



Telecommuting Benefits: The Bottom Line

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INTRODUCTION

The purpose of this paper is to quantify the benefits of telecommuting for employers, employees, and the community.

Three decades have passed since the concept of telecommuting—the substitution of technology for commuter travel—was conceived.ⁱ A broad body of evidence now corroborates the many economic, environmental, and societal benefits that researchers predicted. Occasional telecommuting (one day a month) has grown significantly in recent years—increasing 74% from 2005 to 2008ⁱⁱ, though few companies have adopted it as a regular, multiple days per week, business practice.



In fact, less than 2% of employees consider home their primary place of workⁱⁱⁱ, although theoretical estimates and empirical evidence suggest that approximately 40% hold jobs that could be performed remotely, at least part of the time.^{iv}

Federal employees have been required to telecommute to the maximum extent possible since 2000^v (though only 5.2% do so^{vi}). However, the current ad-

ministration's proposed budget for 2011 calls for a 50% increase in telework.^{vii} Both the House and Senate have passed bills aimed at enforcing federal telework mandates.^{viii} More than two-dozen federal, state, and local laws aimed at encouraging telecommuting have been proposed, and in many cases enacted over the last two years. In 2009, twelve members of Congress urged the House Transportation Committee and House Committee on Energy and Commerce to include telecommuting incentives in the nation's energy and transportation laws.

While worries over weather calamities, pandemic, terrorism, fuel prices, and road closures frequently renew interest in telecommuting, less transient issues will drive widespread adoption in the years ahead. Pollution sanctions, labor shortages, changing workforce dynamics, work-life balance issues, productivity, cost control, and traffic congestion conspire to reinforce that work is what people do, not a place they go. Though cultural obstacles remain, technological innovation has removed many of the practical barriers to remote work.

TechCast, a virtual think tank based at George Washington University, forecasts that 30% of the employees in industrialized nations will telework^{ix} 2-3 days a week by the year 2019. What's more, they estimate the market for related products and services at \$400 billion a year.^x

Missing from the body of knowledge available to date is a quantitative synthesis of the potential benefits that regular telecommuting can offer employers, employees, and communities. This paper aims to fill that gap.

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Half-time telecommuting is assumed throughout this report (roughly the national average for those who do). It is organized into three sections: employer benefits, employee benefits, and community benefits. The total value of benefits is provided for 50, 100, and 500 participants, and for the nation as a whole. The quantified benefits include:

Employer Benefits:

- Productivity
- Real estate and related costs
- Turnover
- Absenteeism

Employee Benefits

- Gas
- Work related expenses
- Time

Community Benefits:

- Oil
- Greenhouse gases
- Accidents
- Highway Maintenance

While there many other telecommuting benefits, not all are easily reduced to numbers. These are listed at the end of each section along with some that were considered too subjective to include.

TELEWORK SAVINGS CALCULATOR

The quantitative conclusions in this report were derived from the Telework Research Network's (TRN) proprietary Telework Savings Calculator™. The assumptions behind the Calculator are based on an analysis of over 500 case studies, research papers, books, and other documents on telecommuting and related topics. Additional information was derived from dozens of interviews with the nation's top virtual employers, telework advocates and naysayers, researchers, and leaders of successful telework advocacy programs in both the public and private sector.

The Telework Savings Calculator™ was developed in 2008 to quantify the potential benefit of half-time telecommuting for every city, county, Congressional District, and state in the Nation. Updated annually, it has been used by organization and community leaders throughout the U.S. and Canada to determine the economic, environmental, and societal potential of telework.

Conclusions derived from the Calculator have been quoted in the *Wall Street Journal*, *Harvard Business Review*, *Washington Post*, and dozens of other publications.

Recognizing that financial, labor, and travel issues vary greatly from industry to industry and region to region, TRN recently introduced a customizable Calculator on its web site. It allows employers and communities to quantify their own potential telework savings based on dozens adjustable parameters such as real estate

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costs, turnover, absenteeism, participation rate, frequency, labor costs, etc.

