



# Workshifting Benefits: The Bottom Line

## TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	3#	OTHER EMPLOYEE BENEFITS .....	14#
<b>TELEWORK SAVINGS CALCULATOR</b> .....	4#	EMPLOYEE TOTAL SAVINGS .....	14#
GENERAL ASSUMPTIONS .....	5#	<b>COMMUNITY SAVINGS</b> .....	<b>14#</b>
<b>EMPLOYER BENEFITS</b> .....	<b>6#</b>	OIL SAVINGS .....	15#
PRODUCTIVITY .....	6#	GREENHOUSE GAS (GHG) SAVINGS .....	15#
REAL ESTATE, ELECTRICITY, OFFICE .....	7#	TRAFFIC ACCIDENTS & RELATED COSTS .....	16#
EXPENSES .....	7#	HIGHWAY MAINTENANCE .....	16#
ABSENTEEISM .....	8#	OTHER COMMUNITY BENEFITS .....	17#
ATTRACTION AND RETENTION .....	9#	TOTAL COMMUNITY BENEFITS .....	17#
OTHER BENEFITS .....	11#	TOTAL OVERALL BENEFITS .....	18#
TOTAL EMPLOYER BENEFITS .....	11#	<b>SUMMARY</b> .....	<b>18#</b>
<b>EMPLOYEE BENEFITS</b> .....	<b>12#</b>	<b>TELEWORK RESEARCH NETWORK</b> .....	<b>19#</b>
GASOLINE EXPENSES .....	12#	<b>CITRIX ONLINE</b> .....	<b>19#</b>
OTHER WORK EXPENSES .....	12#	FOOTNOTES .....	<b>20#</b>
TIME SAVINGS .....	13#		

## INTRODUCTION

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

Three decades have passed since the concept of telecommuting—the substitution of technology for commuter travel—was conceived.<sup>i</sup> 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 2008<sup>ii</sup>, 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 work<sup>iii</sup>, although theoretical estimates and empirical evidence suggest that approximately 40% hold jobs that could be performed remotely, at least part of the time.<sup>iv</sup>

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

ministration's proposed budget for 2011 calls for a 50% increase in telework.<sup>vii</sup> Both the House and Senate have passed bills aimed at enforcing federal telework mandates.<sup>viii</sup> 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. In March of 2010, the White House Conference on Workplace Flexibility put its stamp on the importance of workshifting strategies.

While worries over weather calamities, pandemic, terrorism, fuel prices, and road closures frequently renew interest in workshifting, 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<sup>ix</sup> 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.<sup>x</sup>

Missing from the body of knowledge available to date is a quantitative synthesis of the potential benefits that regular workshifting

## Workshifting Benefits: The Bottom Line

can offer companies, employees, and communities. This paper aims to fill that gap.

Half-time telecommuting is assumed throughout this report (roughly the national average for those who do). It is organized into three sections: company 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:

### **Company 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 workshifting 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 250 case studies, research papers, books, and other documents on workshifting and related topics. Additional information was derived from dozens of interviews with the nation's top virtual employers, workshifting 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 company and community leaders throughout the U.S. and Canada to determine the economic, environmental, and societal potential of workshifting.

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 intro-

## Workshifting Benefits: The Bottom Line

duced a customizable Calculator on its web site. It allows companies and communities to quantify their own potential workshifting savings based on dozens adjustable parameters such as real estate costs, turnover, absenteeism, participation rate, frequency, labor costs, etc.

Both the standard and 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 companies and communities that wish to use it as an advocacy tool and / or telework tracking system.

