GSA Public Buildings Service

LEVERAGING MOBILITY, MANAGING PLACE

HOW CHANGING WORK STYLES IMPACT REAL ESTATE AND CARBON FOOTPRINT

WHITE PAPER 4

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The Applied Research Program supports GSA's Public Buildings Service by generating research findings and business improvement recommendations that can be directly applied to real world situations. The mission of the Public Buildings Service is to provide superior workplaces for federal customer agencies at good economies to the American taxpayer.

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June 2010

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INTRODUCTION

"Mobility is a fact of life—how most people work today. They embrace it because it improves their performance. Federal workers are no exception. Mobility helps federal agencies use real estate more effectively, saving money and reducing greenhouse gas emissions."

ROBERT A. PECK,
COMMISSIONER, GSA PUBLIC BUILDINGS SERVICE

Changes in information technology enable office work to happen at any place, any time. When formalized as a program, these broad changes are often rolled into "telework" and "mobility" initiatives.

Adopting a comprehensive strategy to respond to these trends can lead to significant savings in real estate costs, reduction in carbon footprint, and improvement in work/life balance. For example, if 95% of an agency's employees work at home or another location 3 days a week, the agency can achieve a 30% reduction in real estate and a 39% reduction in carbon footprint.

This paper evaluates the potential benefits and challenges of adopting a range of mobility strategies, and identifies the best practices needed to implement those strategies in terms of policies, management approach, and integration of technology.

RESEARCH FINDINGS: OVERVIEW

The shift toward mobile work in the Federal Government has been gradual and includes many different work styles. Most federal agencies now have telework policies, but actual participation rates remain relatively low. According to the U.S. Office of Personnel Management (OPM) just under ten percent of eligible federal employees telework.[1] The most common telework arrangement is for an employee to work from home one day per week. However, many agencies also use the term telework to describe a wide range of work settings beyond those defined by OPM (Figure 1).

To better capture the broad suite of multiple alternative work practices–working inside the office in areas other than assigned workstations, working at home, working outside the office while traveling, working in the field, and in other non-traditional locations–leaders in private sector corporate real estate and workplace consulting are gravitating around the term "mobility" rather than "telework." We feel that the term "mobility" better describes the broad shift in work practices–high levels of collaboration, technology that supports work anywhere anytime, policies that allow for flexibility in work schedule. The remainder of the paper therefore uses the term "mobility."

The following pages describe the programs, policies, benefits, and barriers in areas such as eligibility, workplace use, and space allocation, useful when establishing or expanding a mobility program.

Figure 1: Telework & Mobility

As currently defined, telework is a small sub-set of mobile work.

What is telework?

Work arrangements in which an employee regularly performs officially assigned duties at home or other work sites geographically convenient to the residence of the employee.

U.S. Office of Personnel Management, Telework.gov

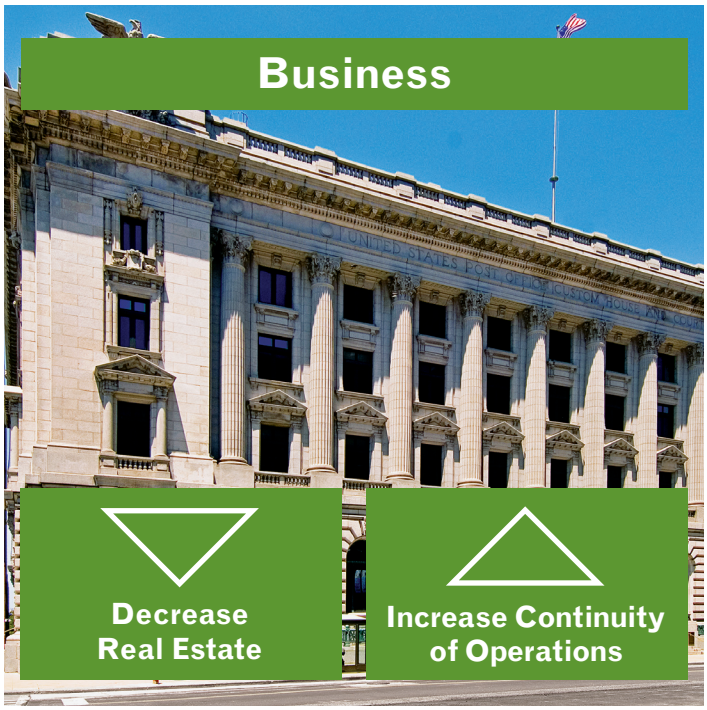
What is mobility?

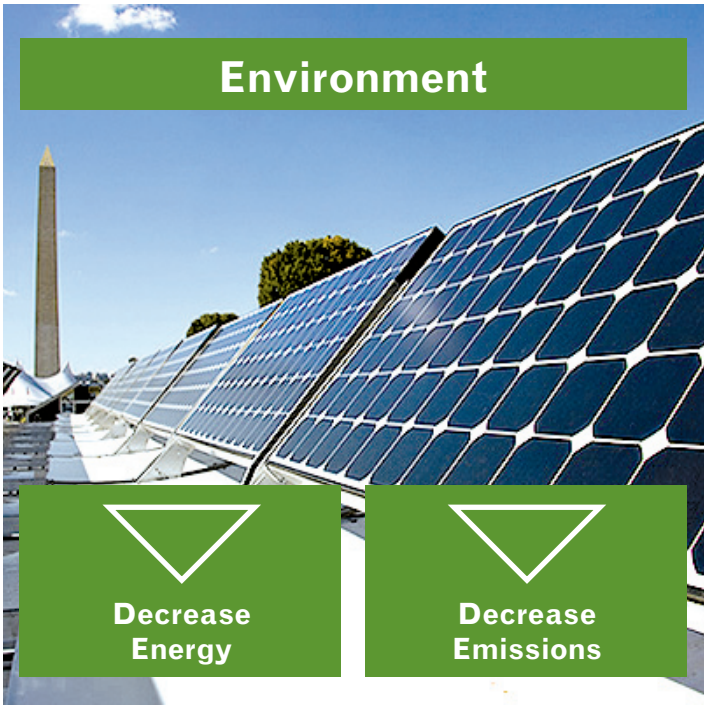
The ability of individuals, enabled by the ubiquity and robustness of information technology and progressive workplace policies, to work freely within and outside the office. This freedom gives individuals more flexibility over when and where they work and allows them to select the space and place that are most appropriate for their work at any given time.

– Frank Duffy, DEGW

Figure 2: Benefits of Mobility

MOBILITY IMPACTS BUSINESS, PEOPLE, SPACE, AND ENVIRONMENT.





RESEARCH FINDINGS: BUSINESS

FINDING 1:
MOBILITY IMPROVES COOP

Continuity of Operations (COOP) refers to the government's ability to maintain essential services in the event of a disruption to normal operating conditions. Mobility can provide significant support to COOP by allowing the workforce to function from many different locations and to be available to perform at a wider range of hours, if needed. For example, the Internal Revenue Service (IRS) effectively maintained continuity of operations when its headquarters in Washington, DC flooded in 2006. IRS employees were able to work from various other locations, and the agency experienced minimal work disruption.

FINDING 2:
MOBILITY CAN REDUCE REAL ESTATE AND OPERATING COSTS

When people frequently work from alternate locations, their assigned work space becomes underutilized. GSA studies of real-time occupancy of work space observed 22 workplaces across 5 agencies for two-week periods and found that employees are typically only at their desks one-third of the time. An agency can increase the workplace utilization rate and reduce its real estate by reducing the size of individual workstations and providing a wider range of meeting spaces as well as hoteling workstations. Financial savings result from both reduced space and the associated reduction in operational expenses.