Both the standard and a limited custom Calculator are available free on the Telework Research Network's web site (<http://TeleworkResearchNetwork.com>)

A branded version of the Calculator is available to organizations and communities that wish to use it as an advocacy tool and / or as a method of estimating existing or potential telework results.

The primary sources of data used in the Calculator are:

- U.S. Census Bureau's American Community Survey
- U.S. Bureau of Transportation Statistics
- U.S. Environmental Protection Agency
- U.S. Bureau of Labor Statistics
- U.S. Department of Energy
- U.S. National Highway Safety Administration
- Federal Highway Administration
- U.S. General Services Administration
- American Management Association
- Harris Interactive
- Wolters Kluwer / CCH
- Business Week Research
- Cushman & Wakefield
- Reason Foundation

- Colliers International
- International Facilities Management Association

GENERAL TELEWORK SAVINGS ASSUMPTIONS

Below are the general assumptions behind the conclusions in this paper. Additional assumptions, specific to each projected benefit are summarized in the sections that follow.

General Assumptions

- Half-time telecommuting (roughly the average for those who currently do^{xi}) is assumed in all scenarios
- U.S. population model:
 - Assumes 40% of workers could work from home at least part of the time^{xii} (not including those who already telecommute regularly), and 79% of that population would choose to if given the opportunity^{xiii}
- Company model:
 - Assumes 50, 100, and 500 telecommuters
- Notations throughout: B=Billions, M=Millions

EMPLOYER BENEFITS

Half-time telecommuting among those with compatible jobs could save employers over \$10,000 per employee per year—the result of higher productivity, reduced facility costs, lower absenteeism, and reduced turnover. The cumulative benefit to U.S. companies would exceed \$400 billion a year.

PRODUCTIVITY

Employer—Productivity Assumptions:

- 27% increase in productivity on telecommuting days (see industry research)
- Value of employee time = \$32,136 per man-year (Bureau of Labor Statistics average earnings^{xiv})

Just about every existing telework study cites ‘lack of management buy-in’ as the biggest obstacle to acceptance. It’s clear manager’s fear that left unmonitored, employees will not work as hard as they otherwise would.

In fact, study after study shows that people who telecommute are *more* productive than their office counterparts. Contributing factors include:

- Fewer interruptions: Telecommuters are not distracted by the many time drains that take place in a traditional office—morning chatter, coffee breaks, long lunches, rumor mills, birthday parties, football pools, etc.

- More effective time management: Email and other asynchronous communications can be time-managed more effectively and are less apt to include non-work digressions.
- Feeling like a trusted employee: A sense of empowerment and commitment is consistently shown to be one the highest contributors to employee job satisfaction.^{xv}
- Flexible hours: For those who are able to flex their hours as well as their location, telecommuting allows them to work when they are most productive.
- Longer hours: Many employees work during the time they would have otherwise spent commuting. In fact, overworking is a significant problem among telecommuters.

INDUSTRY RESEARCH ON PRODUCTIVITY

Employees admit to wasting two hours a day (not including lunch and scheduled breaks).^{xvi}

Businesses lose \$600 billion a year in workplace distractions.^{xvii}

Best Buy’s average productivity increased 35% through its flexible work program.^{xviii}

A Work+Life Fit / BDO Seidman survey of CFO’s showed 75% agree that flexible work increases productivity.^{xix}

British Telecom estimates productivity increased 20% through telecommuting.^{xx}

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Dow Chemical estimates a 32.5% increase in productivity among its teleworkers.^{xxi}

Surveys and pilots conducted by IBM suggest that telework employees can be up to 50% more productive.^{xxii}

Alpine Access, one of the nation's largest all-virtual employers, attributes a 30% increase in sales and 90% reduction in customer complaints to its home-based agents.^{xxiii}

American Express telecommuters handled 26% more calls and produced 43% more business than their office-based counterparts.^{xxiv}

Compaq Computer Corporation documented increased teleworker productivity ranging from 15 to 45%.^{xxv}

Over two-thirds of employers report increased productivity among their telecommuters.^{xxvi}

Sun Microsystems' found that telecommuters spend 60% of the commuting time they save performing work for the company.^{xxvii}

