



Telecommuting/Telework Programs:

Implementing Commuter
Benefits Under the
Commuter Choice
Leadership Initiative

Telecommuting/Telework

Implementing Commuter Benefits under the Commuter Choice Leadership Initiative

- Telecommuting, also known as telework, is a work arrangement in which employees work part- or full-time from alternate locations, such as their homes or telework centers.
 - Telecommuting has a number of important benefits for employers: it can serve as a valuable recruitment and retention tool, increase employee morale and productivity, and reduce costs through office space and parking savings.
 - Current estimates show that over 10 percent of the U.S. workforce telecommutes either part- or full-time. Improvements in information technology and remote computing access make this number likely to rise in the future.
 - Studies have shown that telecommuters tend to drive less on the days they telecommute, which reduces both road congestion and air pollution.
 - Telecommuting is one of the primary benefits under the Commuter Choice Leadership Initiative (CCLI). Employers must offer at least one of three primary benefits to their employees in order to participate in the CCLI (the other two are transit or vanpool benefits and parking cash out).
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COMMUTER CHOICE LEADERSHIP INITIATIVE

The National Standard of Excellence for Commuter Benefits

This document is one in a series of Commuter Choice Leadership Initiative briefing papers designed to help employers implement commuter benefits.

The U. S. Environmental Protection Agency (EPA) and the U. S. Department of Transportation (DOT) have established a voluntary National Standard of Excellence for employer-provided commuter benefits.

Commuter benefits help American workers get to and from work in ways that cut air pollution and global warming pollution, improve public health, improve employee recruiting and retention, improve employee job satisfaction, and reduce expenses and taxes for employers and employees. Participants in the Commuter Choice Leadership Initiative (CCLI) agree to meet the National Standard of Excellence, and qualify as Commuter ChoiceSM Employers. CCLI participants agree to:

- Centralize commute options information so that it is easy for employees to access and use;
- Promote the availability of commuter benefits to employees;
- Provide access to a guaranteed ride home program;
- Provide one or more of the following primary commuter benefits:
 - ✓ Vanpool or transit benefits of at least \$32.50 per month
 - ✓ Parking cash out of at least \$32.50 per month
 - ✓ Telecommuting program that averages six percent of daily work force
 - ✓ Other option proposed by employer and agreed to by EPA
- Provide three or more of the following additional commuter benefits:

✓ Ridesharing/carpool matching	✓ Employee commuting awards programs
✓ Pre-tax transit/vanpool benefits	✓ Discounts/coupons for bicycles and walking shoes
✓ Shuttles from transit station	✓ Compressed work schedules
✓ Parking at park-and-ride lots	✓ Telecommuting
✓ Provision of real-time transit information	✓ Lunchtime shuttle
✓ Preferred parking for ridesharers	✓ Proximate commute (working closer to home)
✓ Reduced parking costs for ridesharers	✓ Incentives to encourage employees to live closer to work
✓ Employer-sponsored vanpool or subscription bus programs	✓ On-site amenities (dry cleaning, etc.)
✓ Employer assisted vanpools	✓ Concierge services
✓ Secured bicycle parking, showers, and lockers	✓ Active membership in a Transportation Management Association (TMA) or similar organization
✓ Electric bicycle recharging stations	✓ Other options proposed by employer
- Exceed a minimum benchmark of either 14 percent of employees who do not drive alone to work or an average vehicle ridership (the number of vehicles divided by the *total* number of employees) of 1.12.

Please see the CCLI Agreement and Agreement Particulars documents for specific information about employer participation requirements.

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Disclaimer

EPA provides this briefing as a service to employers participating in the CCLI. Information about private service providers is intended for informational purposes and does not imply endorsement by EPA or the federal government.

The information presented here does not constitute official tax guidance or a ruling by the U.S. Government. Taxpayers are urged to consult with the Internal Revenue Service of the U.S. Department of Treasury or a tax professional for specific guidance related to the Federal tax law.

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TELECOMMUTING: A SUMMARY

Telecommuting is a workplace arrangement in which employees work part- or full-time away from the primary workplace. Most telecommuters work out of their homes, but a smaller number work out of "telecenters:" offices with communications access to the main workplace, but closer to the employee's home.¹

Most telecommuting is based on exchanging information via telephone and computer. Telecommuting has been increasing as communications technology improves and becomes cheaper, and as employers and employees have become more comfortable with it. However, many employees and employers have also begun to regard telecommuting as having a positive impact on employees through reducing long commutes. As a result, in addition to providing emissions benefits, telecommuting is also a valuable recruitment and retention tool for employers.

The term "telework" is generally interchangeable with telecommuting. However, some authors use the term "telework" for a broader category of employees who are able to work from any location (e.g., hotels, airports, client offices) using communications technology, and are not tied to a fixed location. The distinction between these terms may become more blurred with the growth of communications technologies. However, most surveys of telecommuting do not make this distinction, and accurate estimates of the number of teleworking employees are not available, so this paper uses the term telecommuting for both types of work.

BRIEF HISTORY

Telecommuting is linked to the proliferation and advance of telecommunications technology. Until the 1980s, most office arrangements required employees to be physically present to perform their jobs. However, with the ability to exchange documents over phone lines via modems, many jobs (in whole or in part) can be performed from remote sites. Such tasks as entering and analyzing data, writing and editing documents, and computer programming are no longer tied to specific locations. The term "telecommuting" was coined by Jack Nilles in 1973, during a period in which interest in the concept was high due to the growth in computer technology and the oil crises.

Telecommuting has increased dramatically over the past several decades, for several reasons: advances in computer and remote access technology, longer commutes, and the desire of employees to spend more time with family. However, the actual number of telecommuters is difficult to measure accurately because of varying definitions and the small sample size of many surveys. Current estimates from the International Telework Association & Council (ITAC) put the number of telecommuters in the U.S. at 16.5 million in 2000 (ITAC, 2000). According to the U.S. Department of Labor, 17.7 million non-agricultural workers worked on their principal job from home in 1997, the most recent year for which figures are available (Dept of Labor, 1999, table 3-10). These figures imply that approximately 12 percent of the workforce telecommutes at least occasionally. On the other hand, market research firm IDC puts the total number of home-based offices at 34.3 million, of whom only 8.7 million are classified as telecommuters (IDC, 2000).