FINDING 3:
MOBILITY REQUIRES CONTINUED INVESTMENT IN TECHNOLOGY

Mobile employees depend on a reliable information technology (IT) system for communication and individual work. The more robust the mobility program, the more robust the IT system must be. For the employee, IT needs to provide and support equipment like laptops and smart phones. For the agency, IT considerations include maintaining a network, remote file servers, a secure virtual private network (VPN), and virtual communication services, such as conference calling, video conferencing, and screen-sharing. The exponential growth of IT, stability, and service offerings over recent years allayed prior concerns about security. In terms of costs, the General Services Administration (GSA) *Telework Technology Cost Study* shows that this upfront investment is typically less than the significant savings achieved. This study found that if an agency invests $16 million over 3 years for basic telework-at-home solutions for a staff of 100,000, the potential return can be up to $36 million over the same period of time.[2]

FINDING 4:
MOBILITY HELPS AGENCIES ADAPT TO CHANGES IN HEADCOUNT

Contract staff, joint task forces, and other factors can result in an agency's headcount growing or shrinking quickly. Mobility allows an agency to easily adapt to changes in headcount because a real estate portfolio designed for mobility is flexible in work locations and space sharing. It also allows an agency to smoothly reconfigure teams or take on temporary employees.

"If there is a silver lining to 'Snowmaggedon 2.0' it was proving that our government does not shut down. At least 30% of our employees logged on to their office computer systems or were physically present, not counting many thousands more who worked on BlackBerries or simply brought home the papers they needed. That is great progress over the single digits possible in the last blizzard of '96, but much more is achievable. Managers and agencies now have tangible proof of the critical importance of driving telework capabilities forward."*

JOHN BERRY,
DIRECTOR, U.S. OFFICE OF PERSONNEL MANAGEMENT

* The East Coast snow storms of winter 2010.

Figure 3: Mobility Factors

MANY FACTORS INFLUENCE HOW WELL A TELEWORK OR MORE DEVELOPED MOBILITY PROGRAM WOULD MATCH WITH AN EMPLOYEE. HERE ARE THREE:

How often am I away from the office?

People with customer-facing roles that spend time away from the office are good candidates for a mobility program. These individuals often have unpredictable schedules and/or may work offsite frequently for specific projects.

What kind of work do I do?

People that work more individually, rather than in a team environment, are also good candidates for a mobility program. This includes people whose roles are task-based or who are self-sufficient.

What is my interest level?

Lifestyle factors could influence an individual's motivation to work mobily. Employees who want to reduce their commute time, work from home, or have other lifestyle needs fall in this category.

Figure 4: Common Work Styles

GSA'S PUBLIC BUILDINGS SERVICE CREATED A WORKSTYLES FRAMEWORK BASED ON THE LEVEL OF EMPLOYEE MOBILITY AND INTERACTION.

Potential space savings: 36 externally mobile and interactive workers can be accommodated in the same amount of space as 24 deskbound and concentrative workers.

	work station	recommended size	work style/habit	
deskbound	assigned	48 sf – 64 sf min.	**interactive:** People spend the majority of work hours at their desks while interacting with others or talking on the phone. Because their work involves more noise, their arrangement differs from the style to the right.	**concentrative:** People spend the majority of work hours at their desks and focusing on individual tasks, so they need more space in the office and an arrangement that minimizes disruption.
internally mobile	shared or assigned	36 sf – 54 sf min.	**interactive:** People work in various locations around the office or in the building; they interact with others when at their desks.	**concentrative:** People work in various locations around the office; they need to focus on individual tasks when at their desks.
externally mobile	shared or assigned	30 sf – 48 sf min.	**interactive:** People spend significant amounts of time working away from the office, so they need less space in the office. When in the office, they tend to interact with others and need collaboration space.	**concentrative:** People spend significant amounts of time working away from the office; they need to focus on individual tasks when at their desks and need arrangements that minimize disruption.

RESEARCH FINDINGS: PEOPLE

FINDING 1:
MOBILE WORKERS ARE MORE PRODUCTIVE

Surveys and interviews indicate that workers feel they experience fewer distractions from co-workers and other activities, and therefore perceive themselves to be more productive at home and better able to control their workflow. For example, 95 percent of respondents to an internal survey of mobile workers at the Defense Information Systems Agency (DISA) reported equal or increased productivity while teleworking. DISA managers support this assessment, as over 85 percent rated teleworkers as equally productive or more productive when they are teleworking[3] (Figure 5).

FINDING 2:
MOBILE WORK OPPORTUNITIES STRENGTHEN RECRUITMENT

Mobility programs strengthen an agency's ability to recruit and retain talented employees. For example, the DISA survey also show that the opportunity to telework has been an important retention tool (Figure 6).

This has proven particularly important as DISA plans to relocate its offices to a location 25 miles away. DISA believes that its mobility program will help it retain 100 percent of its employees. This is particularly valuable because 82 percent of its workforce is scientific and technical staff who would be difficult to replace.

FINDING 3:
MOBILITY IMPROVES WORK/LIFE BALANCE

Mobile work gives employees greater control over their schedule and can reduce commute time. Studies suggest that these two factors play an important part in reducing work-life stress.

FINDING 4:
MOBILITY REQUIRES A SHIFT IN MANAGEMENT STYLE

Some managers worry that their employees will be less productive if the managers can't see them. Similarly, some employees worry that they will miss out on advancement opportunities or will not be recognized for their work if their managers can't see them.

A successful mobility program therefore requires a shift in communication techniques and management style to address these concerns. OPM recommends the approach of managing by outcomes for all managers.[4] Managers must focus on work product instead of physical presence as the performance standard.

FINDING 5:
MOBILITY REQUIRES CULTURAL AND SOCIAL INVESTMENT

Two key challenges that mobility programs face are the need to maintain the agency culture and social connections among coworkers. OPM reports that employees who spend a great deal of time working on their own and away from coworkers may experience feelings of isolation or disconnection. The United States Patent and Trademark Office (USPTO) has one of the most successful mobility programs in the Federal Government, with 82 percent of the eligible positions teleworking.[5] USPTO has maintained agency culture and the interpersonal connections between employees through an electronic magazine focusing on business unit employees, their interests, and personal updates.

Figure 5: Self-reported Productivity Surveys at DISA[6] and the Virginia Department of Taxation[7]

EMPLOYEES AT THE TWO AGENCIES INDICATED THAT THEY WERE MORE PRODUCTIVE WHILE TELEWORKING. MANAGERS ALSO AGREED, THOUGH TO A LESSER EXTENT.

