

Telecommuting, also known as “telework” or “work at/from home,” allows individuals whose jobs can be conducted away from the office to do so remotely from home or a satellite location.

- If 20% of Tennessee state employees telecommuted just one day a week for ten months, it would result in 15 million fewer miles driven and reduce carbon monoxide emissions by 142 tons.
- If everyone who could telecommute did so at least two days a week, 1.35 billion gallons of gasoline could be saved annually according to a University of Maryland study.
- Thirty-four states have telecommuting policies, and the federal government has several agencies that promote and encourage telecommuting.

TELECOMMUTING

SAVING ENERGY AND PROMOTING PROGRESS

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According to work-at-home advocates Kate Lister and Tom Harnish, telecommuting could potentially reduce Gulf oil imports by 24% to 48% and greenhouse gases by up to 67 million metric tons a year, and save 7.5 trillion gallons of gasoline each year.¹

In a time of high energy costs, everyone is looking for ways to cut fuel cost and consumption. Americans are faced with the unwelcome reality of higher gasoline prices. As policy makers develop strategies to reduce emissions and fuel consumption and relieve drivers' wallets at the gas pump, four-day work weeks and telecommuting are viable solutions to consider.

TELECOMMUTING: WHAT IS IT?

Telecommuting, also known as “telework” or “work at/from home,” allows individuals whose jobs can be conducted away from the office to do so remotely from home or a satellite location. Telecommuting is generally used by companies whose employees rely on the Internet, computers, and phones to complete tasks. Modern technology makes computer work possible virtually everywhere, and with wireless capabilities, employers can offer virtual access to work servers from remote locations.² Clearly, it

¹ Oracle, “Keeping Your Distance,” http://www.oracle.com/profit/exec/031908_ft.html.

² M. L. Moss and J. Carey, “Telecommuting for Individuals and organizations,” *The Journal of Urban Technology* 2, no. 1 (1994): 18-29.

would not be appropriate or feasible for certain retail or public service jobs.

Telecommuting offers several benefits to individuals, organizations and their communities. Individuals are able to cut gasoline costs and mileage on personal vehicles, which also impacts community congestion and air quality. In addition to environmental benefits, various human resource management studies have found that employees are at least as effective, if not more, in a home setting as in the office, improving organizational productivity and employee morale. Thirty percent of chief financial officers surveyed by staffing consultant Robert Half International said telecommuting is the best way to attract talent, and almost 50% said it was second best, after salary.³ Of course, there are drawbacks to telecommuting, which range from potential abuse by employees, loss of office interaction, limited direct management, and workplace safety issues, among others.

ENVIRONMENTAL BENEFITS AND ENERGY SAVINGS

Authors and telework advocates Kate Lister and Tom Harnish, also founders of Undress4Success: Home Based Business, Work At Home, and Freelance Job Advice, recently published results from their independent study of telecommuting, its usage, and impacts. The study found that less than 4% of the American workforce works from home though 40% have jobs that would allow them to telecommute.⁴ The same study says that 40% (33 million Americans) would collectively avoid 154 trillion miles of driving and save \$25 trillion in fuel purchases per year.⁵ Lister and Harnish also report there are currently 12 million employees and 16 million

self-employed people who could work from home at least one day each month.⁶ If they worked at home one day a month, this could reduce Gulf oil imports by 24% and reduce green house gas emissions by 33 million metric tons each year.⁷

A University of Maryland study found that 1.35 billion gallons of fuel could be saved annually if everyone who could telecommute did so at least 1.6 days per week. If that were the case, it would prevent 26 billion pounds of carbon dioxide from being released yearly, according to the U.S. Environmental Protection Agency (EPA).⁸ Additionally, the 2005/2006 National Technology Readiness Survey suggests that if telecommuting were used by all those who could, it would save \$3.9 billion a year in fuel and the time savings would be equivalent to 470,000 jobs.⁹

CARBON “FOOTPRINTS”

The Brookings Institution, an independent research and policy institute, released a report on the carbon footprint of metropolitan America.¹⁰ The report quantifies the amount and most significant sources of carbon emitted from highway transportation and residential energy consumption in the 100 largest metropolitan areas during 2005.

All four major cities of Tennessee were ranked and consistently placed in the top 25 cities with the largest per capita footprints of 2005. Nashville ranked 6th for highest per capita carbon emissions.¹¹ Knoxville was ranked 10th,

⁶ Ibid.

⁷ Ibid.

⁸ Kazmierczak and James, *Telework in the Information Age*, 2.

⁹ Rockbridge Associates, *2005/2006 National Technology Readiness Survey Summary Report* (Great Falls, VA: Rockbridge Associates, 2006).