¹ Telecommuting does not include the following employment arrangements: home-based businesses (small companies with their main offices co-located in a residence), work in branch offices, and employment in which the regular work location is not fixed (for example, truck drivers and airplane pilots would not be considered to be telecommuters).

EMPLOYER BENEFITS

Telecommuting can assist a business in several key areas.

Recruiting and Retention

Many employers are looking at telecommuting primarily as an employee benefit, not a cost- or space- saving measure. The literature abounds with anecdotal evidence that employees seek out jobs and firms with telecommuting possibilities:

Schilling [owner of telecommuting consulting firm TCS] cites the case of a competitor of American Express, one of TCS' earliest clients. "They didn't have any of the issues that ordinarily lead to a formal program," says Schilling. "So I [say], 'OK, we don't get it. Why do you want to do telecommuting?'" And they [say], 'Because American Express is doing telecommuting.' We are after the same people as it is, and we're starting to get an increased number of people coming through the door, and they ask us 'Do you offer work-at-home programs?' When we say 'No,' they say, 'Thank you very much.' So we have all this space, we have all these great things, we're rural, and the cost of telecom and network is under control, but we've got to offer this because those guys offer it." (Hotch, 1999)

In addition, many employers have found that telecommuting allows them to retain employees who would otherwise leave for personal reasons, such as moving out of the area or the birth of a child. Fitzer (1997) makes a typical case:

Some companies have come to view telecommuting options as important components of their competitive strategies for attracting and retaining valuable talent. For example, a Connecticut-based insurance company arranged for one of its most productive software programmers to telecommute from

Canada. The company calculated it was less costly to pay for the employee's regular office visits and for installation of the needed technology in the worker's home than to lose the programmer's business knowledge and creativity.

Cost Savings

Many companies find that telecommuting saves money in the long run, because cost savings can be achieved in a number of areas:

- Reduced rent costs if telecommuting employees use less office space;
- Reduced recruiting and retention costs; and
- Increased productivity for telecommuting employees.

Fitzer (1997) speculated that the net savings per telecommuting employee could reach \$12,000 annually:

Another powerful driver spurring the use of telecommuting is potential real estate cost savings from housing fewer employees on-site. These savings easily offset the expense of equipping telecommuters with hardware, software, and other needed supplies. June Langhoff, author of the recently published book, *The Telecommuter's Advisor*, says that employees telecommuting two days a week can save companies 15 to 25 [percent] in higher productivity, as well as decrease turnover, reduce space requirements, and decrease sick-time usage by two days, resulting in a total savings per employee of an estimated \$12,000 annually.

Increased Productivity

Many telecommuters report higher productivity while working from home, due to reduced workplace distractions. For example, according to the 1999 *Telemwork America National Telemwork Survey*, almost one-half of telecommuters

surveyed reported higher productivity at home than in the office (40 percent said their productivity was unchanged, while only 10 percent said their productivity had declined.) (Pratt, 1999) In addition, use of sick leave tends to decline when employees telecommute. This may be due to a several reasons: employees are less likely to call in sick for spurious reasons, less likely to need time off for doctor's appointments, and less likely to need time off because of a sick child.

Benefits at Individual Employment Sites

Employers that institute telecommuting programs may be able to reduce parking at their workplaces if the number or percentage of telecommuters is sufficiently high.

TAX CONSIDERATIONS

There are currently no federal tax incentives or implications for establishing a telecommuting program. Legislation introduced at the federal level would allow a \$500 tax credit for employers or employees who begin telecommuting over 75 days per year. Rep. Frank Wolf (R-VA) most recently introduced a bill in March, 2001 (a February, 2000 introduction of identical legislation died in committee), and companion legislation was introduced in the Senate by Sen. Rick Santorum (R-PA). The tax credit could be taken by either the employer or the employee, depending on who incurred the expense of setting up a home office.

For tax purposes, telecommuters are considered regular employees (not persons running a business out of a home). If a telecommuting employee lives in a different state than the employer's main office, s/he should consult a tax expert to determine applicable state tax laws. Generally, most telecommuters will not be eligible to claim the home-based office tax deduction. According to IRS regulations, in order for a telecommuter home office to qualify for the home office deduction, it must be regularly and exclusively used for

business, and the arrangement must be at the employer's request (i.e., if the telecommuter chooses to work out of the home for convenience, the deduction would not be allowed). (Flynn, 1999)

At the state level, Oregon allows employers to take a tax credit of 35 percent for investments made in telecommuting (i.e., costs of purchasing and installing office and computer equipment). The credit, which employers must be approved for in advance of their investments, is spread over a five-year period: 10 percent in the first two years, and five percent annually for the next three years. Telecommuters must work from their home or telework center at least 45 days per year to make the program eligible.

EMPLOYEE BENEFITS

Employees generally react very positively to telecommuting programs. The main benefit is commute time savings, which can amount to several hours per day or more. Employees can spend this extra time with their families, or on other personal needs.

Employees also enjoy the following benefits:

- **Decreased stress.** Many drivers find solo commutes in heavy traffic stressful. Telecommuting allows them to avoid traffic.
- **Reduced costs.** Telecommuters save on gas, depreciation, and general wear and tear on their vehicles.

WHEN TELECOMMUTING MAKES SENSE

Many disparate factors affect employers' ability to offer telecommuting, and the effectiveness of telecommuting programs. While the following discussion is not exhaustive, it covers the main factors.

Employers with Information Workers

Only employees who can perform their tasks away from the main workplace can telecommute. The U.S. Office of Personnel Management (OPM) suggests the following types of jobs as most suitable for telecommuting (OPM, 2001):

- Jobs that involve thinking and writing
- Data analysis
- Writing decisions or reports
- Telephone intensive tasks
- Computer-oriented tasks (data entry, web page design, word processing, programming, engineers)
- Payroll transaction processing
- Analysis-type work (investigators, program analysts, financial analysts)
- Engineers
- Architects
- Researchers
- Customer service jobs

As the list above describes many white-collar jobs, offices with high concentrations of such workers are good candidates for telecommute programs. On the other hand, jobs that require face-to-face communication, access to on-site materials or files (including confidential material), and site-specific occupations are not as amenable to telecommuting. Within companies whose primary occupations are not right for telecommuting, there may still be positions with the potential to telecommute (for example, a large construction company with an in-house human resources department might allow an employee in the payroll section to telecommute). There may also be positions whose duties would lend themselves to telecommuting on a part-time basis. In general, however, telecommuting has the most promise in offices with large concentrations of information workers, whose outputs depend largely on computer access.