Annual Increase in Productivity for Businesses				
Telecommuters	50	100	500	U.S.
Productivity Increase	\$288,176	\$576,351	\$2,881,756	\$235.4 B

REAL ESTATE, ELECTRICITY, OFFICE EXPENSES

Employer—Real Estate Assumptions:

- Average office cost = \$16,422/year^{xxviii}
- Reduction with half-time telecommuting = 18%^{xxix}
- Electricity savings = 4,400 kWh per person, per year^{xxx}

Traditional offices are expensive, inefficient, inflexible, and difficult to scale (particularly down). Telecommuting programs can reduce the capital drain of owning or leasing a building. Along with the lease/purchase costs, a telecommuting program can save on parking lot leases, furniture, supplies, maintenance, security, janitorial, insurance, taxes, common area, and other related costs. Telecommuting strategies can also reduce ADA, EPA, and OSHA compliance costs.

Telecommuting programs can eliminate the need for new office structures. Some state and local governments already require a telecommuting feasibility study prior to all new office moves.

Telecommuting can help companies consolidate inefficient space and eliminate the need for a local presence in regionally regulated industries such as healthcare, insurance, and finance.

Through office hoteling and hot-desking programs, even part-time telecommuting can reduce office-related expenses.

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INDUSTRY RESEARCH ON REAL ESTATE SAVINGS

Sun Microsystems saves \$68 million a year in real estate costs, \$3 million a year in reduced power consumption, and \$25 million a year in IT savings with flexible work options for 17,000 employees (2,000 primarily working at home, 15,000 up to 2 days a week).^{xxxvi}

Unisys reduced its real estate costs by 87% through telecommuting.^{xxxvii}

McKesson Corporation's telecommuting program saves them \$1 million a year in real estate.^{xxxviii}

The U.S. Patent & Trademark Office avoided \$11 million in new real estate expense through telecommuting and office hoteling. Over 80% of eligible staff telework (4,000 employees, 70% of staff).^{xxxix}

IBM's 80,000 teleworkers save the company \$700 million a year in real estate costs.^{xl}

Mindwave Research, a 21-person marketing research company reduced office space by nearly 70 percent by enabling more than half its employees to become full-time teleworkers. They estimate the company saves more than \$11,000 per month in reduced rent and energy consumption.^{xli}

Annual Saving in Real Estate & Electricity for Businesses				
Telecommuters	50	100	500	U.S.
RE/Electricity Savings	\$151,846	\$303,692	\$1,518,462	\$124.0 B

ABSENTEEISM

Employer—Absenteeism Assumptions:

- Average reduction in absenteeism = 3.7 days a year^{xliv}
- Annual per person cost of unscheduled absences = \$1,800^{xlv}

Unscheduled absences cost employers billions. They necessitate staffing redundancies, they inconvenience co-workers and customers, and they reduce productivity. Telecommuting has proven to be the second most effective method of reducing absences (flexible scheduling is first).^{xlv}

Telecommuters often continue to work when they're sick. They're able to return to work more quickly following pregnancy or surgery. And they're able to handle personal appointments (e.g. cable installer, appliance delivery, teacher consult, etc.) without losing a full day of work.

They're sick or absent less often because they:

- experience less stress—a trigger in 85% of chronic diseases,^{xli,xlii}
- are less exposed to sick co-workers;
- are exposed to fewer occupational and environmental hazards;
- avoid driving—the most dangerous part of a worker's day;^{xliii}
- have more time for exercise.

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Perhaps the most important reason they're absent less is that they are more satisfied in their job and therefore less likely to fabricate and illness.^{xlili}

INDUSTRY RESEARCH ON ABSENTEEISM

78% of employees who call in sick, really aren't. They do so because of family issues, personal needs, and stress.^{xliv}

Unscheduled absences cost employers \$1,800/employee per year; that adds up to \$300 billion/yr for U.S. companies.^{xlvi}

The U.S. GSA telework cost/benefit model shows a 63% reduction in unscheduled absences per teleworker.^{xlvi}

The spread of contagious disease is at the root of a Federal policy that requires all eligible employees to telework to the maximum extent possible.^{xlvi}

