

## Improving the utilization of health data to drive innovative applications and advanced analytics

- Create next-generation interoperability across clinical, research and administrative data
- Ensure patients have access to and control over their health data

## Ensuring all providers have access to affordable broadband

- FC • Transform the Rural Healthcare Program
  - Subsidize ongoing broadband costs for delivery locations
  - Subsidize network deployment to delivery locations where existing networks are insufficient
  - Expand the definition of eligible providers
  - Require participating institutions to meet outcomes-based performance measures
  
- Upgrade Indian Health Service broadband service
  
- FC • Track and publish progress on broadband connectivity in healthcare facilities

# Education



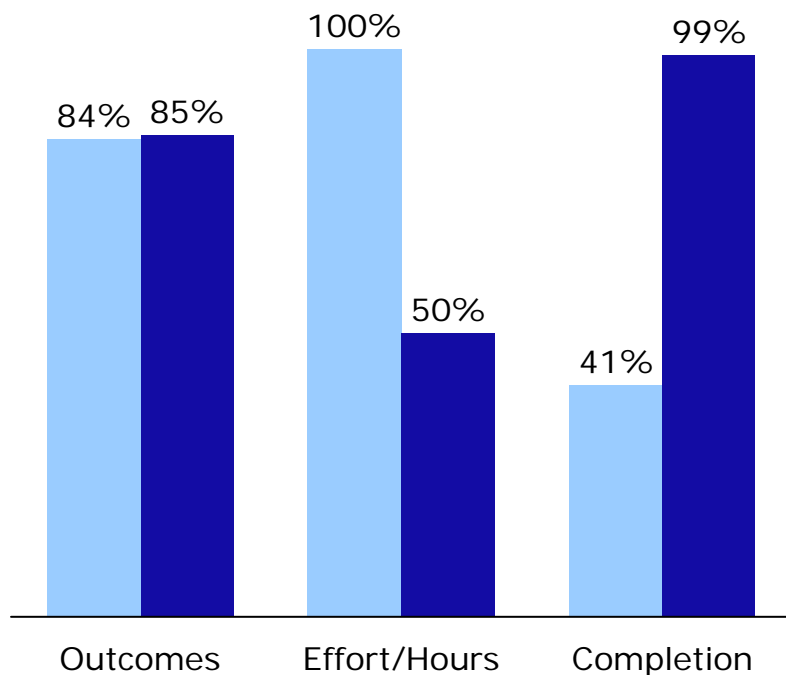


# Online instruction pilots reveal significant opportunity to advance achievement

## Comparison of results between traditional and hybrid instruction models

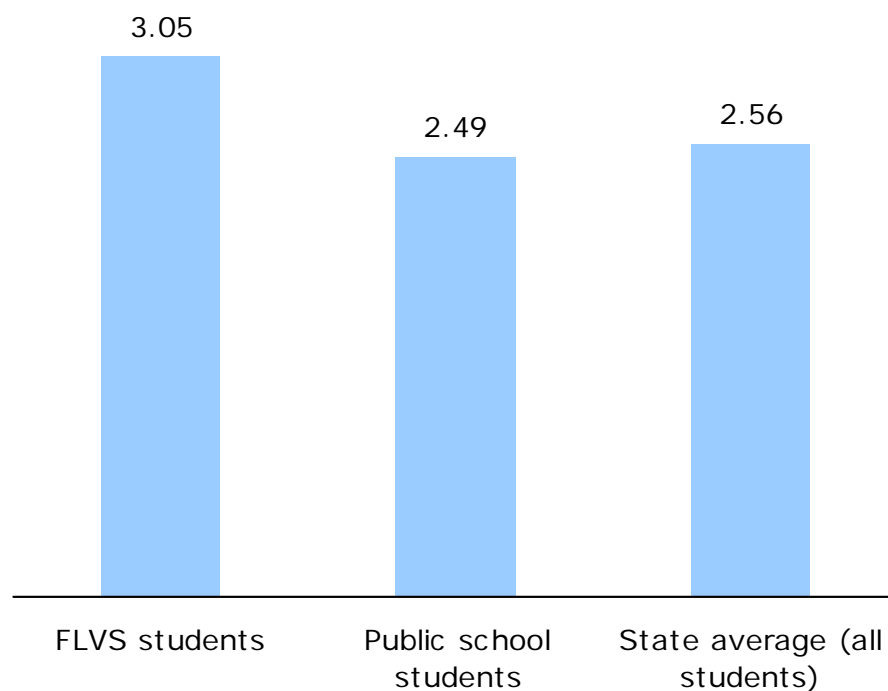
Percentages

Traditional  
Hybrid



## Comparison of Advanced Placement scores at Florida Virtual School and traditional instructional models

Advanced Placement Scores, 1-5 Scale



# Gaps prevent education from taking full advantage of broadband

## *Gaps*

### **Insufficient connectivity**

- School and classroom bandwidth demands to rise dramatically over the next few years
- 16% of public community college campuses have high speed broadband v. 91% of research universities

### **Limitations on online learning systems and content**

- Regulations inhibit online learning: teachers often cannot teach across state lines; course accreditation is often based on "seat time", not outcomes
- Limited supply of high quality online learning systems and digital content
- Limited digital literacy skills among teachers and students