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
- TalentKeepers
- CommuteSolutions.org

## GENERAL 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<sup>xi</sup>) is assumed in all scenarios
- U.S. population model:
  - Assumes 40% of workers could work from home at least part of the time<sup>xii</sup> (not including those who already telecommute regularly), and 79% of that population would choose to if given the opportunity<sup>xiii</sup>
- Company model:
  - Assumes 50, 100, and 500 telecommuters
- Notations throughout: B=Billion, M=Million

## 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<sup>xiv</sup>)

Just about every 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.<sup>xv</sup>
- Flexible hours: For those who are able to flex their hours as well as their location, workshifting 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).<sup>xvi</sup>*

*Businesses lose \$600 billion a year in workplace distractions.<sup>xvii</sup>*

*Best Buy’s average productivity increased 35% through its flexible work program.<sup>xviii</sup>*

*A Work+Life Fit / BDO Seidman survey of CFO’s showed 75% agree that flexible work increases productivity.<sup>xix</sup>*

*British Telecom estimates productivity increased 20% through telecommuting.<sup>xx</sup>*

*Dow Chemical estimates a 32.5% increase in productivity among its teleworkers.<sup>xxi</sup>*

## Workshifting Benefits: The Bottom Line

Surveys and pilots conducted by IBM suggest that telework employees can be up to 50% more productive.<sup>xxii</sup>

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.<sup>xxiii</sup>

American Express telecommuters handled 26% more calls and produced 43% more business than their office-based counterparts.<sup>xxiv</sup>

Compaq Computer Corporation documented increased teleworker productivity ranging from 15 to 45%.<sup>xxv</sup>

Over two-thirds of employers report increased productivity among their telecommuters.<sup>xxvi</sup>

Sun Microsystems' found that telecommuters spend 60% of the commuting time they save performing work for the company.<sup>xxvii</sup>

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<sup>xxviii</sup>
- Reduction with half-time telecommuting = 18%<sup>xxix</sup>
- Electricity savings = 4,400 kWh per person, per year<sup>xxx</sup>

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

Workshifting 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.

Workshifting 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 workshifting can reduce office-related expenses.



## Workshifting Benefits: The Bottom Line

### 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).*<sup>xxxvi</sup>

*Unisys reduced its real estate costs by 87% through telecommuting.*<sup>xxxvii</sup>

*McKesson Corporation's telecommuting program saves them \$1 million a year in real estate.*<sup>xxxviii</sup>

*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).*<sup>xxxix</sup>

*IBM's 80,000 teleworkers save the company \$700 million a year in real estate costs.*<sup>xl</sup>

*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.*<sup>xli</sup>

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<sup>xxxvii</sup>
- Annual cost per unscheduled absence = \$310<sup>xxxviii</sup>

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).<sup>xxxix</sup>

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;<sup>xl,xli</sup>
- 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;<sup>xlii</sup>
- Have more time for exercise.



## Workshifting Benefits: The Bottom Line

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.<sup>xliii</sup>

### 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.*<sup>xliv</sup>

*Unscheduled absences cost employers \$1,800/employee per year; that adds up to \$300 billion/yr for U.S. companies.*<sup>xlv</sup>

*The U.S. GSA telework cost/benefit model shows a 63% reduction in unscheduled absences per teleworker.*<sup>xlvi</sup>

*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.*<sup>xlvii</sup>

*The American Management Association (AMA) reduced absences by 63% through telework.*<sup>xlviii</sup>

*64% of managers felt reduced absenteeism was a strong or very strong business reasons to allow flexible work.*<sup>xlix</sup>

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 attrition<sup>l</sup>
- Cost of turnover = 138% of wages<sup>li</sup>
- Average U.S. Wage = \$32,136<sup>lii</sup>

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

Prior to the 2009 recession, being able to hire and retain good people was one of managements' top non-financial concerns.<sup>lv</sup> 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.<sup>lvi</sup> 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. Workshifting enhances attraction and retention because it:

- Is among the top non-financial benefits desired by employees;
- Expands the talent pool beyond geographic boundaries;

## Workshifting Benefits: The Bottom Line

- Provides access to disabled workers;
- 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.*<sup>lvii</sup>

*85% of employers say telework has a moderate to high impact on employee retention.*<sup>lviii</sup>