The American Management Association (AMA) reduced absences by 63% through telework.^{xlvi}

64% of managers felt reduced absenteeism was a strong or very strong business reasons to allow flexible work.^{xlvi}

Annual Saving Due To Reduced Absenteeism for Businesses				
Telecommuters	50	100	500	U.S.
Absenteeism Savings	\$56,700	\$113,400	\$567,000	\$46.3 B

ATTRACTION AND RETENTION

Employer—Attraction and Retention Assumptions:

- 25% reduction in attritionⁱ
- Cost of turnover = 138% of wages^{li}
- Average U.S. Wage = \$32,136^{lii}

Almost 80% of employees say they would like to work from home, at least part of the time.^{liii} More than a third say they'd choose the option to telecommute over a pay raise.^{liv}

Prior to the 2009 recession, being able to hire and retain good people was one of managements' top non-financial concerns.^{lv} As the recovery continues, retention and hiring problems will be exacerbated. Nearly half of employees surveyed in August 2009 said they were either looking for a new job or planned to do so when the recession was over.^{lvi} Forty percent of the labor force is now over the age of 40 and Baby Boomers are already slipping into retirement. Businesses will have to fight for top talent in the decade ahead.

The cost of replacing an employee extends far beyond the recruiting process; it includes separation costs, temporary replacement costs, training costs, and lost productivity. A lost employee can also lead to lost customers, co-workers, and corporate intelligence. Telecommuting enhances attraction and retention because it:

- Is among the top non-financial benefits desired by employees;
- Expands the talent pool beyond geographic boundaries;
- Provides access to disabled workers;

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- Offers alternatives that would have otherwise kept parents and senior caregivers out of the full-time workforce;
- Appeals to retiring workers.

INDUSTRY RESEARCH ON ATTRACTION AND RETENTION

Attrition costs total 75% of a non-exempt person's salary and 150 to 200% of an exempt person's salary.^{lvii}

85% of employers say telework has a moderate to high impact on employee retention.^{lviii}

Turnover among VIPDesk's home-based customer agents is less than 10%; compared to 100-150% typical in a traditionally staffed call center.^{lix}

35% of employees who were not currently telecommuting (but felt they could) said they would be willing to give up some pay in exchange for the option to do so 2 days a week.^{lx}

68% of Shering-Plough Corporation's telework program participants say that being able to telework is a factor in their decision to stay with the company.^{lxi}

72% of employees say flexible work arrangements would cause them to choose one job over another; 37% specifically cite telecommuting.^{lxii}

Gen Y workers are more difficult to recruit (as reported by 56% of hiring managers) and to retain (as reported by 64% of hiring managers) but they are particularly attracted to flexible work ar-

rangements (ranked as 8 on a 10 scale for impact on overall job satisfaction).^{lxiii}

70% of baby boomers plan to work for pay after retirement by seeking flexible work arrangements and part-time schedules that allow them to pursue other interests.^{lxiv}

71% of retired workers who later decided to go back to work originally retired because of a desire for more flexibility than their job offered.^{lxv}

5.4 million Americans with some college education or more aren't working.^{lxvi}

More than 12 percent of the working age population is disabled (16 million). A full three quarters of unemployed workers with disabilities cite discrimination in the workplace and lack of transportation as major factors that prevent them from working.^{lxvii}

52 million Americans aren't working and 26 million work part time.^{lxviii}

Only 75 percent of women, still the traditional primary caregivers, age 25 54 participate in the labor force (compared to 90 percent of men). Almost a quarter of women work part-time (16.5 million), compared to ten percent of men.^{lxix}

Two-thirds of employees would take another job to ease the commute.^{lxx}

Nortel estimates that they save \$100,000 per employee they don't have to relocate.^{lxxi}

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Annual Saving Due To Reduced Turnover for Businesses				
Telecommuters	50	100	500	U.S.
Turnover Savings	\$38,046	\$76,092	\$380,459	\$31.1 B

OTHER BENEFITS

Other benefits, not quantified in the company model include:

- Potential financial incentives: A number of state and local programs provide financial and non-financial incentives for telecommuting initiatives. Notable programs include:
 - TeleworkVA (Virginia; \$3,500 per new telecommuter and free assistance),
 - 36CommutingSolutions (Denver; free assistance),
 - The Clean Air Campaign (Georgia; tax credits and free assistance), and
 - Telecommute Connecticut (free assistance).