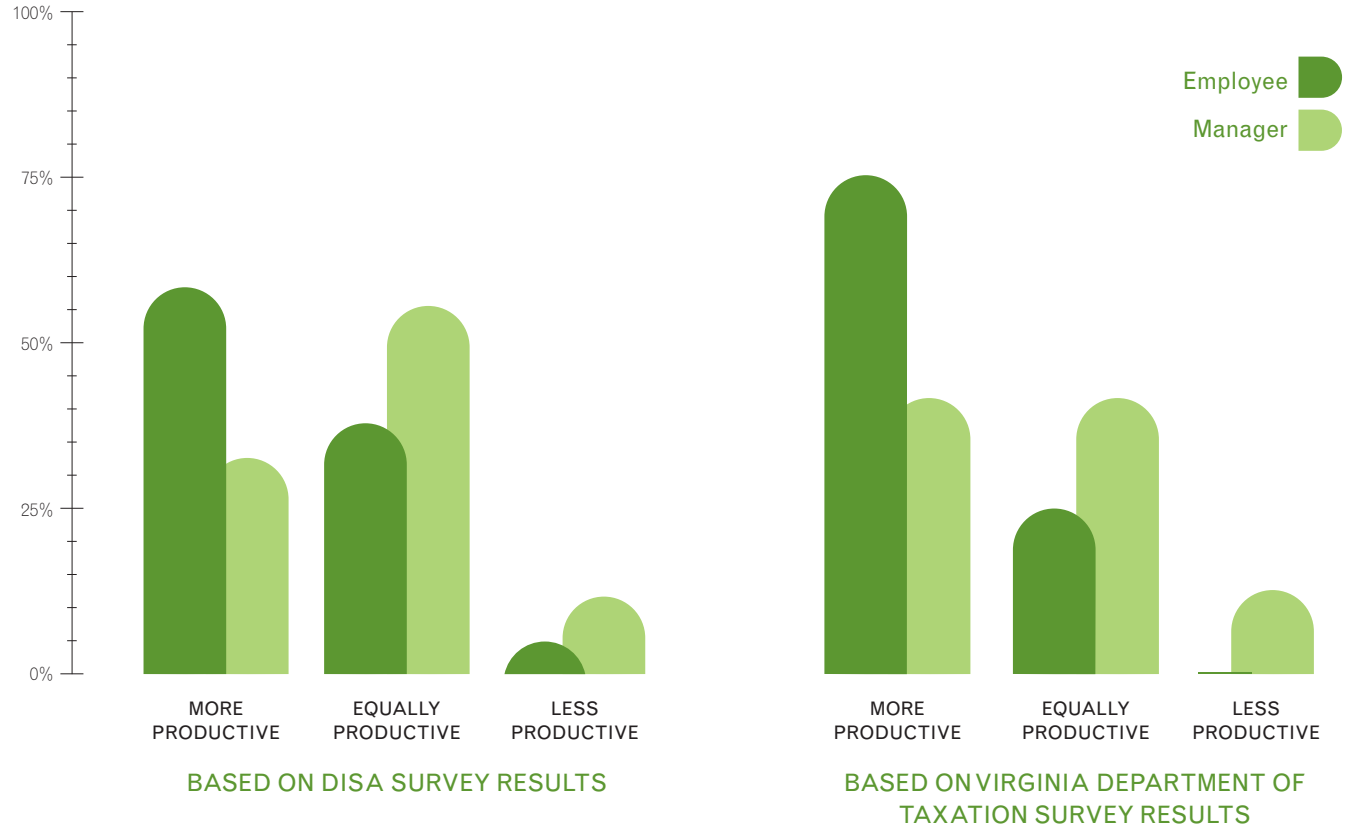
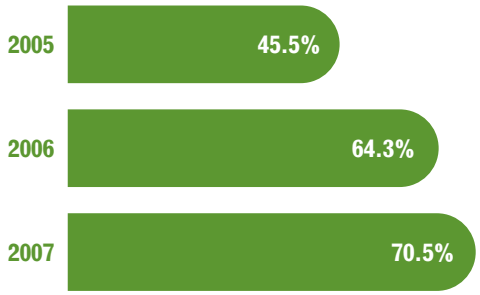


Figure 6: Teleworking as an Employee Attraction/Retention Tool at DISA[8]

BASED ON SURVEY RESULTS FROM 2005 THROUGH 2007, THE OPTION TO TELEWORK HAS INCREASINGLY IMPACTED EMPLOYEES' DECISIONS TO CONTINUE WORKING FOR THE ORGANIZATION.



RESEARCH FINDINGS: SPACE

FINDING 1:
MOBILITY SUPPORTS HIGHER SPACE UTILIZATION

The most common mobile practice is an employee working from home 1 day per week. Typically, this means that an employee's workstation sits empty on the day that he or she works from home. A mobility program offers an agency an opportunity for much better space utilization by replacing dedicated workstations with open workstations that employees use only on the days they are in the office. Utilizing this strategy, the USPTO telework program, for example, reported in 2009 that their 9,643 employees currently occupy a space that would accommodate about 5,000 traditional, or non-teleworking, employees.[9]

FINDING 2:
MOBILITY REQUIRES CHANGES IN SPACE DESIGN

A robust mobility program requires space designed to support various work arrangements (Figure 7). Workstations need to be adaptable to different users in terms of ergonomics, file access, and personal belongings. Also, an increase in mobility typically requires greater access to technology, power, internet, and other resources.

FINDING 3:
MOBILITY LEADS TO CHANGES IN PROPORTION OF SPACE TYPES

The proportion of space types must also adapt to the changing functions of the office. When mobile employees are in the office, they are more likely to take advantage of face time with colleagues and spend their time in both formal and informal meetings. This means that there is a need for a greater proportion of collaboration space, a reduction in dedicated, individual work spaces, and an increase in small, more isolated, drop-in spaces. To function effectively, these drop-in spaces must provide acoustic privacy and also the opportunity for focused work or one-on-one meetings.

FINDING 4:
MOBILITY AFFECTS LOCATION STRATEGIES

A federal agency adopting a more aggressive mobility strategy may wish to revisit its broader location strategy. Decisions to consolidate space in centralized locations in particular should be evaluated alongside the alternative of distributed offices in transit-oriented developments.

Figure 7: Mobility's Effects on Workplace Design

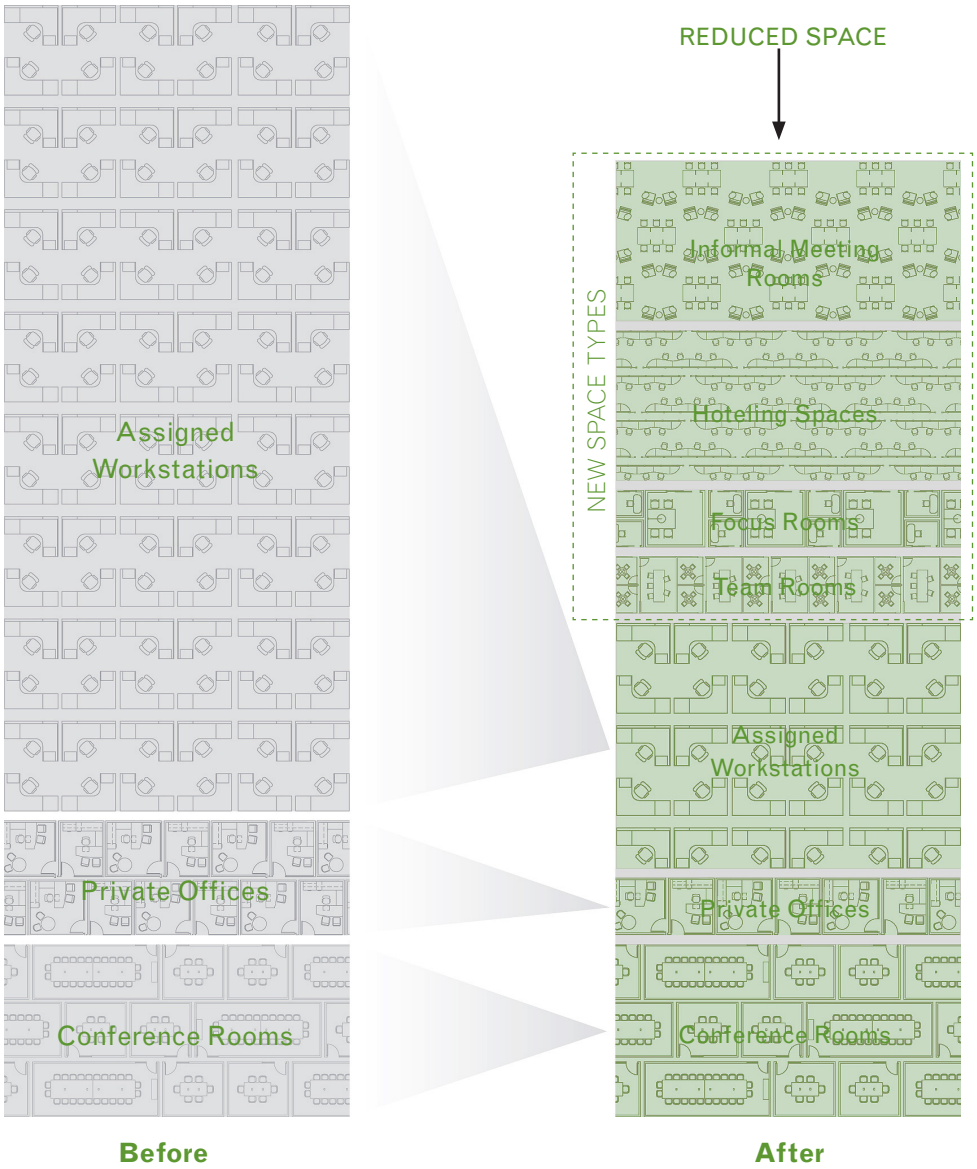
A MOBILE WORKFORCE WILL AFFECT BOTH THE DENSITY AND USE OF SPACE.