*Turnover among VIPDesk's home-based customer agents is less than 10%; compared to 100-150% typical in a traditionally staffed call center.*<sup>lix</sup>

*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.*<sup>lx</sup>

*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.*<sup>lxi</sup>

*72% of employees say flexible work arrangements would cause them to choose one job over another; 37% specifically cite telecommuting.*<sup>lxii</sup>

*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 arrangements (ranked as 8 on a 10 scale for impact on overall job satisfaction).*<sup>lxiii</sup>

*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.*<sup>lxiv</sup>

*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.*<sup>lxv</sup>

*5.4 million Americans with some college education or more aren't working.*<sup>lxvi</sup>

*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.*<sup>lxvii</sup>

*52 million Americans aren't working and 26 million work part time.*<sup>lxviii</sup>

*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.*<sup>lxix</sup>

*Two-thirds of employees would take another job to ease the commute.*<sup>lxx</sup>

## Workshifting Benefits: The Bottom Line

Nortel estimates that they save \$100,000 per employee they don't have to relocate.<sup>lxxi</sup>

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
<b>Total Employer</b>	<b>\$534,768</b>	<b>\$1,069,535</b>	<b>\$5,347,676</b>	<b>\$436.8 B</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 almost 2 workweeks a year.

### GASOLINE EXPENSES

#### Commuter—Gas Savings Assumptions:

- Commuting Miles/Day = 30<sup>lxxii</sup>
- % Reduction in Driving = 75%<sup>lxxiii</sup>
- Gas Savings = \$2.61/gallon<sup>lxxiv</sup>

At the peak of the 2008 fuel price spike, employees on tight budgets were desperate for relief.<sup>lxxv</sup>

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.<sup>lxxvi</sup>

While the average trip to and from work is 30 miles, a third of commuters have longer drives.<sup>lxxvii</sup> Those travelling over 60 miles round trip (11% of commuters<sup>lxxviii</sup>), 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.*<sup>lxxix</sup>

Annual Saving Due To Reduced Gas Usage				
Telecommuters	50	100	500	U.S.
Gas Saved (\$)	\$18,080	\$36,161	\$180,804	\$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<sup>lxxx</sup>
- Food (net of food at home): Low = \$2.73, Mid = \$7.37, High = \$11.72/day<sup>lxxxi</sup>
- Clothing: Low = \$1.40, Mid = \$2.41, High = \$4.12/day<sup>lxxxii</sup>
- 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<sup>lxxxiii</sup>
- Cost of Extra Home Office Electricity = \$176.40/year<sup>lxxxiv</sup>

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

## Workshifting Benefits: The Bottom Line

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.	\$192,086	\$384,173	\$1,920,863	\$156.9 B

Other Work Related Savings Per Person/Yr		
Low	Mid	High
\$1,966	\$4,203	\$6,808

## TIME SAVINGS

### Consumer—Time Savings Assumptions:

- Average commute = 52 minutes round trip; Low = 29 minutes; High = 79 minutes<sup>lxxxv</sup>
- Equivalent days calculation based on 8-hour days.

Half-time telecommuting can add up to an additional 2-3 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.*<sup>lxxxvi</sup>

*90% of telecommuters say they are happier with the balance in their lives because of working from home.*<sup>lxxxvii</sup>

*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.*<sup>lxxxviii</sup>

*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%).*<sup>lxxxix</sup>

*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.*<sup>xc</sup>

*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.*<sup>xci</sup>

## Workshifting Benefits: The Bottom Line

In cities such as Chicago, Houston, and Seattle, commute-time travelers have to allow twice as long as they normally would if they want to be sure to arrive on time.<sup>xcii</sup> 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.<sup>xciii</sup>

Traffic jams idle away 2.9 billion gallons of gas, and release more than 58 million extra pounds of CO<sub>2</sub> every year.<sup>xciv</sup>

## OTHER EMPLOYEE BENEFITS

Other benefits, not quantified in the employee model include:

- Greater flexibility<sup>xcv</sup>

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

- Fewer sicknesses<sup>xcvi</sup>
- Eldercare/childcare savings, home office tax

## EMPLOYEE TOTAL SAVINGS

Total Annual Employee Savings				
Telecommuters	50	100	500	U.S.