Links to these and other state and local programs are available at <http://TeleworkResearchNetwork.com>

- Improved continuity of operations;
- Higher community citizenship scores for being environmentally and labor friendly;
- Avoidance of environmental sanctions / city access fees;
- The tendency of virtual communications to equalize personalities;
- Emphasis on performance-based management;

- Reduced potential for discrimination;
- Increased employee empowerment;
- Improved work-life balance;
- Attractive alternative to politically unpopular off-shoring;
- Reduced overtime among shift workers;
- Reduced need for overstaffing to accommodate peak loads;
- More effective and less expensive 24/7 global coverage;
- Avoidance of local labor burn out;
- The ability to hire people with local knowledge without brick and mortar presence.

TOTAL EMPLOYER BENEFITS

Total Annual Employer Savings for Businesses				
Telecommuters	50	100	500	U.S.
Productivity Incr.	\$288,176	\$576,351	\$2,881,756	\$235.4 B
RE/Electricity Savings	\$151,846	\$303,692	\$1,518,462	\$124.0 B
Absenteeism Savings	\$56,700	\$113,400	\$567,000	\$46.3 B
Turnover Savings	\$38,046	\$76,092	\$380,459	\$31.1 B
Total Employer	\$534,768	\$1,069,535	\$5,347,676	\$436.8 B

EMPLOYEE BENEFITS

Half-time telecommuting could save employees between \$2,000 and \$6,800 per year—the result of reduced driving and fewer work-related expenses. That adds up to over \$170 billion a year that could go toward savings or be spent elsewhere in the economy. Time saved per employee would total over 2 workweeks a year.

GASOLINE EXPENSES

Commuter—Gas Savings Assumptions:

- Commuting Miles/Day = 30^{lxxii}
- % Reduction in Driving = 70%^{lxxiii}
- Gas Savings = \$2.61/gallon^{lxxiv}

At the peak of the 2008 fuel price spike, employees on tight budgets were desperate for relief.^{lxxv}

Research suggests that while not all travel is eliminated on telecommuting days (because errands that used to be performed during the commute now require separate trips), the majority is.^{lxxvi}

While the average trip to and from work is 30 miles, a third of commuters have longer drives.^{lxxvii} Those travelling over 60 miles round trip (11% of commuters^{lxxviii}), would save an average of \$5,800/year with half-time telecommuting and over \$11,000 a year a full-time telecommuters.

INDUSTRY RESEARCH ON POTENTIAL GAS SAVINGS

During the 2008 run up in fuel prices, 92% of employees said they were concerned with the high cost of fuel. 80% of them specifically cite the cost of commuting to work. 73% feel their employers should take the lead in helping them reduce their commuting costs. During the same survey, two-thirds said they'd take another job to ease the commute.^{lxxix}

Annual Saving Due To Reduced Gas Usage				
Telecommuters	50	100	500	U.S.
Gas Saved (\$)	\$36,133	\$72,266	\$361,330	\$14.8 B
Average of \$362 per person per year				

OTHER WORK EXPENSES

Consumer—Other Work Expense Assumptions:

- Parking: Low = \$0, Mid = \$12.24, High = \$27.02/day^{lxxx}
- Food (net of food at home): Low = \$2.73, Mid = \$7.37, High = \$11.72/day^{lxxxi}
- Clothing: Low = \$1.40, Mid = \$2.41, High = \$4.12/day^{lxxxii}
- Incidentals: certainly, they're there—tolls, gifts, socializing, lunch-time shopping—but lacking facts, we've assumed zero.
- Non-gas portion of IRS mileage allowance = .45/mile^{lxxxiii}
- Cost of Extra Home Office Electricity = \$176.40/year^{lxxxiv}

The cost of working in an office doesn't stop at the gas pumps. While socio-economic, geographic, and occupational differences

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create a wide range of potential employee costs, the savings are significant for all telecommuters.