Currently, federal workplaces have a high percentage of dedicated, individual spaces like private offices and assigned workstations.

Organizing the federal workplace around mobility would reduce the size and number of dedicated, individual spaces and allocate more space to shared activities that support collaborative work. Conference rooms are examples of such collaborative space.

Mobility also requires the creation of new space types, such as hoteling spaces, focus rooms, team rooms, and informal meeting rooms.

These shifts lead to denser floorplates, reduced real estate, and higher utilization rates, while accommodating **the same number of workers.**



RESEARCH FINDINGS: ENVIRONMENT

FINDING 1:
MOBILITY CAN REDUCE THE ENVIRONMENTAL IMPACT OF COMMUTING

When mobile workers reduce their commute, they also reduce transportation energy consumption. While few organizations currently calculate the transportation energy savings of their telework programs, the National Science Foundation (NSF) performed a detailed study. Based on survey responses from 87 percent of its employees, NSF found that the average employee saves 62 hours and $1,201 in commute costs per year by teleworking. Applying this average across the whole agency, NSF projects that their telework program reduces over 1 million pounds of emissions and saves more than $700,000 in commuting costs per year.[10]

FINDING 2:
MOBILITY CAN INCREASE SPACE UTILIZATION AND REDUCE REAL ESTATE

Buildings are responsible for 39 percent of the U.S. greenhouse gas (GHG) emissions.[11] Executive Order (EO) 13514 directs all federal agencies to set targets for reducing GHG emissions from buildings, vehicle fleets, and federal workers' commutes. Since new construction represents only 2 percent of the U.S. building stock, improving the use of existing buildings is clearly a priority.[12]

A well designed mobility program should help an organization use less space more intensively. Mobile workplace design strategies in concert with complimentary programs such as electronic document access and high density filing enable an agency to reduce overall energy consumption, a key strategy for reducing their carbon footprint and complying with EO 13514.

FINDING 3:
MOBILITY REDUCES ENERGY CONSUMPTION

Lighting and IT strategies that support mobility often reduce operational energy consumption. For example, workstation specific luminaires combined with task lighting controlled by occupancy sensors conserve energy by turning off automatically when an employee is not at his or her desk. Laptop computers consume less energy than desktop computers. A mobile worker who exchanges a desktop computer for a laptop computer saves energy even when working in the office.

Additionally, mobility takes advantage of an employee's own motivation to conserve energy while working at home. At home, employees have a financial incentive to only consume the energy they need because they pay the utility bills. Furthermore, employees have more control over their environment at home. They can take advantage of daylight or use only the amount of electric light necessary for a given task. They can open windows or only use air conditioning when they need it.

A MANDATE TO REDUCE GREENHOUSE GASES[13]

EO 13514 - Federal Leadership in Environment, Energy, and Economic Performance was signed on October 5, 2009. In terms of GHG reduction, federal agencies must meet a series of goals including:

- Set a percentage reduction target for agency-wide reductions of scope 1 and 2 GHG emissions in absolute terms by fiscal year 2020, relative to a fiscal year 2008 baseline
- Set scope 3 targets and develop a Strategic Sustainability Performance Plan
- Submit a comprehensive GHG inventory

Agencies must pursue cost-effective, innovative strategies to minimize consumption of energy, water, and materials. They should identify opportunities to consolidate and eliminate existing assets, optimize the performance of portfolio property, and reduce associated environmental impacts.

Figure 8: Environmental Impacts of the California Telecommuting Pilot Program[14]

CALIFORNIA'S TELECOMMUTING PILOT PROGRAM REDUCED PERSONAL VEHICLE TRIPS BY 27%, REDUCED MILES TRAVELED BY 77%, AND LED TO A:

48% REDUCTION IN ORGANIC GASES

64% REDUCTION IN CARBON MONOXIDE

69% REDUCTION IN NITROGEN OXIDES

78% REDUCTION IN PARTICULATE MATTER

GSA CARBON FOOTPRINT AND GREEN PROCUREMENT TOOL

The GSA Carbon Footprint and Green Procurement Tool is a user-friendly, online tool that allows federal agencies to inventory their GHG emissions and evaluate how mobility can help them reduce their impact.

The Tool follows the GHG Protocol, which is supported by the World Resources Institute and the World Business Council for Sustainable Development.

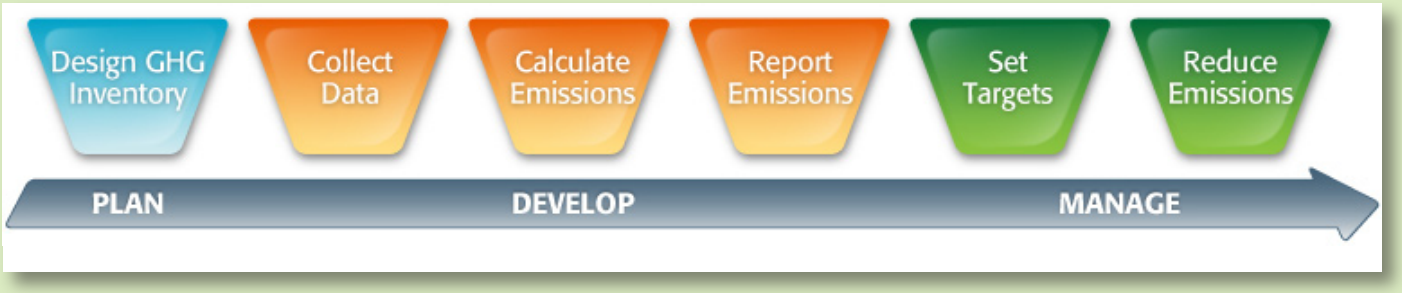
The GHG Protocol includes Scope 1, 2, and 3 emissions:

- Scope 1 refers to emissions produced directly by an organization, such as burning natural gas on site.
- Scope 2 refers to emissions generated off-site, such as electricity generated by a power plant and then used by an agency.
- Scope 3 is much broader and refers to indirect emissions, such as employee travel.

To analyze existing conditions, an agency needs information about its energy consumption, equipment, employees, travel, and commuting behaviors.

An agency can also use the Dashboard to model the impact of different strategies for the future. The Dashboard provides a summary of the total GHG emissions and also the percent reduction that a model achieves.

To model the impact of mobility, an agency can adjust the Telecommuting Participation on the Dashboard and also reduce the total real estate area. The scenarios presented later in this white paper utilize this Tool to estimate the GHG impact of various degrees of mobility. For more information, go to: www.GSACarbonTool.org.



SCENARIOS FOR THE FUTURE

Scenario planning is a useful way to consider possible strategies for the future. It examines practices that are not typical for an organization but probable in the larger context in which the organization operates.

Federal agencies have not widely embraced mobility thus far. However, trends in the private sector, workforce demographics, and technology all indicate that agencies will likely increase their implementation of mobility. The following three scenarios provide agencies with a framework for forecasting how mobility could affect them. The scenarios are:

- Basic Telework,
- Responding to Mobility, and
- Mobility as Strategy.

Each scenario characterizes how an agency might structure a mobility program; analyzes the impacts of the strategy in terms of business, people, space, and environment; and compares impacts against a baseline that represents current practices. The scenarios represent a range of possibilities and are not mutually exclusive.

BASELINE

The Baseline scenario represents the current state of mobility in the Federal Government, in which nine percent of employees work from home one day per week. For the purposes of comparison, this white paper uses GSA's Carbon Footprint and Green Procurement Tool to assess a hypothetical agency. The agency has 1,000 employees and 200,000 square feet in Washington, DC. Other specific assumptions for this calculation are described at the end of this white paper. This Baseline is characterized by:

BUSINESS

- Nearly ten percent of the workforce has the needed experience to work remotely in an emergency situation, providing basic continuity of operations (COOP).
- One set of workstation equipment and IT tools are provided per employee.