### **Limited data access & lack of transparency**

- Only 37% of teachers have electronic access to achievement data for their students
- Data integration is one of the most challenging problems facing schools

## *Issues*

# Framework for recommendations

1

Upgrading E-rate

2

Supporting and promoting online learning

3

Unlocking the power of data to personalize learning and improve decision-making

# Upgrading E-rate

- **FC** Increase flexibility and bandwidth
  - Permit off-hours community use
  - Set goals for school and library connectivity
  - Support more flexibility in infrastructure development
  - Support more internal connections
- **FC** Improve program efficiency
  - Streamline application process
  - Improve cost efficiency and data collection
  - Collect better data
  - Index cap to inflation
- **FC** Foster innovation with pilot programs
  - Support wireless connectivity to devices on and off-campus
  - Award some funds competitively
- Improve connectivity of community colleges

## Supporting and promoting online learning

- Increase supply of digital content
  - Develop standards for government-generated content
  - Make federal content digital
  - Provide incentives for publishers
  - Simplify copyright regime to encourage contributions
- Promote digital literacy
  - Support standards for digital skills
  - Fund integration of digital literacy and STEM into curriculum
- Expand online learning solutions
  - Remove regulatory barriers
  - Fund research & development and investment
  - Consider open license as option for federal investments

## Unlocking the power of data to personalize learning and improve decision-making

- Foster adoption of Electronic Educational Records
- Develop standards for financial data transparency
- Create an online RFP broadcast service to increase market information