Established Employees

Because telecommuting requires supervising employees not at the workplace, telecommuting tends to work better for employers who are already assured of their employees' work quality and reliability. Most employers are reluctant to allow new employees to telecommute, because of concerns that they may not perform well or that they will not become sufficiently acquainted with the company's internal structure and culture. Similarly, at a very new company, the importance of face-to-face interaction among all employees may outweigh the potential benefits of telecommuting.

Employees with Personal Needs

Telecommuting may be used by employers to retain established employees who would otherwise resign for personal reasons (moving, child- or eldercare issues). In addition, some employers have found that disabled employees can be accommodated through telecommuting when physical access issues are problematic.

Competitiveness in a Crowded Employment Field

Many companies have begun to view telecommuting as primarily an employee benefit, rather than a transportation strategy or means to reduce costs. For example, one survey of 3,400 high tech workers in the Washington, DC area asked what employer perk they would most appreciate; the largest response (548 respondents, or 16 percent) was telecommuting, followed by training and flex-time. (Behr, 1999)

However, employers should also be aware that because not all positions are suitable for telecommuting, they may not want to characterize telecommuting as a "benefit." Rather, they may wish to publicize a telecommuting program or arrangement, so as to minimize the perception that telecommuting will be available to all employees.

IMPLEMENTATION ISSUES AND COSTS

This section addresses a variety of implementation issues, including supervision and evaluation.

Eligibility

An employer should establish guidelines for determining which employees can telecommute. There may be two components to eligibility: which activities within a company are suitable for telecommuting, and which employees have the job skills that make them eligible to telecommute. Even if a particular activity or position lends itself to telecommuting, the employee may not be allowed to telecommute until after a training period, or obtaining a certification. Telecommuting guidelines and policies should address both issues.

Amount of Time Spent Telecommuting

Few telecommuters spend their entire workweek off-site. One study (Varma, *et al.*, 1998) found that the average number of days worked at telework centers by California employees was 1.1 per week. Handy and Mokhtarian (1996), reviewing the research, found that the average number of days telecommuters spent working off-site was one to two per week. While this may vary with the type of work performed, most firms find that full-time telecommuting is far less common than occasional telecommuting.

Telecommuting Program Turnover

If programs are solidly implemented and telecommuters selected well, telecommuting programs are generally successful. However, a few studies suggest that some employees encounter problems with the arrangement and return to regular commuting. In a study of approximately 275 telecommuters at telework centers in California, 50 percent stopped telecommuting within nine months. (Varma, *et al.*, 1998) Most reasons were job-related (e.g., a change in position or request from

supervisor to return to a regular office schedule), rather than personal dissatisfaction with the arrangement. Also, turnover may be higher at telecenters than for home-based telecommuters, and some telecenter employees find it is just as easy to work at home.

Costs

Employers usually pay the costs of telecommuting arrangements for their employees. Costs might include computer equipment, networking access (including internet, intranet, and/or company servers), additional phone lines, fax machines and printers, and in some limited cases general office equipment (ergonomic chairs, files, cabinets, etc).

Costs to implement a telecommuting program will vary dramatically depending on the type of equipment currently owned by the employer; according to one recent article, "Starting from scratch, you'll pay anywhere from \$1,500 to \$30,000 for network server alone," in addition to monthly costs (Sandlund 2000b). Another study advised companies that average investment per employee would be \$3,000 to \$5,000, with an additional \$1,000 incurred in costs each year (Casco, 2000). JALA International's general estimate claims that the average employer will spend \$5,500 in establishing each individual employee as a telecommuter (estimate available at <http://www.jala.com/homecba.htm>). Most costs are depreciable, so the bottom-line costs will be less.

In addition, employers should consider liability issues, such as responsibility for lost data, theft of equipment, or damage due to power spikes, and insure telecommuters appropriately. There is a small field of telecommuting law that considers under what circumstances employers could be held liable for workplace injuries incurred in the employee's home (Sandlund, 2000a).

Cost Savings

Although implementing a telecommuting program requires investment, many find that it produces long-term savings. For example, telecommuting consultant JALA International estimates that the average business will achieve net benefits of \$6,400 in the first year of telecommuting, through a combination of increased productivity, reduced sick leave, decreased turnover rate, and reduced need for parking and office space (see www.jala.com/twctrcba.htm). ITAC (International Telework Association & Council) found that the equivalent values in 1999 were \$11,850. (Pratt, 1999)

Not surprisingly, cost savings vary. In a pilot project in which 60 employees at the Minnesota Department of Administration telecommuted for 12 months, supervisors reported no change in the use or amount of new office space needed. In addition, only eight percent of supervisors reported reduced operating costs; most reported no change. (Minnesota Office of Technology, 1997) Potential cost savings depend on many factors: current operating costs, investment in telecommuting infrastructure (for example, if a firm invests in a computer server for only one telecommuter, savings will be much less than if the same investment handled 10 telecommuters), and whether telecommuting is linked to changes in organizational structure.

Telecommuting and Use of Office Space

Telecommuting can be performed:

- From the employee's home;
- From an employer's satellite office close to the employee's home;
- From a telecenter (an office in which employees rent space for telecommuters); or
- Entirely remotely (from locations such as hotels, airports, or client offices).

Most telecommuting is currently done from the employee's home. According to ITAC's Telework America 2000 survey, only seven percent of telecommuters work exclusively from telecenters, while another four percent work from both home and telecenters. Entirely remote work is uncommon; it is most likely to be practiced by a mobile sales force or other employees who travel extensively.

In a "hotelling" arrangement, employees no longer have a permanent workspace in the main office, but are assigned an office based on their need for space. This arrangement can reduce rent costs, since several telecommuting employees can share a single office, on different days. This arrangement tends to work best when telecommuting employees use the main office infrequently, and need relatively few physical files—that is, they need only phone and computer access. However, there are many varieties of hotelling and space-sharing, and in some cases they are used by telecommuters in the office as many as three days a week.