PEOPLE

- Ninety-one percent of employees commute daily from their homes to the office.
- Nine percent of employees work from home or a telework center one day per week.
- All employees are recruited from a local population.
- Supervisors manage through daily face-to-face interaction.

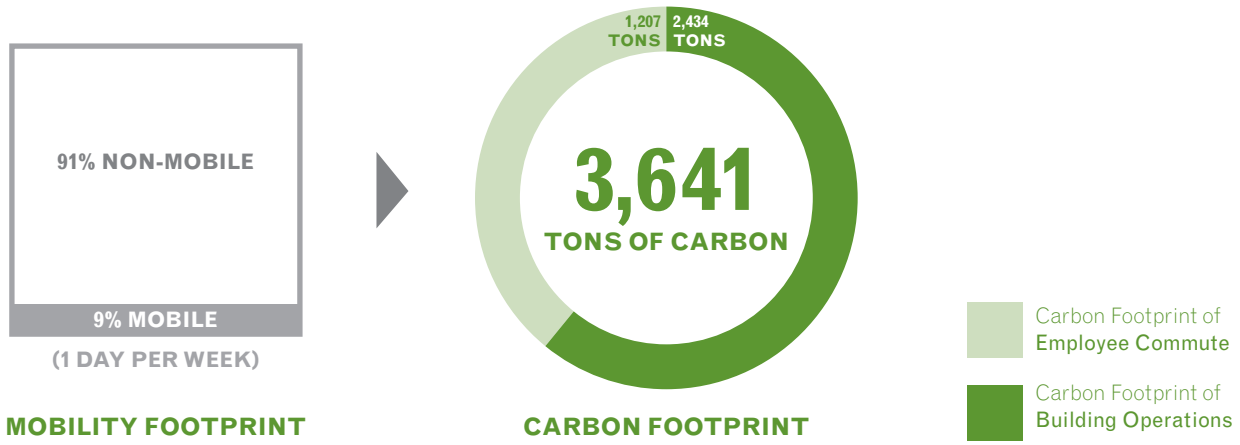
SPACE

- Individual workstations are assigned to all employees, including mobile workers.
- Assigned workstations, private offices, and conference rooms account for nearly all non-circulation and non-support space.
- There is no space supporting casual meetings or ad-hoc collaboration.

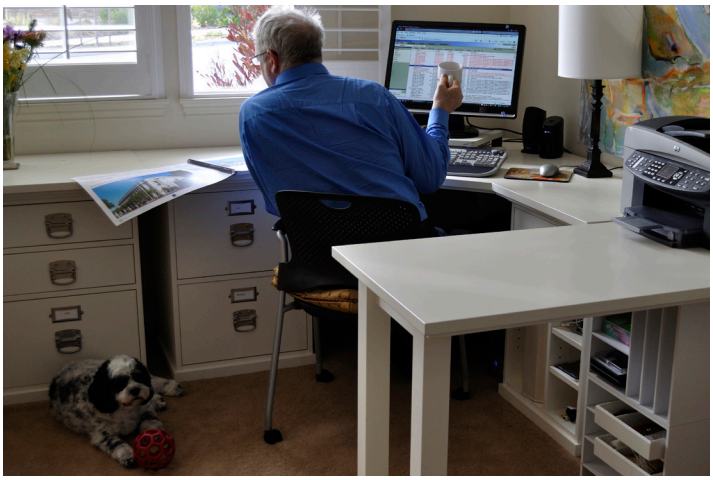
ENVIRONMENT

- Employee commute represents one-third of the agency's overall carbon footprint (see Figure 9).

Figure 9: Carbon Footprint for the Baseline Scenario



Basic Telework

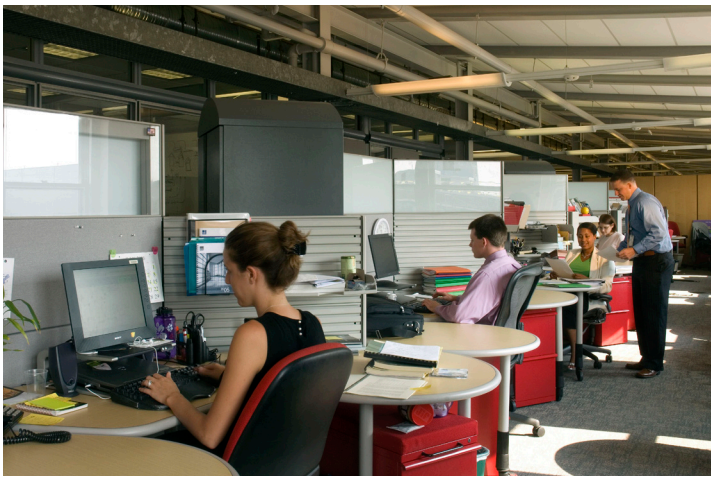


People: 15 percent work at home 2 days a week.

Workplace: No change to existing space.

Responding to Mobility

People: 80 percent can work anywhere within or outside of the office.



Workplace: Denser workstation areas and more varied space types.

Mobility as Strategy

People: 95 percent work mobily 3 days a week.

Workplace: New space model that reduces real estate.

Photo provided by Hewlett-Packard

SCENARIO 1: BASIC TELEWORK

BENEFITS AND CONSIDERATIONS

The Basic Telework scenario is an expansion of current practices. It assumes that 15 percent of employees are working from home 2 days per week, but the agency has made no change in real estate or workplace strategy. This is characterized by:

BUSINESS

- Fifteen percent of the workforce now has the needed experience to work remotely in an emergency situation, providing a small improvement in COOP readiness.
- One set of workstation equipment and IT tools are provided per employee.

PEOPLE

- Eighty-five percent of employees commute daily from their homes to work.
- Fifteen percent of employees work from home or a telework center two days per week, resulting in a small improvement in work/life balance, productivity, and the agency's ability to recruit employees.

SPACE

- In the Basic Telework scenario, the agency's space is unchanged from the Baseline scenario.
- Individual workstations are assigned to all employees, including mobile workers.

ENVIRONMENT

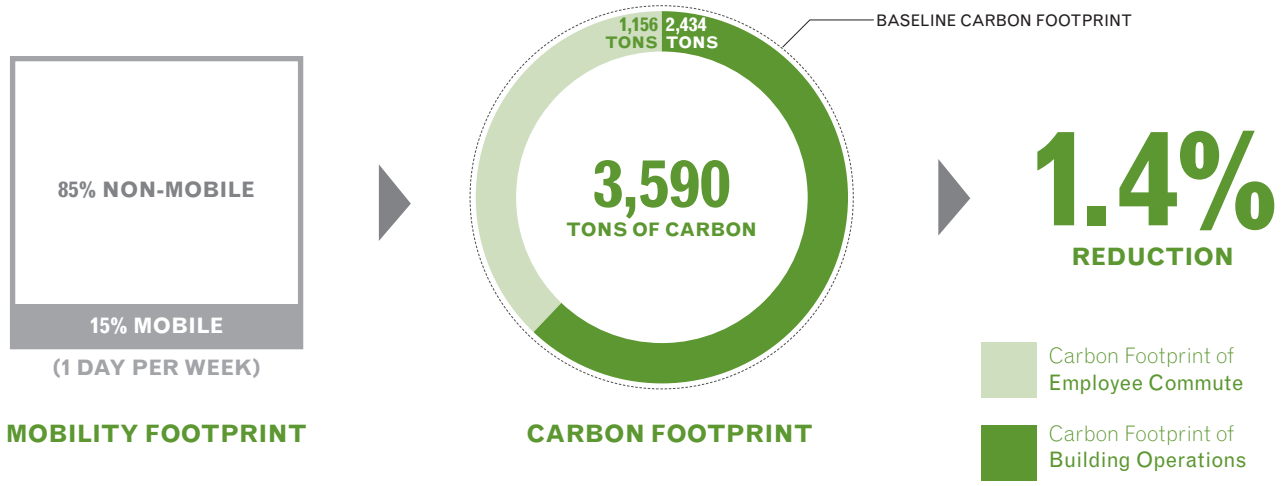
- Compared to the Baseline, the environmental impact of this scenario is a slight reduction in GHG emissions from employee commute and no reduction in emissions from building operations (Figure 10).