Gas	\$18,080	\$36,161	\$180,804	\$14.8 B
Other Work Expenses	\$192,086	\$384,173	\$1,920,863	\$156.9 B
<b>Total Employee</b>	<b>\$210,167</b>	<b>\$420,333</b>	<b>\$2,101,666</b>	<b>\$171.7 B</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 almost 10 million cars off the road,
- Achieve 27% of the nation's 2020 goal for GHG reduction from light cars and trucks,
- Prevent over 95,000 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 workshifting as shown in the analysis that follows.

## Workshifting Benefits: The Bottom Line

### OIL SAVINGS

#### Community—Oil Savings Assumptions:

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

Annual Oil Savings				
Telecommuters	50	100	500	U.S.
Barrels of Oil	353	707	3,534	288.7 B*
* 36.6% of Persian Gulf imports				
\$ Saving for Oil	\$28,275	\$56,550	\$282,749	\$23.1 B



### GREENHOUSE GAS (GHG) SAVINGS

#### Greenhouse Gas Savings (GHG) Assumptions:

- U.S. GHG reduction stated in million metric tonnes (MMT)
- One gallon of gas = 20.9 pounds of greenhouse gases<sup>c</sup>
- Equivalent cars based on 5.5 average tons of GHG per car/year<sup>ci</sup>
- Goal for greenhouse gas reduction by 2020 = 17% of 2005 levels for CO<sub>2</sub><sup>cii</sup>

#### INDUSTRY RESEARCH ON GREENHOUSE GASES

*The Obama administration pledged to cut greenhouse gases (CO<sub>2</sub>) by 17% by 2020 from 2005 levels.<sup>ciii</sup>*

*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.<sup>civ</sup>*

Annual Greenhouse Gas Reduction				
Telecommuters	50	100	500	U.S.
Greenhouse Gases	65 tonnes	129 tonnes	647 tonnes	*52.8 MMT
Equiv Cars	12	23	117	9,596,859
*including 50MMT of CO <sub>2</sub> or 27% of U.S. 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<sup>cv</sup>
- Cost/accident = \$3.2 million/fatality, \$68,170/injury<sup>cvi</sup>

### INDUSTRY RESEARCH ON TRAFFIC ACCIDENT COSTS

Traffic accidents cost \$60 billion a year and results in 3 million lost workdays.<sup>cvi</sup>

More than a quarter of accidents occur during the commute to and from work making it the most dangerous part of the day.<sup>cvi</sup>

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.<sup>cix</sup>

Annual Reduction in Traffic Accident Costs				
Telecommuters	50	100	500	U.S.
Accident Savings (\$)	\$14,211	\$28,421	\$142,107	\$11.6 B

## HIGHWAY MAINTENANCE

### Community—Highway Maintenance Assumptions:

- Highway maintenance cost per VMT = \$.017<sup>cx</sup>

### INDUSTRY RESEARCH ON HIGHWAY MAINTENANCE

The cost per lane-mile of urban highway is almost \$4 million.<sup>cx</sup>

The cost per mile of information superhighway is \$20,000.<sup>cxii</sup>

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%.<sup>cxiii</sup>

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.<sup>cxiv</sup>

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.<sup>cxv</sup>

Annual Highway Maintenance Savings				
Telecommuters	50	100	500	U.S.
Vehicle Miles	140,625	281,250	1,406,250	114.9 B
Maintenance	\$2,391	\$4,781	\$23,906	\$2.0 B