# Energy and the environment

# As a platform for innovation, broadband helps consumers understand and manage their energy use

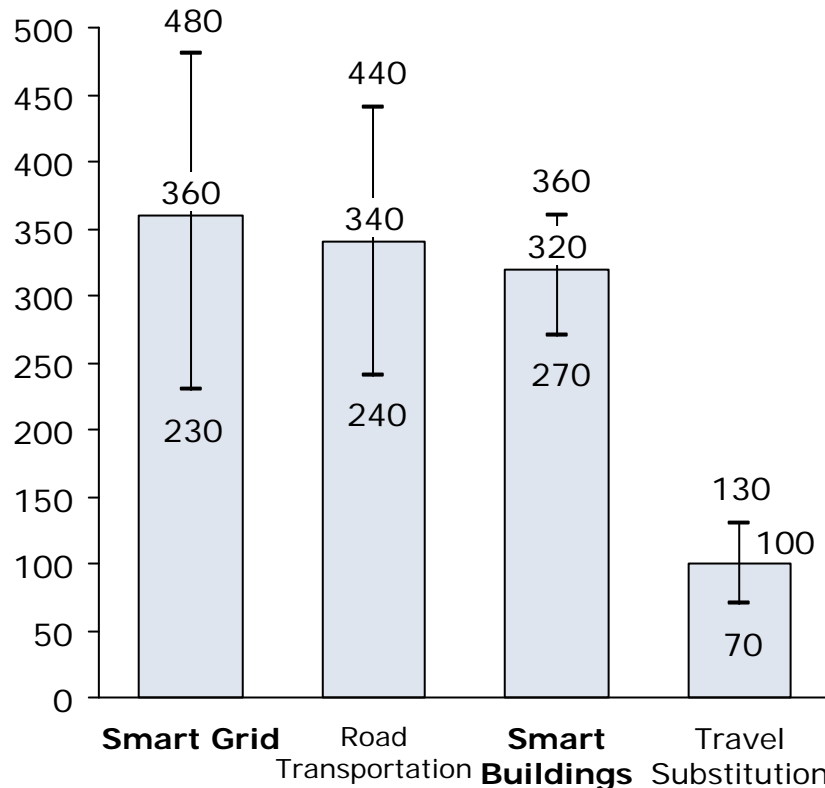




# A smarter grid and smarter homes can have significant impact on carbon emissions and customer bills

## A Smarter Grid and Smarter Buildings offer significant emissions savings opportunities

Annual emissions savings, MM tons CO<sub>2</sub>



- Providing consumers energy information could reduce consumption by 5-15% (a \$60-\$180 annual savings per home)
- Dynamic pricing and smart home technologies can reduce peak demand by 27%-44%

Sources: "Smart 2020: Enabling the Low Carbon Economy in the Information Age. United States Report Addendum", GESI and BCG, Nov. 2008; Google; Faraqui and Sergici

# Broadband and national energy challenges

## *Gaps*

## *Issues*

**Lack of broadband to the smart grid**

- Utilities' private networks are often narrowband solutions that can't support growing number of endpoints
- Unlicensed spectrum solutions may be suboptimal for mission-critical control applications
- Commercial data networks are not ubiquitous or universally reliable during emergencies

**Limited consumer access to energy data**

- Less than 1% of customers have real-time access to their digital energy consumption data
- Of 17 million smart meters to be deployed, only ~35% will provide customers energy data access

**Inefficient energy use in ICT**

- Emissions from ICT growing 3x faster than rest of economy
- Data centers' electricity use to double by 2011

**Distracted driving; lack of intelligent transportation systems**

- Increased potential for distracted driving with broadband applications in the car
- Intelligent transportation systems can help prevent accidents and save lives

## Framework for recommendations

- 1 Integrating broadband into the smart grid
- 2 Expanding consumer access to energy information
- 3 Seeking opportunities to lead in data center efficiency
- 4 Making transportation safer, smarter, and cleaner

# Integrating mission-critical broadband into the smart grid

## Pursue three paths for providing connectivity:

- Commercial networks



- Investigate reliability and resiliency of commercial networks as part of a smart grid
- Reduce impediments and financial disincentives to use

- Public safety networks



- Enable utilities to have secondary access to proposed public safety broadband network

- Private networks



- Consider smart grid requirements in identifying new uses for spectrum

## Expanding consumer access to energy information

- Ensure customers have access to their digital energy information
  - Real-time information
  - Historical consumption, price, and bill data
- Ensure customer access to and privacy of their digital energy information
  - Allow customer-authorized 3<sup>rd</sup> party access

## Seeking opportunities to lead in data center efficiency

### **Set energy efficiency goals for federal data centers**

- Meter to get baseline data on energy use
- Incorporate Energy Star rating program

## Making roads and highways safer, smarter, and cleaner

- Focus on methods to reduce distracted driving
  - Consumer outreach
  - Working with industry on next generation of in-vehicle communications technology
- Deploy vehicle-to-vehicle intelligent transportation technology to help prevent accidents and potentially save energy

# Government performance and civic engagement



# The value of broadband in mobilizing government and citizens to help society

**Howard County, MARYLAND**  
YOUR COUNTY GOVERNMENT WORKING FOR YOU | Home | Site Directory | Contact Info

**Real Time Snow Removal**

Maps updated: every 15 minutes.  
Last Update: 3:19:15 PM 2/15/2010

**Legend**

- ★ Plow Vehicle
- Untreated Roads
- Salted Roads
- Plowed Roads
- Plowed and Salted Roads
- State or Private Roads