KEY STRATEGIES

Key implementation strategies include the following:

- Develop technology protocols so that work performed outside the office is seemlessly integrated with the work performed at the office.
- Shift to managing by outcomes so that managers no longer evaluate employee performance based on physical presence.

Figure 10: Carbon Footprint for Scenario 1



SCENARIO 2: RESPONDING TO MOBILITY

BENEFITS AND CONSIDERATIONS

This scenario illustrates the impact of redesigning the workplace to respond to a workforce where 80 percent of employees work at home or another off-site location 2 days per week and are internally mobile while working at the office. This is characterized by:

BUSINESS

- Eighty percent of the eligible workforce has the needed experience to work remotely in an emergency situation, providing a high level of COOP readiness.
- Mobile employees receive equipment and IT tools, including a laptop computer, a smart phone, and virtual communication technologies to enable them to work flexibly.

PEOPLE

- Eighty percent of employees work off-site two days per week, providing significant improvement in work/life balance, and agency recruitment.
- The ability to be internally mobile provides the flexibility in where and how to work, which enhances productivity and satisfaction with the work environment.

SPACE

- Each employee has an assigned workstation that is smaller and more densely organized than workstations in the Baseline and Basic Telework scenarios.
- Other space types, such as focus rooms and team rooms, comprise a significant proportion of the workplace, supporting casual meetings, collaboration, and socializing.
- The overall real estate footprint remains unchanged; however, space is allocated differently.

ENVIRONMENT

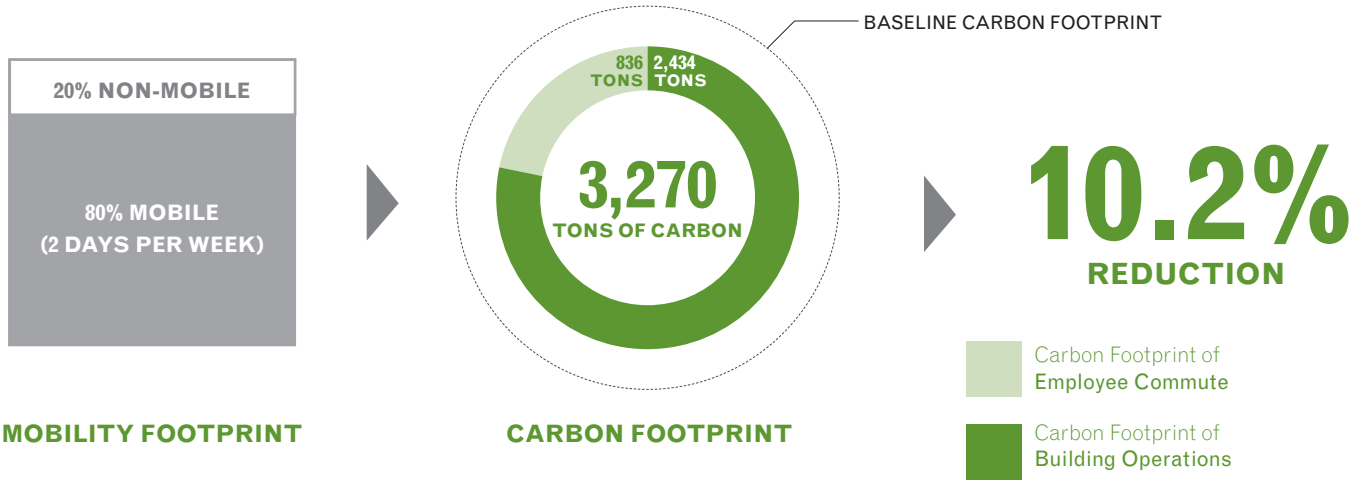
This scenario provides a significant reduction in GHG emissions from employee commute over the Baseline, but no reduction in emissions from building operations (Figure 11).

KEY STRATEGIES

The key implementation strategies beyond those for Scenario 1 include the following:

- Design for mobile work styles by diversifying work settings. Reduce the area dedicated to assigned space and increase the area dedicated to shared space.
- Implement a change management program to prepare employees and managers for the increase in mobility and for the changes associated with the office space, technology, and work protocols.
- Establish methods for maintaining social and cultural connections among all workers.

Figure 11: Carbon Footprint for Scenario 2



SCENARIO 3: MOBILITY AS STRATEGY

BENEFITS AND CONSIDERATIONS

In this scenario, the agency adopts mobility as a guiding real estate and workplace strategy. The scenario assumes that 95 percent of employees work at home or another location 3 days per week and are internally mobile while working at the office. This scenario projects that an agency will achieve a 30 percent reduction in real estate and a 39 percent reduction in its carbon footprint. These numbers are conservative relative to private sector experience. This scenario is characterized by:

BUSINESS

- Ninety-five percent of the workforce has the needed experience to work remotely in an emergency situation, providing the highest level of COOP readiness.
- All eligible employees receive equipment and IT tools, including a laptop computer, a smart phone, and virtual communication technologies that enable them to work flexibly.
- The overall real estate footprint is reduced by 30 percent; remaining space is allocated differently.

PEOPLE

- This scenario offers potentially the greatest improvement in work/life balance.
- Nearly the entire workforce is both externally and internally mobile, establishing workplace norms that enhance both individual and group productivity.
- Recruitment and retention are significantly improved because the workforce can be drawn from a larger geographic area, and life changes can be more readily accommodated.

SPACE

- The overall real estate footprint is reduced by 30%; remaining space is allocated differently.
- Office design is aligned with the needs of its employees and the utilization of various spaces.
- Nearly all workstations and offices are assigned on an ad hoc basis ("Hotelling").
- The target ratio of mobile workers to workstations may approach 8:1.
- The numbers and types of spaces are varied and designed around the variety of work modes employees go through during their typical day in the office.

ENVIRONMENT

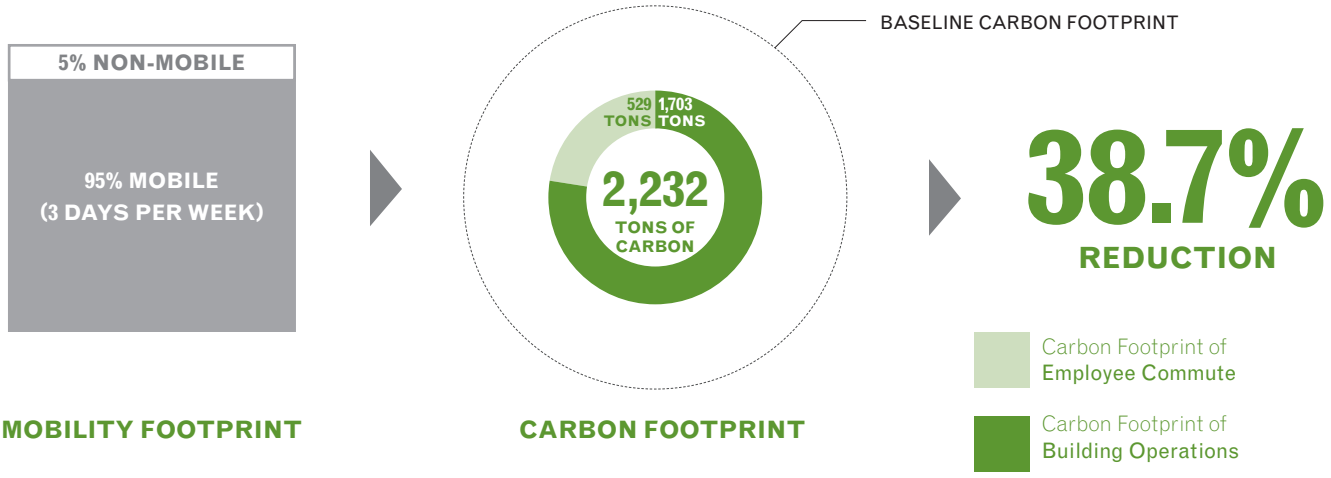
- Employee commute generates 56.2 percent less carbon emissions than in the Baseline scenario.
- The agency's overall carbon footprint is reduced by nearly 40 percent.