## Workshifting Benefits: The Bottom Line

### OTHER COMMUNITY BENEFITS

Beyond the community benefits quantified in this report, widespread workshifting 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.
<b>Barrels of Oil</b>	353	707	3,534	*288,712,881
* 36.6% of Persian Gulf imports				
<b>\$ Saving for Oil</b>	\$28,275	\$56,550	\$282,749	\$23.1 B
<b>Greenhouse Gases</b>	65 tonnes	129 tonnes	647 tonnes	52.8 MMT
<b>Equiv Cars</b>	12	23	117	**9,596,859
*including 50MMT of CO <sub>2</sub> or 27% of U.S. 2020 Goal				
<b>Accident Savings \$</b>	\$14,211	\$28,421	\$142,107	\$11.6 B
<b>Vehicle Miles</b>	140,624	281,250	1,406,250	114.9 B
<b>Maintenance</b>	\$2,391	\$4,781	\$23,906	\$2.0 B
<b>Total Community</b>	<b>\$44,876</b>	<b>\$89,752</b>	<b>\$448,762</b>	<b>\$36.7 B</b>

## Workshifting Benefits: The Bottom Line

### TOTAL OVERALL BENEFITS

Total Annual Benefits—All Constituents				
Telecommuters	50	100	500	U.S.
<b>Total Employer</b>	\$534,768	\$1,069,535	\$5,347,676	\$436.8 B
<b>Total Employee</b>	\$210,167	\$420,333	\$2,101,666	\$171.7 B
<b>Total Community</b>	\$44,876	\$89,752	\$448,762	\$36.7 B
<b>TOTAL</b>	<b>\$789,810</b>	<b>\$1,579,621</b>	<b>\$7,898,104</b>	<b>\$645.2 B</b>

### SUMMARY

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

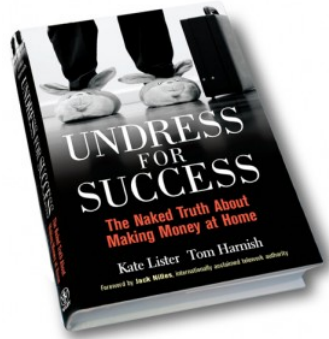
- Environmentalists applaud it because telecommuting can significantly reduce greenhouse gases and energy usage.
- Financial managers endorse it for its cost savings and increased productivity potential.
- Work-life experts encourage it as a way to address the needs of families, parents, and senior caregivers.
- Workforce planners see workshifting as a way 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 workshifting 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 workshifting 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 websites (<http://Undress4Success.com> and <http://TeleworkResearchNetwork.com>) 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 and track telework participation. The principals of TRN are available for research projects, consulting, and writing/speaking projects. They can be reached at [trn@teleworkresearchnetwork.com](mailto:trn@teleworkresearchnetwork.com).

## CITRIX ONLINE

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With GoToMeeting Corporate, organizations of any size can use GoToWebinar® for do-it-yourself Web events and GoToMeeting for smaller, more interactive online meetings.

For additional resources and research on workshifting, please visit Citrix Online's blog, [www.workshifting.com](http://www.workshifting.com).

For a free evaluation of GoToMeeting Corporate, please visit <http://www.gotomeeting.com/TryIt>.