Management Issues

Managing employees who are not at the workplace daily poses a number of challenges. Duxbury and Neufeld (1999) studied how workplace communication changed when employees began telecommuting, and reported that employees and managers raised three main issues:

- Communications between managers and employees became more formal (increased use of phone and memos, with a concurrent decrease in face-to-face meetings);
- Loss of informal office culture and decrease in the ability to make spontaneous work assignments and decisions;
- Perceptions by co-workers that the telecommuter was not working while at home (e.g., "Co-workers seem afraid to call me at home. They think they'll be bothering me.") and occasional jealousy of telecommuters.

These potential problems can be avoided through careful selection of telecommuting participants and training.

GUIDE TO IMPLEMENTATION

Telecommuting can reward businesses in terms of recruitment, retention, and cost savings.

However, implementing a telecommuting program involves a high degree of investment in information technology, trust in workers, changes in supervisory techniques and expectations, and support from management. The following suggested 12 steps are drawn from two sources: OPM and the American Health Information Management Association (AHIMA). The steps are meant as a rough guide for interested employers; specifics will necessarily vary from employer to employer depending on the size of the firm, the nature of the work, and the potential number of telecommuters.

1) *Designate a telecommuting coordinator and/or implementation committee.*

Before proceeding with a telecommuting project, key stakeholder personnel should be identified. This committee include representatives from human resources, information management, risk management, facilities management, and senior management, as well as employee representatives.

2) *Obtain support from senior management.*

Senior management should be involved and supportive from the inception of the program. Telecommuting may raise issues such as changes in supervisory techniques and productivity measurement that senior management should be aware of; in addition, telecommuting will involve both start-up and on-going costs.

3) *Determine employee interest.*

The program coordinator or committee should determine the extent of employee interest in telecommuting, perhaps through survey or orientation sessions. General parameters of a possible program could be discussed.

Two other groups should be considered at this time. First, unions should be included in the decision-making process. Employers sometimes encounter concern from unions, from fear that employees will be forced to work at home when they prefer to remain in an office setting, or that telecommuting may become a way to squeeze more work out of employees. Second, managers will benefit from orientation and education about telecommuting. Early involvement by managers may avoid the fear that telecommuting is something being "done to them," and can also alert the coordinator or committee to real or perceived problems.

4) *Explore which arrangement - home-based, hotelling, telework center, or other - will be most feasible and productive.*

Companies can set up telecommuting programs in many ways, as described above. The best arrangement for a particular employer will depend on many factors - the type of work (for example, data entry from home one day per week, or most time at sales and client meetings), the size of the company (will there be enough employees to make setting up or renting telecenter space economically feasible?), and the type of remote computer access needed.

If there are area telecenters, the committee should make a recommendation as to whether they are a possibility. The decision should be made with input from affected departments and senior management. Telecenters offer the advantage of being already set up with computing equipment and in many cases professional staff; on the other hand, fees may be several hundred dollars per month or more to use the facility one day per week.

5) *Identify specific positions appropriate for telecommuting arrangements.*

Not all positions are suitable for telecommuting. Generally the most likely positions for telecommuting are knowledge- and information-intensive positions (analysts, researchers, data entry, programming, etc.), positions that require outside meetings (sales representatives, etc), and other positions whose duties can be performed out of the office (telephone work, reading, writing). Positions that require face-to-face interaction with co-workers or clients (medical/nursing, receptionist, elementary school teaching), access to site-specific files (military personnel dealing with classified information), and other jobs that require presence in a particular location (photographer) are generally not be suitable for telecommuting. Also, telecommuting does not have to be all or nothing; many positions may require some face-to-face contact, but still be suitable for part-time telecommuting.

6) *Determine equipment, technology, security, and liability needs and costs.*

Telecommuting requires, in most cases, sophisticated information technology equipment to give employees access to company files, internal networks, e-mail, and the like. In addition, many employees may require additional phone lines, fax and printers, and standard office equipment. The information technology department should assess the company's current infrastructure and determine whether upgrades or new equipment are needed, and what level of security should be provided. Employees should have access to similar equipment that they have in the office to maintain the same level of productivity. In general, the older the current equipment, the more costly and difficult it will be to implement telecommuting.

The technical issues around remote access are too complicated to explore in depth in this paper. A useful list of articles reviewing broadband and DSL options can be found at <http://www.gilgordon.com/resources/reports.htm> Also, the ITAC e-Work Guide has a chapter dedicated to technology issues; it is available at http://www.telecommute.org/brp/ework_guide.shtml

Cost estimates for equipment procurement and installation may take time to prepare, especially if a company has complex security or proprietary information issues to address.

In addition, employers should explore potential liability issues regarding loss or damage to home-based employer-owned equipment, loss of valuable company information through computer failure or hacking, and workplace injuries that occur off-site. The company's insurance policies should be updated accordingly.

7) *Prepare and present a telecommuting proposal.*

Before beginning any telecommuting program, the following parameters should be well-defined:

Pilot program. Will there be a pilot program to be evaluated before an organization-wide adoption of telecommuting? If so, these guidelines should be drawn up.

A telecommuting policy for the organization. This would define eligible positions, guidelines for participation (e.g., an employee must work full-time for a year before becoming eligible, or have certain defined work skills), financial responsibility (e.g., the employer pays for equipment and installation, but the employee agrees to pay for additional insurance against theft), and any change in status or benefits for telecommuters.

Develop a telecommuting agreement. Both OPM and AHIMA recommend formal agreements between employers and individual employees who want to telecommute. The agreement should include such topics as trial period, official duties, work schedule, timekeeping and leave, equipment and supplies (including ergonomic standards and other OSHA issues), security and liability, worksite criteria, costs, injury compensation, and performance evaluation. Sample agreements are available at:

- www.opm.gov/wrkfam/telecomm/Tele-Sam.htm#Sample%20Agreement
- www.ahima.org/journal/pb/99.02.ex3.html
- www.telecommute.org/brp/ework_guide.shtml

Screening criteria. Subject to equal employment opportunity criteria, an employer should screen potential telecommuters via survey form or personal interview. Criteria might include the type of job duties to be performed, the degree to which the employee can be evaluated based on work products, not physical presence, and suitability of employee's home as office space. The company should have a clear policy on telecommuting eligibility to diminish perceptions or possible accusations of favoritism or discrimination.

Similarly, employees should screen themselves if the home situation is not suitable in some way, or if the person does not have the self-discipline needed to work from home. Also, employees should be clear that they cannot both telecommute and care for dependents simultaneously.