Other common employee savings, not included in the model include: decreased daycare/eldercare expense—particularly for those who are able to adjust their hours around those needs, home office tax deductions, and car insurance rate reductions. For those with full-time telecommuting arrangements, a move to a less expensive community offers a substantial cost-saving option.

Annual Saving in Other Work Expenses				
Telecommuters	50	100	500	U.S.
Other Work Exp.	\$255,638	\$510,735	\$2,553,675	\$156.9 B

Other Work Related Savings Per Person/Yr		
Low	Mid	High
\$1,605	\$3,842	\$6,447

TIME

Consumer—Time Savings Assumptions:

- Average commute = 52 minutes round trip; Low = 29 minutes; High = 79 minutes^{lxxxv}
- Equivalent days calculation based on 8-hour days.

Half-time telecommuting can add up to an additional two work-weeks of free time a year. Telecommuters typically spend this time

with family and friends, on hobbies, exercising, sleeping, or, as stated earlier, working. For employers, that means better work-life balance, happier people, and greater loyalty.

INDUSTRY RESEARCH ON COMMUTER TIME SAVINGS

79% of employees say they’d like to work from home.^{lxxxvi}

90% of telecommuters say they are happier with the balance in their lives because of working from home.^{lxxxvii}

A study of over 3,000 employees showed that those with flexible schedules were less likely to have health problems that affect their job performance.^{lxxxviii}

Top reasons employees want to work from home (federal employees/private sector): no commute (63/71%), greater flexibility (49/66%), greater productivity (29-40%), and save money (28/31%).^{lxxxix}

41% of workers who have the option to telework are “very satisfied” in their jobs compared to only 27% of those who are office-bound.^{xc}

If traffic continues to grow at the current pace, over the next couple of decades, drivers in many of the nation’s cities will be sitting in daily traffic jams worse than those that plague Los Angeles eight hours a day. Commutes will take almost twice as long.^{xci}

In cities such as Chicago, Houston, and Seattle, commute-time travelers have to allow twice as long as they normally would if

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they want to be sure to arrive on time.^{xcii} For busy road warriors, this essentially cuts their productivity in half.

Nationwide, 4.2 billion hours are spent playing in traffic every year. That robs \$78 billion worth of productivity from the U.S. economy.^{xciii}

Traffic jams idle away 2.9 billion gallons of gas, and release more than 58 million extra pounds of CO₂ every year.^{xciv}

OTHER EMPLOYEE BENEFITS

Other benefits, not quantified in the employee model include:

- Greater flexibility^{xcv}
- Fewer sicknesses^{xcvi}
- Eldercare/childcare savings, home office tax

Total Per Person Employee Savings / Year			
Scenario	Low	Avg.	High
Time (days per person)	5.7	9.9	15.4
\$ Saved	\$1,966	\$4,203	\$6,808

EMPLOYEE TOTAL SAVINGS

Total Annual Employee Savings				
Telecommuters	50	100	500	U.S.
Gas	\$36,133	\$72,266	\$361,330	\$14.8 B
Other Work Expenses	\$255,368	\$510,375	\$2,553,675	\$156.9 B
Total Employee	\$291,501	\$583,001	\$2,915,005	\$171.7 B

COMMUNITY SAVINGS

At the national level, half-time telecommuting could:

- Save \$23 billion a year in imported oil,
- Cut Persian Gulf imports by 37%,
- Reduce greenhouse gases by the equivalent of taking over 9 million cars off the road,
- Achieve 29% of the nation's 2020 goal for GHG reduction from light cars and trucks,
- Prevent over 90,000 traffic injuries and deaths,
- Save over \$11 billion in accident costs, and
- Lower highway maintenance costs almost \$2 billion a year.

Even small companies can make a big impact on improving community life through telecommuting as shown in the analysis that follows.