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### FOOTNOTES

- <sup>i</sup> Jack Nilles, author of *Managing Telework: Strategies for Managing the Virtual Workforce* (Wiley 1998)
- <sup>ii</sup> WorldatWork.org: 2009 Telework Trendlines
- <sup>iii</sup> 2008 American Community Survey (excluding self-employed persons)
- <sup>iv</sup> Matthews & Williams 2005
- <sup>v</sup> Public Law (PL) 106-346 section 359, October 2000.
- <sup>vi</sup> 2008 Status of Telework in the Federal Government—Report to Congress
- <sup>vii</sup> Washington Post, Feb. 11, 2010, Snowstorm’s possible plus: Advancing cause of telework.
- <sup>viii</sup> H.R. 1722 Telework Improvement Act of 2009, S. 707 Telework Enhancement Act of 2009
- <sup>ix</sup> Telework is the term used to describe any substitution of technology for work-related travel (e.g. teleconferencing, video conferencing, telecommuting). It is a broader term than telecommuting though they are commonly used interchangeably.
- <sup>x</sup> Techcast.org
- <sup>xi</sup> Bureau of Labor Statistics – Work at Home in 2004
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- <sup>xv</sup> One More Time: How Do You Motivate Employees? Harvard Business Review, January 2003
- <sup>xvi</sup> The Cost of Not Paying Attention: How Interruptions Impact Knowledge Worker Productivity (Jonathan Spira, Joshua Feintuch), Basex, Inc., 2005
- <sup>xvii</sup> Ibid
- <sup>xviii</sup> Cali Ressler and Jodi Thompson, *Why Work Sucks* (Portfolio 2008)
- <sup>xix</sup> Cali Yost Work+Life Fit Inc / BDO Seidman, LLP, 2008 CFO Perspectives on Work Life Flexibility
- <sup>xx</sup> BT Options 2000 as reported by EuropeanTelework.org
- <sup>xxi</sup> Jeff Zbar, Network World, December 4, 2002
- <sup>xxii</sup> Innovisions Canada
- <sup>xxiii</sup> Email from J. Ball, co-founder of Alpine Access (February 2010)
- <sup>xxiv</sup> Ibid
- <sup>xxv</sup> Ibid
- <sup>xxvi</sup> CompTIA survey, October 2008
- <sup>xxvii</sup> Testimony of Ann Bamesberger, Sun Microsystems, November 2007, U.S. House of Representatives

- <sup>xxviii</sup> International Facility Management Association 2009 (average rentable office space = 377/sf per person); Cushman & Wakefield MarketBeat 2008 average \$43.56/sf.
- <sup>xxix</sup> U.S. GSA telework program suggests half of offices can be eliminated with full time telework. Since half-time telecommuting would not eliminate all the associated offices, a figure of 18% reduction was used.
- <sup>xxx</sup> Joseph Romm, *The Internet and the New Energy Economy*, Center for Energy and Climate Solutions, Global Environment and Technology Foundation, 2002; Cost per kWh per U.S. Energy Administration. Note: extra energy used at home office is shown as a reduction to employee savings.
- <sup>xxxi</sup> Ann Bamesberger, *Flex Your Force: Building the Virtual Office*, Sun Executive Boardroom (August '07) and Sun Powerpoint Presentation: Talent Management: Attracting and Retaining the Next Generation Workforce
- <sup>xxxii</sup> Gary J. Grimes, et al., *Transportation Improvements Through Telework*, Birmingham Alabama Center for Telecommunications Education and Research, July 2004)
- <sup>xxxiii</sup> Telephone interview with Linda Casey, McKesson Corporation, August 2007.
- <sup>xxxiv</sup> 2008 U.S. Patent and Trademark Office Annual Report
- <sup>xxxv</sup> Innovisions Canada
- <sup>xxxvi</sup> Avaya study as reported by MSNBC.
- <sup>xxxvii</sup> U.S. GSA Recommendations to Assist Cost Recovery / ROI Strategies and Budget Planning, May 2006 (attributed to WorldatWork “Exploring Telework as a Business Continuity Strategy” 2005); b) Non-telecommuting average of 2.4% (5.8 days) per year CCH 17<sup>th</sup> Annual Unscheduled Absence Survey
- <sup>xxxviii</sup> CCH 17<sup>th</sup> Annual Unscheduled Absence Survey
- <sup>xxxix</sup> Ibid
- <sup>xl</sup> Safety & Practitioner, May 2008
- <sup>xli</sup> CompTia Survey, October 2008
- <sup>xlii</sup> National Council on Compensation Insurance Inc, December 2006
- <sup>xliii</sup> CompTia Survey, October 2008
- <sup>xliv</sup> Hewitt LCG, Nucleus Absence Overview; and 2005 CCH Unscheduled Absence Survey
- <sup>xliv</sup> Hewitt LCG, Nucleus Absence Overview
- <sup>xlvi</sup> U.S. GSA 2006 Cost Recovery ROI Strategies
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- <sup>li</sup> Karol Rose, author of *Work-Life Effectiveness: Bottom Line Strategies for Today’s Workplace*, WorldatWork, 2006 (used the midpoint between the high and low extreme)