Evaluation criteria. If the employer sets up an initial pilot program before implementing a full-scale telecommuting program, evaluation criteria should be selected. These could include employee productivity (along with basis for measurement), employee satisfaction, client or customer satisfaction (for example, if a customer service representative begins working from home), and degree to

which other employees in a section are affected by a telecommuter (e.g., is other employees' work hindered by the telecommuter's absence) If a formal evaluation is to be completed, baseline benchmarking data should be established so that before-and-after comparisons can be made.

8) Take final steps toward implementation.

This includes procuring and installing equipment, selecting telecommuters, disseminating telecommuting guidelines and policies, signing telecommuting agreements, and setting an implementation date.

9) Train all personnel involved.

Telecommuting involves new ways of working as well as supervising and evaluating, so participating personnel - whether employees or supervisors - should receive training. Some companies even set up a simulation lab in which potential telecommuters can work for several weeks under conditions similar to their potential home office set-up: no face-to-face contact with other employees and remote computing access. This allows them to determine their suitability for telecommuting.

In addition, a company may wish to develop a training program for supervisors so they will be familiar with the demands and issues raised by telecommuting - lack of direct personal contact, potential difficulties with on-site employees, and measuring productivity. Some consider supervisor training as important as employee training.

10) Administer pre-telecommuting evaluation.

If a before-and-after benchmarking survey is to be done, the pre-telecommuting survey should be administered at this point, before program implementation begins.

11) Implement the program.

Once equipment, guidelines, agreements and training have been signed and completed, telecommuting can be implemented.

12) Assess results.

After a period of time, the firm should assess the program's effectiveness. If a before-and-after survey was carried, the after data should be assessed. Those results, as well as other measures of cost, productivity, and morale, should be compared to evaluation criteria established earlier. This will form the basis for determining whether the program should be continued in its current form, expanded, or otherwise modified.

Implementation Costs and Administrative Burden

Unlike many other commuter benefit programs, telecommuting involves a major commitment of both financial and staff resources. The heaviest burdens tend to fall on two groups. Supervisors must revise their methods of managing employees out of their direct contact and deal with the tensions that can arise between employees at the workplace and those working remotely. However, this can yield benefits, according to one telecommuting expert:

In fact, we consistently hear that managers who manage remotely report that doing so makes them better managers not only of the remote workers but also of their in-office staff. (Gordon, 2001)

Information technology departments will be responsible for carrying out an IT gap analysis to determine telecommuting infrastructure start-up needs and costs and providing ongoing support to telecommuters, who rely more heavily on computer networks and remote access.

EMPLOYER QUESTIONS AND ANSWERS

These questions might commonly be asked by an employer (e.g., a human resources administrator or business manager) considering a telecommuting program. Several are variations of each other.

Question: How productive are employees when they are not in the office?

Usually as productive as they are in the office, if not more so. Many telecommuting employees report that they experience fewer distractions. Some employers have been pleasantly surprised to find that employees are more accessible when they are working from home, because managers know exactly where they are, and they have fewer meetings and/or spend less time with co-workers.

Question: How difficult - and costly - is it to establish and administer the program?

It depends on several factors: the scale of the program (size of company and number of employees who will telecommute), the type of information technology selected, and the goals of the program (will telecommuting mean a few employees performing their regular duties out of their homes, or a more fundamental re-engineering of the workplace?) Large-scale programs require substantial commitment for planning and implementing the program, and the involvement of the information technology departments will be much more significant and critical. In addition, telecommuting programs require continuing investments of both money and staff time.

Question: How does working at home affect dependent care issues?

Telecommuting employees should not expect to simultaneously work and care for their dependents (children or elders). Although many employees who telecommute do so because they prefer to be near home in case of an emergency, or to have additional time to spend with their families,

employees must make arrangements for dependent care. This understanding should be part of a formal telecommuting agreement, so that employees are aware of the need to separate dependent care from work.

Question: Who pays for charges such as increased electricity and telephone costs?

This is generally covered under the telecommuting agreement. In the federal government, the OPM guidelines allow reimbursement for official telephone calls, but not for increased electricity costs resulting from use of computing equipment.

Question: Is there an ideal percentage of employees who should telecommute?

No. Some firms have only a small percentage of employees telecommuting; others have near-virtual offices, where everybody works independently. It depends on the nature of the business, the type of work performed by the employees, employees' suitability to working independently, the company culture, and the technological capabilities available.

Question: How does telecommuting affect morale and productivity among workers who continue to work on-site?

It depends on a number of factors, including the number or percentage of telecommuters and their roles within the office, how their work affects other co-workers (i.e., is work collaborative or independent? Do co-workers require face-to-face interaction?), and how well supervisors manage the transition to telecommuting. Some employers have found feelings of jealousy and resentment from on-site co-workers who may believe the telecommuter is not really working. Others find that on-site workers have no interest in telecommuting themselves and do not mind their colleagues' absence. Supervisors must take care to ensure that all employees, regardless of location, are selected and treated equitably and with simi-

lar expectations. Also, most telecommuting guides recommend that even full-time telecommuters come to the office periodically to establish and maintain personal relationships with colleagues and supervisors.

Question: Do employees and supervisors need training before starting a telecommuting arrangement?

Training is generally a good idea, because of the major change in the working relationship and risk management issues related to telecommuting. Some guidelines even recommend setting up a simulation for employees who want to telecommute, so that they can experience remote work for several weeks and judge whether they would be suitable candidates for the arrangement. Supervisors might also be trained in management techniques for distance employees, such as how to manage by results and assess productivity.

Question: Can I require employees to telecommute?

Although private employers may require telecommuting as a condition of employment for certain positions, most guides do not recommend it. Telecommuting has become an employment perk, and forcing employees to telecommute may remove that status. Further, while an employee's position may be suitable for telecommuting, his or her personality may not be. Some telecommuters complain of isolation, and being "left out of the loop." Some begin telecommuting with high hopes and find that they have a hard time managing their time, that there are too many distractions at home, or that that casual contact with colleagues was more important to their work than they realized.

OPM regulations prohibit federal agencies from requiring an employee to telecommute.

Question: Do any state or local governments offer incentives for doing this?