KEY STRATEGY

The key implementation strategy beyond those for Scenario 1 and 2 is the following:

- Reframe real estate and workspace planning based on utilization and work modes, as opposed to area and headcount.

Figure 12: Carbon Footprint for Scenario 3



U.S. PATENT AND TRADEMARK OFFICE

The U.S. Patent and Trademark Office (USPTO) telework program has enabled the agency to avoid securing $11 million in additional office space, provides for COOP planning, and positions the USPTO as an employer of choice.

In 1997, USPTO piloted the Trademark Work @ Home Program with 18 examining attorneys who worked at home part-time. Today, of USPTO's 9,643 employees, 6,311 are eligible to telework and about 82 percent of eligibles participate. The agency is considered a model for telework in the Federal Government and has secured numerous awards for its exemplary telework programs.

Approximately 2,200 employees have relinquished office space and work from home 4 days per week. When these employees come into the office, they use an electronic concierge to reserve workspace in the hoteling suites. By utilizing hoteling stations instead of assigned workstations for hoteling employees, the agency has been able to grow in headcount without incurring the cost of additional real estate.

UNITED STATES MARINE CORPS

More than 90 percent of the staff in the Business Enterprise organization of the United States Marine Corps (USMC) Headquarters telework regularly. The 32 staff members of this small office telework an average of 1.7 days per week. Business Enterprise uses the standard Department of Defense telework agreement to formalize each employee's telework arrangement. It also uses the annual agreement review as an opportunity to collect commute data. Based on such data, it estimates that employees save a total of $13,000 on gasoline, reduce carbon emissions by 100,000 lb, and eliminate 3,500 hours of commute annually.

To ensure that teleworkers can work effectively, Business Enterprise leverages both technology and work protocols. Its SharePoint site increases employees' ability to collaborate. Its daily "check-in/check-out" protocol and the expectation that employees return phone calls within three minutes keep communication flowing. Managers conduct quarterly impact evaluations for each employee to assess how effectively work is getting accomplished.

During the East Coast snow storms of winter 2010, Business Enterprise effectively maintained continuity of operations in the National Capital Region. Even though the Federal Government was officially closed for 4-1/2 days, Business Enterprise employees in the region were "at work" for 63 percent of that time. Telework accounted for 53 percent of the work hours recorded.

As the USMC office focuses on creating more efficient ways to work, Business Enterprise believes telework is a key strategy in improving business processes, reducing environmental impacts, and achieving cost savings.

BUREAU OF ALCOHOL, TOBACCO, FIREARMS AND EXPLOSIVES

Mobility is a natural fit for the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). Its law enforcement agents and inspectors spend most of their time in the field. Prior to the mobility program, agents needed to go in to the office in order to fill out paperwork and collect and analyze electronic intelligence. Now, they are able to accomplish these tasks while in the field or at home.

Technology plays a significant role in the success of ATF's mobility program. Agents need high-performing yet lightweight laptops, data storage, and other support services. Security is particularly important to ATF, and ATF's success shows that it is possible to maintain a highly secure exchange of information while mobile.

Although this technology and support is costly, mobility has also led to cost reductions: ATF is shifting to small, wireless offices. It has reduced costs associated with traveling back and forth to the office. Agents have been able to increase their time spent in the field, which allows law enforcement to be more effective and inspectors to complete more tasks. Mobility has also improved morale and ATF's response capabilities.

Mobility is Transforming the Urban Context

CHANGING COMMUTE AND CONSUMER PATTERNS

Mobile work patterns are creating a shift away from the typical daily pedestrian and vehicle flow. This means cities could experience less rush-hour effects and more distributed transportation patterns for both car traffic and public transportation. Mobile workers have more variations in their schedule and create a more active street and sidewalk environment during the day. Since mobility includes working from home, residential areas will experience an increase in retail and commercial uses. Cities were originally developed to support a common set of needs, behaviors, and capabilities, all of which are being reshaped by mobile work. It is only logical that cities will adapt and evolve to accommodate our new ways of working and living.

TRANSFORMING CITIES INTO VIBRANT NETWORKS

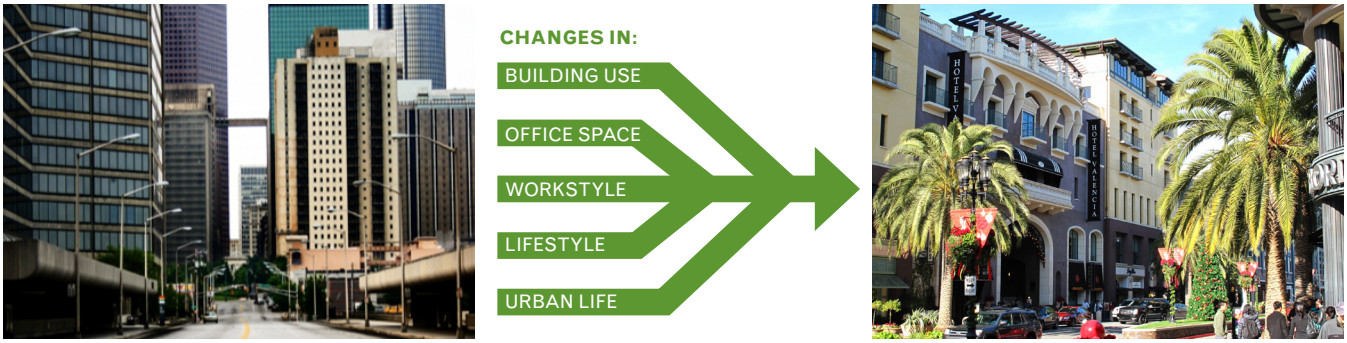
As mobility becomes more widely adopted, it will impact not only buildings and building interiors, but also the larger urban context.[15] Cities will shift away from having a single downtown hub to being a network of multi-activity areas. Movement among the areas of activity allows for greater interaction, both planned and spontaneous. According to Laurel Prevetti, Assistant Director of Planning for San Jose, California, the city is responding to the effects of mobility on the urban environment. San Jose is seeking to provide a variety of flexible work environments, including shared amenities and public spaces, in various parts of the city. San Jose believes these investments will increase economic opportunities and add vibrancy to the city. [16]

INCREASING THE DEMAND FOR A MIX OF USES

As technology makes it easy for work to disperse to residential and other areas, mobility is leading to less demand for office intensive districts and buildings. Work is happening in a variety of locations within cities. Locations within cities–cafes, restaurants, plazas, and even parks–are becoming places for both individual work and collaborative sessions with colleagues. Cities with single-use buildings will feel pressure to accommodate new workstyles, lifestyles, and a focus on urban life. Development will increasingly favor urban environments, where complimentary and mutually supportive uses can easily coexist. [17]

Figure 13: The Changing Landscape

Mobility will spark shifts in how we see and use our cities.

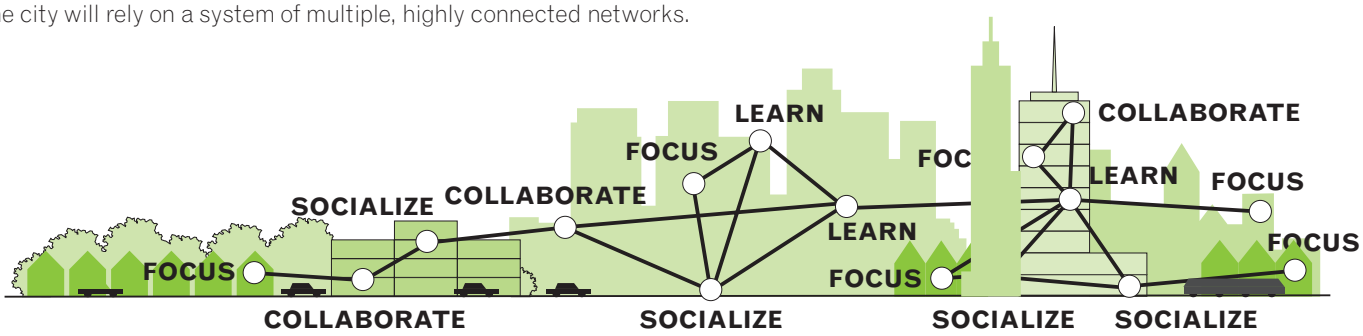


CITIES WITH SINGLE-USE BUILDINGS

CITIES WITH MULTI-USE BUILDINGS

Figure 14: The Future Urban Context

The city will rely on a system of multiple, highly connected networks.