## Workshifting Benefits: The Bottom Line

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- <sup>liii</sup> 2009 Telework Trendlines, WorldatWork
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- <sup>lv</sup> Small Business Problems and Priorities, National Federation of Independent Business, 2008
- <sup>lvi</sup> Managing Talent in a Turbulent Economy: Keeping Your Team Intact, Deloitte, September 2009
- <sup>lvii</sup> Karol Rose, author of Work-Life Effectiveness: Bottom Line Strategies for Today's Workplace, WorldatWork, 2006
- <sup>lviii</sup> WorldAtWork member survey, October 2007
- <sup>lix</sup> Telephone interview with S. Hurley, President of VIPDesk (7-09)
- <sup>lx</sup> 2009 Telework Trendlines, WorldatWork
- <sup>lxi</sup> Addressing Labor Shortage through Virtual Office and Telework Arrangements, as quoted by Kristina Gribovskaja, Runzheimer International, October 2007
- <sup>lxii</sup> The Edge Report, Robert Half International / Career Builder.com, Sept 2008
- <sup>lxiii</sup> The Edge Report, Robert Half International and Career Builder, Sept 2008; and Generation Y, What Millennial Workers Want, Robert Half International and Yahoo! HotJobs, 2008
- <sup>lxiv</sup> Addressing Labor Shortage through Virtual Office and Telework Arrangements, AARP as quoted by Kristina Gribovskaja, Runzheimer International, October 2007
- <sup>lxv</sup> Moen, Erickson, Argarwal, Fields, Todd,; 2000, The Cornell Retirement and Well-Being Study, Ithaca, NY: Bronfenbrenner Life Course Center at Cornell University.
- <sup>lxvi</sup> Bureau of Labor Statistics
- <sup>lxvii</sup> AccessibleSociety.org, Economics and People With Disabilities
- <sup>lxviii</sup> U.S. Bureau of Labor Statistics
- <sup>lxix</sup> Source: U.S. Bureau of Labor Statistics, Monthly Labor Review, November 2007
- <sup>lxx</sup> The Impact of Commuting on Employees, BusinessWeek Research and Transit Center, February 2008
- <sup>lxxi</sup> The Telework Coalition (Telcoa.org)
- <sup>lxxii</sup> Bureau of Transportation Statistics (BTS) Omnibus Household Survey. Average commute is 15 miles each way
- <sup>lxxiii</sup> 2005 Reason Foundation — The Quiet Success: Telecommuting's Impact on Transportation and Beyond. Telecommuters reduce their daily trips by 53 to 77% on telecommuting days. We use 70% because part-time teleworkers are more apt to hold and combine errands for work days. A more conservative figure of 65% should be used in full time scenerios.
- <sup>lxxiv</sup> EIA.doe.gov, February 2010
- <sup>lxxv</sup> BusinessWeek Research and TransitCenter, 2/08, The Impact of Commuting on Employees. 1048 respondents from 3 major metros (SF, Chicago, NY)