Some regional organizations offer technical assistance for implementing telecommuting programs; see below under Associations and Contacts for more information. In addition, the state of Oregon offers a tax credit for implementing telecommuting programs; see above under the Tax Considerations section for more information. In spring 2001 Virginia introduced a Telework!VA pilot program through which employers in northern Virginia could receive state reimbursement for certain telework start-up or expansion costs, up to \$35,000 over two years.

EMPLOYER CASE STUDIES

New York City, New York - Merrill Lynch

Merrill Lynch, an investment services firm, has over 400 employees in a telecommuting program. Employees wishing to participate must first complete a formal training program, which includes a detailed employee proposal outlining their work schedule and home office needs. They also participate in a series of meetings with both supervisors and the firm's alternative work arrangements group. Finally, employees must go through a two-week simulation at a company lab, working on similar projects with similar equipment to get a first-hand feel for what telecommuting will be like.

A *Fast Company* article explaining the program points out four lessons learned for implementing a telecommuting program:

- The importance of keeping up ties with colleagues;
- Organizational skills;
- Creation of new routines to replace office routines; and
- A well-equipped and ergonomic home office.

The article notes that for telecommuters, productivity has increased and turnover decreased, although no numbers are provided. (Chadderdon, 1997)

Minneapolis, Minnesota - Sopheon Resource Network Corporation

Sopheon, an information services company, began a telecommuting program in 1994 after the loss of two valued employees due to a move and a long commute. The program currently encompasses 27 percent of a workforce of over 100 employees. There are various categories of telecommuters, including mobile workers, virtual home office, hotelling, and flexible scheduling (part-time). The national sales force was effectively telecommuting prior to the current program; the pilot program was extended to research staff.

Benefits to the company include improved employee morale and competitive advantage. There is no difference in productivity between telecommuters and on-site employees.

The company provides different computers and connectivity to employees depending on their job. In order to minimize dependence on information technology staff, who experienced a significant increase in workload after program inception, all telecommuters must complete a hardware/software certification program before beginning to telecommute. Telecommuting employees receive a furniture allowance; purchases must meet company ergonomic guidelines. If an employee leaves the company within one year of beginning to telecommute, s/he must repay 100 percent of the computing start-up costs and 50 percent of the furniture costs.

The program has become more formalized since its inception. For example, a Telecommuting Task Force reviews employee requests to telecommute. Employees wishing to begin telecommuting must complete a formal agreement and have a home site evaluation. Managers have also had to learn to include telecommuters in office decisions and

team meetings. Because some telecommuters had complained of isolation, there are monthly telecommuter conference calls, and the company brings all full-time telecommuting employees, many of whom live outside the area, into the office once or twice yearly. (MITE, 1999)

New Jersey - Pharmaceutical Marketing Firm

A company that provides marketing and distribution for the pharmaceutical industry implemented a telecommuting program for its 20-member sales force. The impetus to institute the program came from the firm's executive board, which thought that a move to telecommuting would increase productivity and sales. The program required a major upgrading of the firm's information technology infrastructure to allow remote access and automation of sales tracking data that had previously been entered manually. The information technology department had to hire two new employees to plan and implement the project; the implementation period lasted six months.

Not all members of the sales force were able to make the mandatory adjustment to telecommuting; two were terminated, partly due to poor records and partly due to their failure on qualifying tests to measure their ability to use the new technology. Two others requested and received early retirement. Those who remained were often reluctant to ask the IT department for assistance, because of embarrassment at their unfamiliarity with the technology. However, the remaining sales people became more productive, because a higher proportion of their time was spent on sales. The firm estimated that sales increased approximately 18 percent per year for the first three years of the project, and revenues increased 21 percent. The nature of sales work changed as well; where previously the sales force had operated largely independently from the main office, their new technological capabilities gave them continuous access to up-to-the-minute information. As the case study explains:

The program affected every level of the organization. At the strategic level, the program helped the company maintain existing accounts, develop a new image, enhance relationships with clients, increase forecasting capabilities, and improve responsiveness. At the tactical level, the program helped increase management control, improve resource management, and promote accountability. At the operational level, the program freed more time for sales, thus increasing productivity. It enabled high-quality presentations, created a new information flow with clients, and simplified business procedures. Any negative impact on IT personnel and sales representatives, while costly, was only short term. Real-estate savings and other benefits of having individuals work remotely were simply "icing on the cake."

Average cost for a new telecommuter was approximately \$5,600 to \$5,800, with annual support costs of \$1,000. (Net cost per telecommuter was \$25,500 during the first year, because of the price of the new technology infrastructure, but costs dropped as telecommuting increased.) The firm saved \$183,000 in rent because it was able to close one branch office and avoid an expensive move at the main office. Finally, the firm saved approximately \$35,000 annually in clerical costs, because the new technology eliminated data entry functions.

The company also identified three unexpected consequences of the project:

- Twelve non-sales employees began telecommuting part-time;
- The new cost accounting system, originally intended for exclusive sales use, became the company's main cost accounting system; and
- Managers were better able to track sales activity and make sales predictions.

After several years almost one-quarter of the company's 150 employees were telecommuting

either part- or full-time. The start-up costs of the new information technology infrastructure were recouped in the same period. (Watad and DiSanzo, 2000)

Minneapolis, Minnesota - Abbott Northwestern Hospital

Abbott Northwestern Hospital began a pilot program in 1994 to allow some of its 51-person medical transcription staff to telecommute. The program began with three full-time telecommuters, and had over 30 telecommuters by 2001. The hospital found that medical transcription was a good fit for telecommuting because productivity could be quantified: minutes of dictation per hour. After the program had been in place for four years, telecommuters were found to be more productive than on-site employees: the 38 percent of the staff who telecommuted produced 46 percent of the output. The increased productivity was attributed to fewer distractions and side projects within the office.

Abbott's telecommuters do so full-time. However, most telecommuters come into the office on a quarterly basis, either for formal meetings or to re-establish contacts with colleagues. Both telecommuters and supervisors have found that full-time telecommuting forces them to be more efficient in managing their time - instead of making several phone calls during the course of a day, a supervisor and telecommuter may instead handle several issues in one conversation.

The hospital committed to providing telecommuters with the same standards of equipment that on-site employees enjoy, but early in the program it was assumed that outfitting telecommuters with appropriate equipment would be a one-time cost. However, it was found that upgrading and maintenance were ongoing costs.