**U.S. Citizenship and Immigration Services**

**My Case Status**

Para tener acceso a este sitio en Español, presione aquí

**Your Current Case Status**

Enter your receipt number

**Check Status**

Acceptance Initial Review Request for Evidence Testing and Interview Decision Post-Decision Activity Document production or Oath Ceremony

To view the status of a case, please enter the corresponding application receipt number. The 13-character application receipt number can be found on application notices you have received from the USCIS. It begins with three letters such as (EAC, WAC, LIN, or SRC). Dashes (“-”) should be omitted when entering a receipt number. However, all other characters, including asterisks (“\*”), can be included if listed on your notice as part of the receipt number.

You can register for automatic case status updates by email and text message by [creating an account](#).

Please @**BigSixxRaven** don't worry bout ur dad. Just talked 2 him & I'll get 2 his Driveway by noon. I've got salt, shovels & great volunteers

7:12 AM Dec 31st, 2009 from web

**CoryBooker**  
Cory Booker

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Search  **Search**

AT&T 2:21 PM

Messages 909-99 Edit

Haiti

To confirm your \$10 donation to Red Cross Int'l Response Fund reply with YES. Reply HELP for help or visit [RedCross.org](http://RedCross.org)

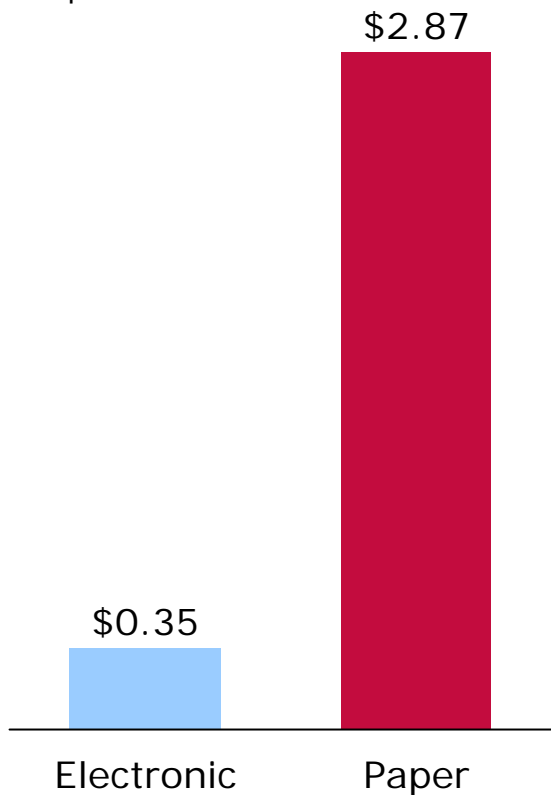
YES

Thanks! \$10 charged to your phone bill for Red Cross Int'l Relief. Reply HELP for help or Visit [RedCross.org](http://RedCross.org) Reply STOP to cancel. Msg&Data Rates May Apply

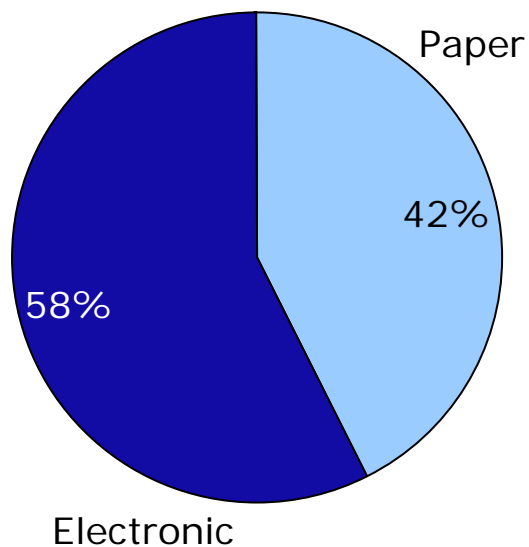
Send

# Significant opportunities exist for cost savings through broadband for government performance

**Comparison of costs of processing tax returns**  
\$ per user



**Comparison of filers by hand v. e-file**  
Percentage



**\$333M in savings over 5 years**

# Gaps persist in government adoption and deployment of broadband

## *Gaps*

### Inefficient service delivery

- Government lags in adoption of Internet technologies compared with private sector, hindering quality of service
- Government often fails to share information across silos in ways that improve service delivery