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- <sup>lxxvii</sup> U.S. Bureau of Transportation Omnibus Household Survey, 2003
- <sup>lxxviii</sup> U.S. Bureau of Transportation Omnibus Household Survey, 2003
- <sup>lxxix</sup> The Impact of Commuting on Employees, BusinessWeek Research and TransitCenter, February 2008
- <sup>lxxx</sup> Colliers International 2008 non-reserved parking survey
- <sup>lxxxii</sup> 2008 BLS Consumer Spending Report. Mid-figure: averaged the difference in 'food dining' and 'food home' between 1 earner and 2 earner households and difference between average Manager/Technical/Service workers and Retired persons. High case is 59% higher, and low case is 63% lower to match relative difference between highest and lowest occupation figures.
- <sup>lxxxiii</sup> 2008 BLS Consumer Spending Report: Mid-figure, averaged the difference in clothes for 1 earner and 2 earner households and difference between average Manager/Technical/Service Workers and Retired persons. High case 71% higher, and low case 42% lower to match relative difference between highest and lowest occupation figures.
- <sup>lxxxiv</sup> Email from Senator Kerry legislative aide: gas is \$.10 of the I.R.S. reimbursement
- <sup>lxxxv</sup> 2008 IRS deduction of \$.55/mile includes \$.10 for gas.
- <sup>lxxxvi</sup> 2008 American Community Survey (U.S. Census). Lowest commute time was Lowton OK, highest was New York NY, average is based on all commuters
- <sup>lxxxvii</sup> 2009 WorldatWork Telework Trendlines; reinforced by adoption rate among Sun Microsystems program participants (79%) and 2007 CDW-G Telework Report (79% federal, 63% private sector).
- <sup>lxxxviii</sup> How Employers and Workers Can Strike a Balance, University of Connecticut and Rutgers University, Center for Survey Research and Analysis and John J. Heldrich Center for Workforce Development; Work and Family. 1999
- <sup>lxxxix</sup> Grzywacz and Casey, Workplace Flexibility Associated with Reduced Absences and Improved Job Commitment, Wake Forest University School of Medicine, April 2008
- <sup>xc</sup> CDW-G 2007 Telework Report
- <sup>xcii</sup> The Reason Foundation, Building Roads to Reduce Traffic Congestion in America's Cities: How Much and at What Cost? August 2006
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- <sup>xciv</sup> Ibid
- <sup>xcv</sup> CDW-G 2007 Telework Report



## Workshifting Benefits: The Bottom Line

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<sup>xcvi</sup> 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.

<sup>xcvii</sup> Oil-Price.net: of 2/21/2010

<sup>xcviii</sup> Energy Information Administration, Petroleum Supply Annual 2005, June 2006.

<sup>xcix</sup> U.S. Energy Information Administration

<sup>c</sup> EPA Emission Facts: Average Annual Emissions and Fuel Consumption

<sup>ci</sup> Environmental impact estimates were made using the Environmental Defense Fund Paper Calculator. For more information visit <http://www.papercalculator.org>.

<sup>cii</sup> Washington Post, January 29, 2010, US pledges 17% emissions reduction by 2020; U.S. Energy Information Administration: Inventory of Greenhouse Gas Emission and Sinks 1990-2007: Transportation sector for light cars and truck was 1085 (Tg CO2 Eq.) in 2005

<sup>ciii</sup> Washington Post, January 29, 2010, US pledges 17% emissions reduction by 2020

<sup>civ</sup> Broadband Services: Economic and Environmental Benefits, American Consumer Institute, 2007

<sup>cv</sup> Traffic Safety Facts NHSTA, August 2008

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<sup>cvi</sup> Trafficsafety.org, Network of Employers for Traffic Safety – 10 Facts Employers Must Know, 2005

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<sup>cix</sup> RoadRagers.com 2004 composite statistics

<sup>cx</sup> CommuteSolutions.org: 2006 state and local construction, improvement and repair, maintenance, and operations

<sup>cx</sup> Hartgen and Fields, Building Roads to Reduce Traffic Congestion in America's Cities, The Reason Foundation, August 2006

<sup>cxii</sup> Vermont Department of Public Services, Understanding Broadband Deployment in Vermont, based on data reported in Adelphia's 2005 Annual Report.

<sup>cxiii</sup> 2007 Urban Mobility Report

<sup>cxiv</sup> U.S. Senate, Committee on Banking, Housing and Urban Affairs, Condition of our Nation's Infrastructure: Local Perspectives from Mayors, June 2008

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