Telecommuters at Abbott have high job satisfaction and loyalty. Although supervisors feared that the program might cause resentment among

employees who did not telecommute, many employees chose not to telecommute. (MITE, 1999)

Vienna, Virginia - Southern Management Corporation

Southern Management Corporation, a residential property management firm, initiated a pilot telecommuting project at its suburban Washington, DC headquarters, which houses 75 of its 1000 employees. Ten employees participated in the pilot program; their duties involved mostly phone-related work, writing and editing, data management, and general administration. Internal telecommuting guidelines address eligibility, work schedules and planning, performance measurement, customer and colleague support, home office set up, equipment and supplies, proprietary information, and taxes and insurance.

The company spent \$16,500 to set up its telecommuters, and another \$5,300 in indirect staffing costs over a six-month period. A survey completed after the program was implemented revealed that telecommuters reported higher productivity, better morale, less stress, and good support from managers and co-workers. The main complaint from supervisors was that meetings became more difficult to schedule (most telecommuters worked from home or a satellite office two to three days per week). (Washington Metropolitan Council of Governments, 2001)

Multiple Locations - Davis Wright Tremaine LLP

The law firm Davis Wright Tremaine became a telecommuting firm in 1990, investing between \$4 and \$5 million in technology and equipment. Many of the firm's 350 lawyers take advantage of the ability to telecommute, as do paralegals and office managers. With offices in both East and West Coast locations, as well as China, lawyers in one office often work on cases in another geographic area - or example, a group of health

care lawyers in North Carolina have clients throughout the country.

The firm has found that employees generally become more productive when they begin telecommuting. One lawyer estimated that he has added 200 billable hours per year simply through the ease of working out of his home. A financial analyst who works at home with two computers can use one for budget numbers while the other is printing a monthly report; she covers a workload that would typically require 1.5 employees. Although law firms have traditionally been averse to telecommuting because of the paper and legal references involved, the firm has found that needed opinions and cases are increasingly available online through either commercial providers or the courts. Most lawyers find that they need access to a law library only occasionally.

Perhaps surprisingly for a law firm, Davis Wright Tremaine does not have a detailed or formal telework policy. Telecommuting requests are handled on a case-by-case basis. The firm's own employment lawyers say that telecommuting requires more common sense than complex rules.

SERVICES THAT SUPPORT IMPLEMENTATION

Many regional and local governments provide services to help employers implement telecommuting programs. Metropolitan planning organizations (MPOs), city and county transportation agencies, transportation management associations (TMAs), and transportation management organizations (TMOs) throughout the U.S. provide assistance to employers in starting and maintaining transportation demand management programs such as telecommuting. They often provide information to employers about options to reduce driving to work, implementation issues, and local programs that support employer initiatives. Some of these resources are listed in the next section, Associations and Contacts.

Depending on the nature of the work, the ability to telecommute effectively may be linked to the availability of high speed internet connections. Access to these services varies throughout the country.

ASSOCIATIONS AND CONTACTS

This section includes information on regional and national groups that EPA and regional, state, and local governments might wish to utilize for expertise in understanding, promoting, or providing technical information on telecommuting. Individual employers are directed to contact EPA, their local MPOs, telecommuting consulting firms, or other groups that provide services to support telecommuting implementation.

Organizations That Promote Telecommuting

International Telework Association and Council
204 E. Street N.E.
Washington, DC 20002
Tel: 202-547-6157
Fax: 202-546-3289

www.telecommute.org

The International Telework Association and Council (ITAC) is a membership organization for businesses that sponsors research and surveys on telecommuting. ITAC maintains an extensive list of member consultants, available at www.telecommute.org/resources/consultant_members.shtml.

The American Telecommuting Association
1220 L Street, NW, Suite 100
Washington, DC 20005
Tel: 800-ATA-4-YOU

www.knowledgetree.com/ata.html

The American Telecommuting Association (ATA) is a membership organization whose members are employees who telecommute.

National TDM and Telework Clearinghouse
University of South Florida
4202 E. Fowler Ave.
CUT100
Tampa, FL 33620-5375
Tel: 813-974-3120

www.nctr.usf.edu/clearinghouse/

The National TDM (Transportation Demand Management) and Telework Clearinghouse is a compendium of research and information on TDM and telecommuting. TDM refers to a set of programs and policies that are designed to make the best use of existing transportation resources without additional infrastructure investment. Much of the Clearinghouse information is available electronically at their website. The site contains information for employers interested in establishing various kinds of trip reduction programs, including telecommuting.

Clean Air Council
135 South 19th Street Suite 300
Philadelphia PA 19103
Tel: 215-567-4004
Fax: 215-567-5791

www.cleanair.org/green/index.html

The Clean Air Council supplies information on telecommuting as a means to reduce air pollution.

National Environmental Policy Institute
Shelley Rappaport, Project Manager
1401 K Street, NW
Suite M-103
Washington, DC 20005
Tel: 202-857-4784
Fax: 202-833-5977

www.ecommute-nepi.org

The National Environmental Policy Institute (NEPI) administers the eCommute pilot project in five cities (Washington, Denver, Philadelphia, Houston, and Los Angeles) to encourage businesses to participate in telecommuting. Businesses can gain tradable emissions credits through implementing telecommuting programs and calculating their emissions reduction. The project began its second phase in January 2001 and runs through December 2002.

Online Resources

Several other private firms and organizations have online information regarding telecommuting; the list below is a sample.

www.gilgordon.com

Gil Gordon Associates maintains a web site with a wide variety of information, including links to research articles and "how-to" tips.
www.jala.com

JALA International is a consulting firm founded by Jack Nilles, who originally coined the terms "telecommuting" and "telework."

www.workathomesuccess.com/telecomm.htm

This site is aimed more at employees wishing to being telecommuting, but it also offers advice to employers thinking of implementing telecommuting programs.