CONCLUSION

"Agencies don't have to 'go mobile' overnight. By taking the time to align space, technology, and policy, they can reap the full benefits of mobility—higher productivity and satisfaction, plus higher space utilization with correspondingly lower costs and carbon footprint."

KEVIN KAMPSCHROER,
DIRECTOR, GSA OFFICE OF FEDERAL HIGH-PERFORMANCE GREEN BUILDINGS

Adopting a clear mobility strategy can provide significant benefits to federal agencies. It can help agencies maintain continuity of operations, reduce real estate, improve satisfaction and productivity, and reduce their carbon footprint. GSA's research shows that, in order to implement a successful mobility strategy, an agency must invest in technology, shift its management approach, and support a wide variety of ways of working.

RECOGNIZING THE PRESENT

Many agencies have begun to implement mobility programs and have documented successes and lessons learned. Their stories and data, both quantitative and qualitative, helped form the foundation of this white paper. These agencies will be invaluable resources to others as the shift to mobility continues. The private sector, spurred by the need to accommodate a new generation of workers and to achieve cost savings triggered by the economic downturn of 2008 - 2010, is aggressively embracing mobility strategies. It is inevitable that the public sector will support contemporary work practices and achieve similar reductions in real estate and carbon emissions.

PREPARING FOR IMPLEMENTATION

The scenarios presented in this white paper illustrate the benefits of varying degrees of mobility. The scenarios may also be thought of as steps that build toward greater degrees of implementation. The third scenario, Mobility as Strategy, offers the greatest benefits and, at the same time, requires the most investment.

Agencies can start by utilizing the GSA's Carbon Footprint and Green Procurement Tool in order to estimate how mobility will reduce their energy consumption and carbon footprint.

It is also important to recognize the unique needs of every workplace. There is no universal ratio of employees to hoteling stations, for example, or standard size of team collaboration rooms. Also, information technology options are wide-ranging and constantly evolving. Agencies should evaluate the nature of their work and the needs of their employees in order to prepare for mobility in their workplace.

MAKING AN IMPACT

As the largest owner and occupier of real estate in the country, the Federal Government has the opportunity and the responsibility to manage its real estate efficiently. Even small improvements to real estate utilization and environmental footprint across the entire portfolio can have substantial impacts. Significant improvements, such as mobility, across the portfolio can have an even greater impact. If mobility reduces real estate by 30 percent, the government would be able to shed over 106 million square feet of real estate from GSA's portfolio alone and achieve a 39% reduction in its carbon footprint. By embracing mobility as an integral part of workplace and real estate strategy, agencies can not only reduce real estate, but also realize tremendous financial savings, improve employee satisfaction, increase collaboration, and help achieve their greenhouse gas reduction targets.

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[13] For more information about other current environmental mandates, refer to GSA's white paper, *Assessing Green Building Performance: A Post Occupancy Evaluation of 12 GSA Buildings.* It summarizes the study of the same name that represents one of the first steps towards a whole building approach to gathering data. The study gathered and analyzed information for environmental metrics such as transportation, energy, water, waste generation, and recycling.

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FOR MORE INFORMATION

- **Cost per Person Model**
  http://www.gsa.gov/cppm
- U.S. General Services Administration, Office of Governmentwide Policy: Real Property Performance Results: Workspace Allocation Study, May 2010.
- **Energy Policy Act of 2005**
  http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h6enr.txt.pdf
- **Executive Order 13423 – Strengthening Federal Environmental, Energy, and Transportation Management**
  http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_BASIC&contentId=22395
- **Energy Independence Security Act of 2007**
  http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf
- **Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance**
  http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf

CARBON CALCULATION ASSUMPTIONS

We would like to thank the technical staff who developed and implemented the GSA's Carbon Footprint and Green Procurement Tool for their expertise and guidance. The carbon calculations for the scenarios of this white paper are based on the following assumptions:

1. All scenarios assume a total of 1,000 employees. The Baseline, Scenario 1, and Scenario 2 assume a typical ratio of 200 square feet per person, for a total area of 200,000 square feet. Scenario 3 assumes a 30 percent reduction in real estate and total area of 140,000 square feet.

2. Electricity is the sole source of energy for building operations, and energy consumption is similar to a typical agency building in Washington, DC. The building does not house a data center.

3. An average employee commute distance is 15 miles one way, and all commuting occurs during peak hours. Half of commuting employees use public transportation - this percentage corresponds to the percentage of federal employees who receive transit benefits. Of those employees, half use buses, and the other half use rail. In addition, 60 percent of buses use diesel and 40 percent use natural gas.

GSA's Carbon Footprint and Green Procurement Tool follows the Greenhouse Gas Protocol supported by the World Resources Institute and the World Business Council for Sustainable Development. The following assumptions and emission factors were used:

1. Electricity: The electricity emission factor is a region-specific factor determined by zip code and the Emissions and Generation Resource Integrated Database (eGRID).

2. Car Commute: The gasoline emission factor is 19.564 lb CO_2 per US gallon. This calculation assumes that employees on average work 48 weeks per year, and the average vehicle fuel efficiency is 18 mpg.

3. Rail Commute: The emission factors for rail range from 0.372 lb to 0.359 lb. CO_2 per passenger mile.

4. Diesel Bus Commute: The diesel emission factor ranges from 0.17 lb to 0.66 lb CO_2 per passenger mile.

5. Natural Gas Bus Commute: The natural gas bus emission factor is 0.55 lb CO_2 per passenger mile.

PROJECT CREDITS

Supporting research for this document included interviews and presentations from agencies, telework experts, and business industry leaders.

We would like to thank the presenters at the 2009 Telework Town Hall, in Washington, DC (www.teleworkexchange.com), and the many other individuals for their contribution and participation:

Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)
Noah Nason III

Defense Information Systems Agency (DISA)
Aaron Glover

Federal Emergency Management Agency (FEMA)
Alice Carr, Eric Kretz

GSA Public Buildings Service
Michael Bloom

Hewlett Packard
Chris Hood

Internal Revenue Service (IRS)
Lisa McLane, Elizabeth Robinson

Jet Propulsion Lab (JPL)
Tom Soderstrom

National Aeronautics and Space Administration (NASA)
Bert Ulrich

Office of the Treasury Inspector General for Tax Administration
Peggy Evans

U.S. Patent and Trademark Office (USPTO)
Danette Campbell

U.S. Department of Labor (DOL)
Pamela Budda, Joe Ganci

U.S. Office of Personnel Management (OPM)
Kimberly Wells

United States Marine Corps (USMC)
David Clifton, John Kinley

Virginia Department of Taxation
Janie Bowen, Juliann Krogh

U.S. General Services Administration
Public Buildings Service
1800 F Street, NW
Washington, DC 20405

www.gsa.gov

ACKNOWLEDGEMENTS

GSA
Carolyn Austin-Diggs
Patricia Cheng
George Deryckere
Michelle Farrell
Frank Giblin
Wendell Joice
Stanley Kaczmarczyk
Kevin Kampschroer
Kevin Kelly
Robert A. Peck
Kevin Powell
Ray Wynter

Business Place Strategies
Paul Heath
Clark Sept

Gensler
Erin Cubbison
Lisa Hsiao
Brenden Mendoza
John Parman
Kevin Rosenstein
Gervais Tompkin

JHH Associates
Judith Heerwagen

NOBLIS
Mile Corrigan
Robert Wassmann
Brian DeRocher

Paradigm Research International
Nancy Gillis