OIL SAVINGS

Community—Oil Savings Assumptions:

- Gas savings: see Employee section
- Import cost = \$80.07/barrel^{xcvii}
- 19.6 gallons of gas per barrel of crude^{xcviii}
- Persian Gulf oil imports = 790 million barrels^{xcix}

Annual Oil Savings				
Telecommuters	50	100	500	U.S.
Barrels of Oil	707	1,414	7,069	288,712,881*
* 36.6% of Persian Gulf imports				
\$ Saving for Oil	\$56,549	\$113,099	\$565,497	\$23.1 B



GREENHOUSE GAS (GHG) SAVINGS

Greenhouse Gas Savings (GHG) Assumptions:

- U.S. GHG reduction stated in million metric tons (MMT)
- One gallon of gas = 20.9 pounds of greenhouse gases^c
- Equivalent cars based on 5.5 average tons of GHG per car/year^{ci}
- Goal for greenhouse gas reduction by 2020 = 17% of 2005 levels^{cii}

INDUSTRY RESEARCH ON GREENHOUSE GASES

The Obama administration pledged to cut greenhouse gases by 17% by 2020 from 2005 levels.^{ciii}

Telecommuting has the additional potential to reduce greenhouse gas emissions by 28 million tons due to reduced office construction, and 312 million due to energy saved by businesses.^{civ}

Annual Greenhouse Gas Reduction				
Telecommuters	50	100	500	U.S.
Greenhouse Gases	129 tons	259 tons	1,294 tons	52.8 MMT
Equiv Cars	23	47	235	9,596,859
29% of 2020 Goal				

TRAFFIC ACCIDENTS & RELATED COSTS

- Community—Traffic Accident Assumptions:**
- Number of accidents = 1.4 fatalities per 100 million vehicle miles traveled (VMT), and 83 injuries per 100 million VMT^{cv}
 - Cost/accident = \$3.2 million/fatality, \$68,170/injury^{cvi}

INDUSTRY RESEARCH ON TRAFFIC ACCIDENT COSTS

Traffic accidents cost \$60 billion a year and results in 3 million lost workdays.^{cvi}

More than a quarter of accidents occur during the commute to and from work making it the most dangerous part of the day.^{cvi}

70% of drivers admit to making obscene gestures, tailgating, and blowing their horns to assert their irritation; over 40% retaliate against or get into confrontations with fellow drivers.^{cix}

Annual Reduction in Traffic Accident Costs				
Telecommuters	50	100	500	U.S.
Accident Savings (\$)	\$28,421	\$56,843	\$284,214	\$11.6 B

HIGHWAY MAINTENANCE

- Community—Highway Maintenance Assumptions:**
- Highway maintenance cost per VMT = \$.017^{cx}

INDUSTRY RESEARCH ON HIGHWAY MAINTENANCE

The cost per lane-mile of urban highway is almost \$4 million.^{cx}

The cost per mile of information superhighway is \$20,000.^{cxii}

From 1982 to 2005, only 6% major cities were able to grow their roads in pace with traffic needs. Over 60% fell behind by more than 30%.^{cxiii}

In 2008, four big-city mayors told Congress they were overwhelmed by infrastructure needs and couldn't maintain their water systems, roads, and rail networks without more federal help.^{cxiv}

By 2025, the U.S. will need an additional 104,000 lane-miles of capacity to handle the projected load. Funding those improvements will cost \$525 billion tax dollars.^{cxv}

Annual Highway Maintenance Savings				
Telecommuters	50	100	500	U.S.
Vehicle Miles	281,250	562,500	2,812,500	114.9 B
Maintenance	\$4,781	\$9,563	\$47,813	\$2.0 B

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OTHER COMMUNITY BENEFITS

Beyond the community benefits quantified in this report, wide-spread telecommuting could:

- Reduce human congestion;
- Revitalize cities by reducing traffic—a disincentive to visitors;
- Improve emergency responsiveness;
- Reduce road rage;
- Improve air quality;
- Increase productivity among non-telecommuters by reducing travel times;
- Reduce pollution from road-work and office construction;
- Preserve open spaces;
- Further reduce travel through widespread use of virtual technologies;
- Create fuller employment;
- Provide portable work options for military families;
- Reduce the off-shoring of jobs and home-shore some that have already been lost;
- Raise the standard of living in rural and disadvantaged areas;
- Reduce terrorism targets of opportunity.