Regional Resources

Some regions have programs offering technical assistance to local businesses that are interested in setting up telecommuting programs. The type of assistance offered depends on the program; it may include technical assistance tailored to a company's individual needs, presentations for business audiences on telecommuting issues, and/or compilations of case studies of other area employers. Several of these programs are listed following:

Atlanta, GA

Metro Atlanta Telecommuting Advisory Council
704 Beacon Cove
Lawrenceville, GA 30043
Tel: 770-831-6630
www.matac.org

Arizona

Valley Metro
302 N First Avenue
Suite 700
Phoenix, AZ 85003
Tel: 602-262-7433
www.valleymetro.maricopa.gov/telecommute

Colorado

Telework Colorado
Tel: 303-458-8353
www.teleworkcolorado.org

Connecticut

Telework Connecticut
C/o Rideworks
389 Whitney Avenue
New Haven, CT 06511
Tel: 203-777-RIDE
Fax: 203-773-5014
www.telecommutect.com/

Houston, TX

Commute Solutions
Houston-Galveston Area Council
P.O. Box 22777
3555 Timmons Lane
Houston, TX 77227
Tel: 713-627-3200
Fax: 713-993-4508
www.commutesolutions-hou.com/telework/index.htm

Los Angeles area

Southern California Economic Partnership
21865 E. Copley Drive
Diamond Bar, CA 91765
Tel: 909-396-5757 Fax: 909-396-5754
the-partnership.org

Minneapolis, MN

Midwest Institute for Telecommuting Education
1900 Chicago Avenue
Minneapolis, MN 55404
Tel: 612-752-8010
Fax: 612-752-8001
www.mite.org

Oregon

Oregon Office of Energy
625 Marion Street, NE
Suite 1
Salem, OR 97301
Tel: 503-373-7560

www.energy.state.or.us/telework/teletax.htm

Seattle, WA

Commuter Challenge
1301 Fifth Avenue
Suite 2400
Seattle, WA 98101-2611
Tel: 206-389-8656
www.commuterchallenge.org

Washington State

WSU Cooperative Extension Energy Program
925 Plum Street SE, Bldg. #4
P.O. Box 43165
Olympia, WA 98504-3165
Tel: 360-956-2178
Fax: 360-956-2217
www.energy.wsu.edu/telework/

Washington, DC/Northern Virginia

Commuter Connections
777 North Capitol Street, NE
Suite 300
Washington, DC 20002
Tel: 202-962-3286
Fax: 202-962-3202
www.mwcog.org/commuter/telresctr.html

Commuter Connections also administers the Telework!VA financial assistance program for employers located in Northern Virginia, and administers the eCommute pilot program with the National Environmental Policy Institute (see Organizations that Promote Telecommuting).

Commuter Choice Leadership Initiative

For more information on the Commuter Choice Leadership Initiative, contact the Commuter Choice Hotline at 888-856-3131, or see www.commuterchoice.gov

EMISSIONS AND TRANSPORTATION BENEFITS

Telecommuting has great potential to reduce vehicle travel and emissions of air pollutants and greenhouse gases, because it eliminates many commuting trips. Most studies of the air quality and emissions benefits of telecommuting agree that telecommuters drive significantly less when telecommuting. That is, the vehicle miles traveled (VMT) reduced are not usually replaced with more local non-work driving.

A review of the telecommuting research by the National Environmental Policy Institute found that the average round-trip commute distance for telecommuters is 36.1 miles, and that on the days they telecommute they saved an average of 26.3 miles. However, only 74 percent of telecommuters drive alone, so that even on the days they telecommute, total vehicle miles traveled may remain unchanged (for example, if the telecommuter rides with a carpool). (NEPI, 2000)

The two studies that looked at total travel by telecommuters (including non-work trips on days they telecommute) found that the average number of miles traveled per day was 52.9 before telecommuting, and 13.1 miles per day on telecommuting days. (NEPI, 2000)

A study using travel diaries found similarly positive results. An evaluation of the Puget Sound (Washington State) Telecommuting Demonstration project compared a control group of non-telecommuters to a group of telecommuters, and telecommuting days to non-telecommuting days. Telecommuting had demonstrable effects in reducing VMT and emissions. On telecommuting days, the number of daily trips decreased by 30 percent, VMT decreased by 63 percent, and the number of cold starts decreased by 44 percent. A "cold start" is particularly problematic for emissions, because the engine and emissions control systems work well only after warming up. A substantial portion of a cars' total trip emissions occur at start-up, so avoiding a trip altogether is far more "valuable," from a pollution perspective, than shortening the trip. The study calculated, using an emissions model, that for each telecommuting day, the telecommuter's vehicle released 50 to 60 percent less pollutants than if the telecommuter had worked in the office. This includes additional non-work trips made while at home - telecommuters drove less on the days that they telecommuted than they did on regular commute workdays.

While this study concluded that telecommuting has a demonstrable effect on emissions, it also noted several reasons why more widespread telecommuting might not produce proportionally larger results. First, telecommuters had average commutes 2.5 times longer than the control group. Indeed, this is probably one of the reasons this group chooses to telecommute, because they save more time by not commuting.

This implies that as telecommuting increases, and telecommuters' commute length falls, the relative benefits produced by new telecommuters will fall somewhat-although they should still be positive.

Second, the benefits are confined to the days telecommuted; if people telecommute only one day per week, those benefits amount to only 20 percent of the potential benefit of telecommuting five days per week. Finally, the study notes that emissions benefits will differ with the time of year, because atmospheric conditions affect both the amount of pollutants released by vehicles and the formation of ozone. (Henderson, et al, 1996)

Telecommuting is one of the most effective transportation demand management (TDM) emissions reductions measures. A study done by the Metropolitan Washington Council of Governments of four transportation emission reduction measures found that its Telework Resource Center (a program that assisted businesses in implementing telecommuting) was the most effective of the four, reducing the number of vehicle trips by almost 35,000 per day. The program was also estimated to reduce NOx emissions by .9 tons per day, and VOC by .5 tons per day. However, the evaluation also noted that the effectiveness of telecommuting as a measure to reduce emissions is limited by two factors. First, although it was predicted that telecommuters would work remotely 2.65 days per week, the average was only 1.59 days. Second, only 71 percent of telecommuters drive alone on the days that they go into the office. (Metropolitan Washington Council of Governments, 2001)

The National Telecommuting and Air Quality Act established a pilot program through which companies can receive emissions credits for creation of a telecommuting program; credits will be traded on a market basis. The pilot program is limited to five cities - Washington, Philadelphia, Denver, Los Angeles, and Houston - and will run for a year (the initial study was done in mid-2000). If the concept proves successful, it may be expanded to other areas.

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FOR MORE INFORMATION

This guidance document and other information about the Commuter Choice Leadership Initiative are available at www.commuterchoice.gov or by calling the Commuter Choice voicemail request line at (888) 856-3131.

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