### Limited access to information and tools for civic engagement

- Data is often not sufficiently accessible online
- Government fails to fully engage citizens using broadband-enabled technologies
- Overseas military more than twice as likely to experience voter registration problems as general public

### Limited leverage of government resources for broadband

- State and local governments can't take advantage of savings in federal communications contracts
- Federal grants encourage the development of duplicative, stove-piped broadband networks

## *Issues*

# Framework for recommendations

- 1 **Transforming government service delivery**
- 2 **Increasing the quantity and quality of civic engagement**
- 3 **Using government assets to improve broadband deployment**

# Transforming government service delivery

- Improving government efficiency and productivity
  - Explore use of cloud computing to reduce costs
  - Use competitions to gather ideas for improving quality and efficiency using broadband
  - Encourage greater use of social media
  
- Enable citizen-centric online services
  - Enhance authentication for online services
  - Enable individuals to access and verify their personal data held by government agencies
  - Expand efforts to provide integrated benefits online

## Increasing the quantity and quality of civic engagement

- FC • Make the federal government more open and transparent
  - Release more government data and information on digital platforms

- FC • Create a more robust digital public media ecosystem
  - Support public media's transition to digital platforms for content and delivery

- FC • Engage citizens using online and social media channels
  - Implement broadband-enabled tools to increase civic participation

- FC • Engage citizens to increase innovation in government

- Modernize democratic processes

## Using government to improve broadband deployment

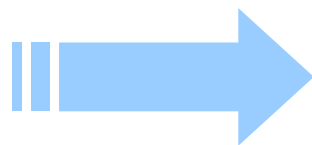
- Improve ability of federal buildings serve as anchor tenants for unserved and underserved communities
- Open federal NETWORKX contracts to state and local governments
- Encourage greater review and coordination of broadband grants
- Target federal funding to areas where broadband solutions are outcomes-oriented and holistic

# Public safety and homeland security



# As a platform for efficient information flow, broadband can change the future of public safety communications

Current State



Future goal



# Gaps persist in fully utilizing broadband for public safety and homeland security purposes

## *Gaps*

**No nationwide public safety network**

**Outmoded 9-1-1 system**

**Outmoded alerting system**

**Critical infrastructure vulnerabilities**

## *Issues*

- No nationwide, interoperable broadband wireless network that is ubiquitous, redundant, and resilient
  - Few public safety agencies have access to commercial wireless mobile broadband
  - Commercial broadband does not support public safety requirements and is not cost effective
- 
- 9-1-1 services utilize varied legacy communications networks
  - Few public safety agencies have access to broadband services to support next-generation 9-1-1
- 
- Current distribution technology limits amount of audio/visual to Americans over broadcast channels
  - FEMA has taken steps to develop IPAWS but clear implementation milestones are needed
- 
- Companies reported \$265M+ in cyber crime-related losses
  - Communications providers subject to frequent attacks on critical IP-based infrastructure
  - Insufficient incentives and safeguards for security of critical communications assets

# Framework for recommendations

- 1 **Creating a nationwide interoperable broadband wireless public safety network**
- 2 **Transitioning to a next-generation 9-1-1 system**
- 3 **Developing a comprehensive next-generation alerting system**
- 4 **Enhancing security measures to safeguard networks and core infrastructure**

# Creating a nationwide interoperable broadband wireless public safety network

- Ensure network capacity and resiliency
- Leverage commercial technologies to capture economies of scale
- Create an Emergency Response Interoperability Center to ensure interoperability nationwide
- Fund network construction, operation, and evolution

## Transitioning to a next-generation 9-1-1 system

- Identify costs and recommend congressional appropriations
- Enact a federal regulatory framework to ensure nationwide standards
- Conduct proceedings to address IP-based communications devices, applications and services for next-generation 9-1-1

# Developing a comprehensive next-generation alerting system

- **FC** Examine all issues associated with a next-generation alerting system
- Ensure coordination between agencies that have overlapping jurisdictions over alerting