TOTAL COMMUNITY BENEFITS

Total Annual Community Savings				
Telecommuters	50	100	500	U.S.
Barrels of Oil	707	1,414	7,069	288,712,881*
* 36.6% of Persian Gulf imports				
\$ Saving for Oil	\$56,549	\$113,099	\$565,497	\$23.1 B
Greenhouse Gases	129 tons	259 tons	1,294 tons	52.8 MMT
Equiv Cars	23	47	235	9,596,859
29% of 2020 Goal				
Accident Savings \$	\$28,421	\$56,843	\$284,214	\$11.6 B
Vehicle Miles	281,250	562,500	2,812,500	114.9 B
Maintenance	\$4,781	\$9,563	\$47,813	\$2.0 B
Total Community	\$89,752	\$179,505	\$897,524	\$36.7 B

Telecommuting Benefits: The Bottom Line

TOTAL OVERALL BENEFITS

Total Annual Benefits—All Constituents				
Telecommuters	50	100	500	U.S.
Total Employer	\$534,768	\$1,069,535	\$5,347,676	\$436.8 B
Total Employee	\$291,501	\$583,001	\$2,915,005	\$171.7 B
Total Community	\$89,752	\$179,505	\$897,524	\$36.7 B
TOTAL	\$916,021	\$1,832,041	\$9,160,205	\$645.2 B

SUMMARY

Telework, and in particular, home-based telecommuting offers a relatively simple, high return-on-investment solution to some of the nation's most vexing problems:

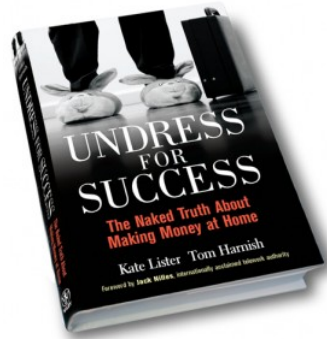
- Environmentalists applaud it because telecommuting can significantly reduce greenhouse gases and energy usage.
- Financial managers endorse it for its cost savings and increased productivity potential.
- Work-life experts encourage it as a way to address the needs of families, parents, and senior caregivers.
- Workforce planners see telecommuting as away to mitigate the 'brain drain' effect of retiring boomers.
- Human resource professionals see it as a way to recruit and retain the best people.

- Employees desire it because it saves time and money, and improves the quality of their lives.
- Baby Boomers see telecommuting a flexible alternative to full retirement.
- Millennial workers appreciate it as a way to work on their own terms.
- Disabled workers, rural residents, and military families find it an answer to their special needs.
- Urban planners see it as a strategy to fill the gap between transportation system demand and supply.
- Governments see it as a way to reduce highway wear and tear and alleviate the strain on the nation's crumbling transportation infrastructure.
- Organizations rely on it to ensure continuity of operations in the event of a disaster or pandemic.



TELEWORK RESEARCH NETWORK

Kate Lister and Tom Harnish established the Telework Research Network (TRN) to gather, study, and share information about telecommuting and home-based work. Frustrated by managers' reluctance to initiate telecommuting strategies, they aimed their popular press book, *Undress For Success—The Naked Truth About Making Money at Home* (John Wiley & Sons, 2009), at employees so they would have the facts necessary to negotiate, find, or create remote work jobs, freelance careers, or home-based businesses. It has won the praise of work-life and telecommuting advocates including the Telework Coalition, Telework Canada, WorldatWork, and many others. Jack Nilles, the father of telework, wrote the foreword for the book.



TRN's website (<http://Telework-ResearchNetwork.com>) offer a wide range of free resources for researchers, companies, and individuals interested in telework. Their Telework Savings Calculator™ is available to companies and communities that want to encourage telework participation and measure its impact. The principals of TRN are available for research, consulting, and writing/speaking projects. They can be reached at trn@teleworkresearchnetwork.com.

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FOOTNOTES

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This paper was prepared by Kate Lister
for Citrix Online.

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