# Enhancing security measures to safeguard networks and core infrastructure

## Cyber security

- Examine creating voluntary cyber security certification program for communications services providers
- Explore extending outage reporting to broadband service providers
- Create a cyber security information reporting system

## Critical infrastructure

- Ensure survivability of critical infrastructure
  - Understand capacity and vulnerabilities of core infrastructure
  - Address networks' preparedness to deal with pandemics or incidents of high network stress/overload
  - Develop priority network access and routing rules
  - Understand reliability and resiliency issues in broadband networks

# Economic opportunity



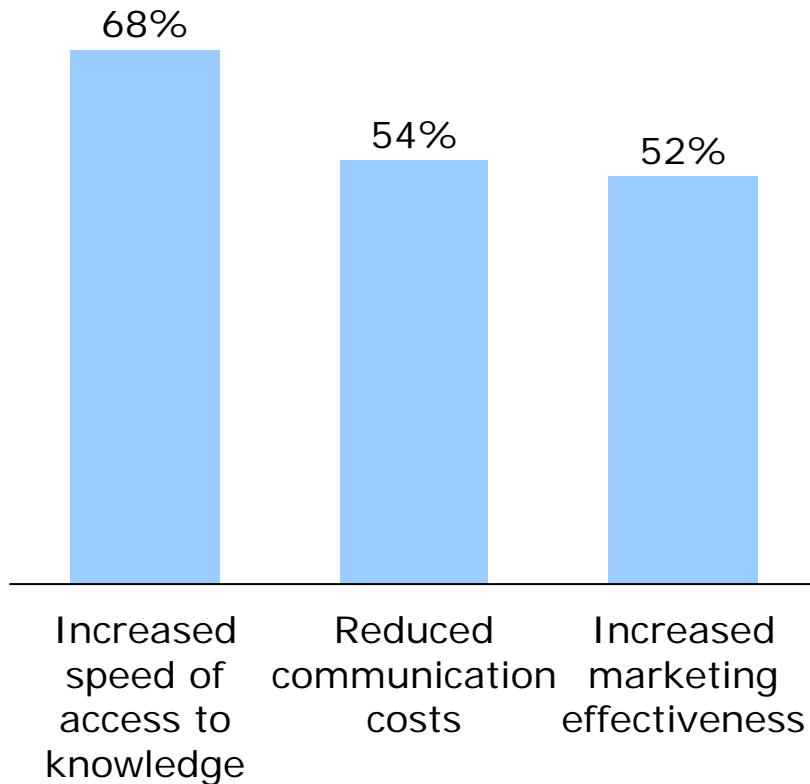
# Broadband brings economic opportunity to job seekers, small businesses, and communities



# Broadband can improve productivity and relieve pressures felt in workforce development system

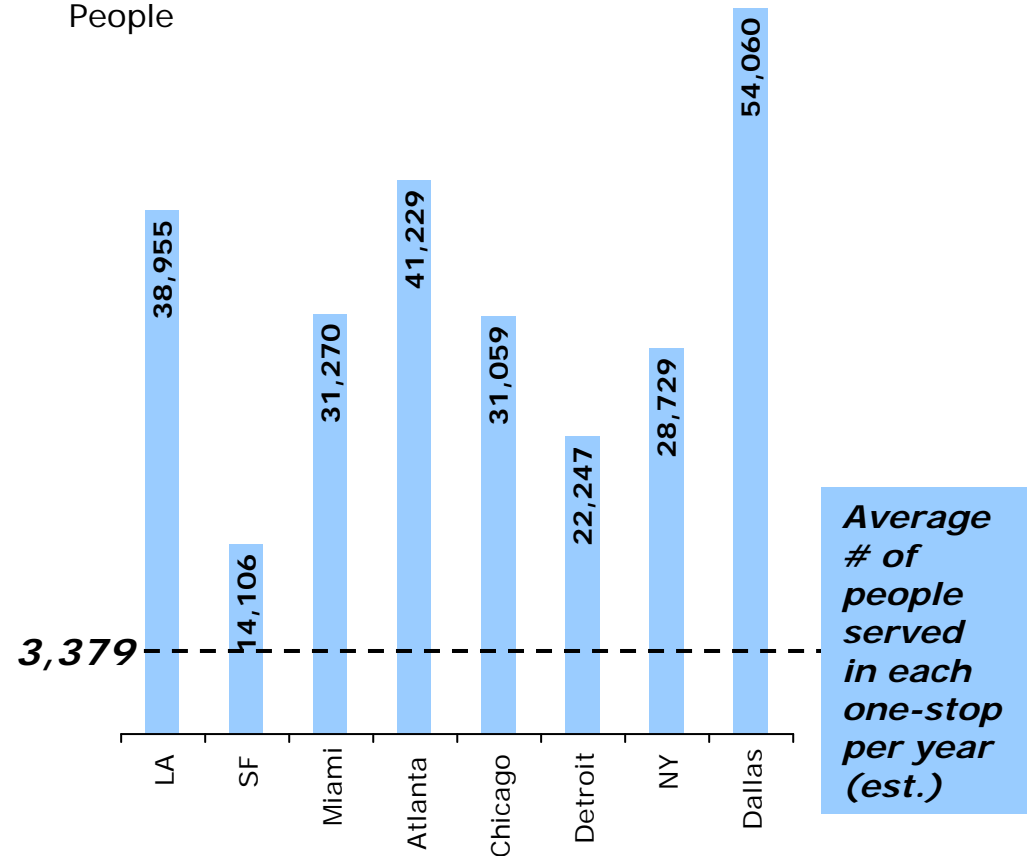
## Survey results of small businesses after implementing web-based technology tools

Percentage of users



## Unemployed population per one-stop in major metro areas, 2008<sup>1</sup>

People



# Gaps persist in fully utilizing broadband to open up new economic opportunities for Americans

## *Gaps*

**Under-skilled workforce; fragmented system**

- Over 50% of today's workforce lacks a post-secondary education, which many jobs require
- Workforce support system is a "confusing maze...programs spread across...agencies"
- Career Centers are overtaxed, each serving an average of 3,000 people in cities with high unemployment rates

**Limitations on telework**

- Tax and regulatory barriers prevent some employees from teleworking
- Limited standards, policies, and infrastructure for teleworking in the federal government

**Sub-optimal broadband utilization among small businesses**

- Almost all businesses use broadband, but only 32% use their websites to sell products
- Small businesses are less likely to adopt key applications such as e-commerce, CRM, and video conferencing

**Lack of scale in economic development efforts**

- Federal economic development funding is fragmented: \$76B spread across 14 agencies and 250 programs
- 57% of all federal support for R&D happens in only 50 colleges and universities

## *Issues*

# Framework for recommendations

1

**Creating a robust national  
employment assistance platform**

2

**Promoting telework through federal policy**

3

**Expanding efforts to train and equip  
SMEs with broadband applications**

4

**Utilizing broadband to enhance economic  
development tools and planning**

# Creating a robust national employment assistance platform

- Deliver employment assistance programs on a scalable online platform
- Provide workforce with anytime, anywhere e-learning tools to drive enrollment in post-secondary education and job training programs
- Guide users to pursue individualized job training and long-term career paths

## Promoting telework through federal policy

- Remove current tax and regulatory barriers for telework
- Make the federal government a leader in telework policy
- Deploy next-generation communications technology throughout federal government to make telework easier

## Expanding efforts to train and equip SMEs with broadband applications

- Expand current efforts to train small businesses on key IT applications
- Launch public-private partnership to provide technology training for small disadvantaged businesses and small businesses in low-income areas
- Support entrepreneurial development programs with broadband tools and training
- Use broadband to bring greater scale and effectiveness to existing federal support programs for small businesses

## Utilizing broadband to enhance economic development tools and planning

- Integrate broadband assessments into economic development grant programs
  - EDA's regional development planning process
  - Enterprise Community/Empowerment Zone programs
- Create a national data warehouse & knowledge management tool
  - Integrate federal sources of economic data, available federal grants, and knowledge management tools
- Support development of regional technology transfer centers