¹⁰ Marilyn A. Brown, Frank Southworth, and Andrea Sarzynski, *Shrinking the Carbon Footprint of Metropolitan America* (Washington, DC: Brookings Institution, 2008).

¹¹ Ibid.

³ Matthew Kazmierczak and Josh James, *Telework in the Information Age: Building a More Flexible Workforce and a Cleaner Environment* (Washington, DC: American Electronics Association, 2008).

⁴ Tom Harnish, “New Study Quantifies Pollution Reduced by Telecommuters,” news release, April 17, 2008.

⁵ Ibid.

Chattanooga was ranked 13th, and Memphis was ranked 24th.¹² These abysmal figures drive home the serious problems Tennesseans and policy makers face in battling energy costs and carbon emissions.

FEDERAL LEGISLATION AND PARTICIPATION

Telecommuting is not new. Jack Nilles coined the phrase in the early 1970s, and there has been federal legislation related to telecommuting since the 1990s.¹³ One news article states there are more than 100,000 federal employees who telecommute at least one day a week, and 25 percent of the EPA's staff telecommutes.¹⁴ The Government Accountability Office reviewed five federal agencies' telework methodologies in 2005 and reported that while some federal employees are not eligible for the program because of their positions, the Securities and Exchange Commission and the Small Business Administration make all positions telework eligible.

Several recent pieces of legislation aim to promote and increase the use of telecommuting, some of which are mentioned here.

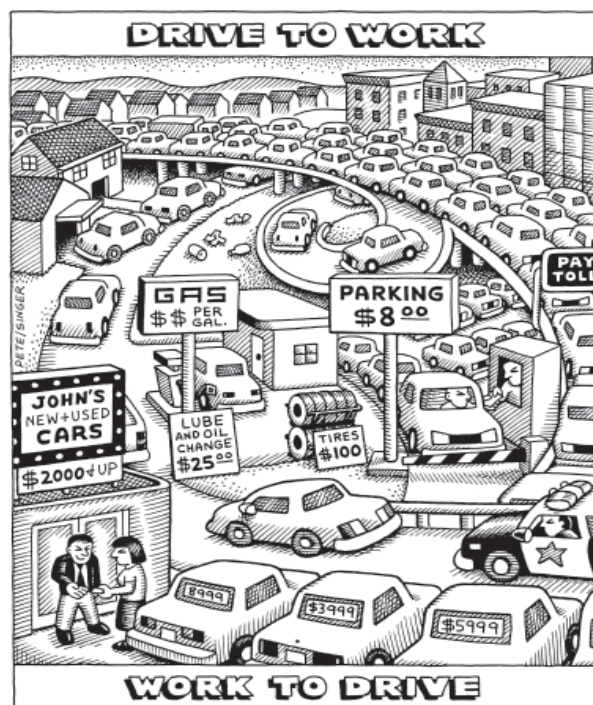
- The Telework Enhancement Act of 2007, introduced by U.S. Senator Ted Stevens (R-Alaska), would establish a policy under which federal employees shall participate in telework to the maximum extent possible without diminishing employee performance or organizational operations; and appoint a Telework Managing Officer.¹⁵ It passed in the House and is currently in a Senate subcommittee.

¹² Ibid.

¹³ Mieke Bomann, "Telecommuting Works for Many," American News Service, October 21, 1999. <http://www.berkshirepublishing.com/ans/HTMLView.asp?parItem=S031000194A>.

¹⁴ Stephen Anderson, "Telecommuting: State Stuck in the Slow Lane" Hartford Courant, April 16, 2008.

¹⁵ S 1000, 110th Congress, 1st sess.



- U.S. Representative Nick Rahall (D-West Virginia) introduced House Resolution (H.R.) 6 in January 2007, which was signed by the President in December 2007. H.R. 6 is a large energy policy bill that includes an instruction for the Small Business Administration director to conduct a pilot program to provide information regarding telecommuting to small business concerns and to encourage them to offer telecommuting options to employees.¹⁶
- H.R. 4106 (Telework Improvements Act of 2008), sponsored by U.S. Representative Danny Davis (D-Illinois), is a measure to improve teleworking in executive agencies by developing a telework program that allows employees to telework at least 20% of the hours worked in every two administrative workweeks. It has passed the House and awaits a vote in the Senate.¹⁷

¹⁶ The Energy Independence and Security Act of 2007, HR 6, 110th Congress, 1st sess.

¹⁷ HR 4106, 110th Congress, 1st sess.

STATE AND LOCAL PARTICIPATION

There are several states that have standard telecommuting policies for state offices and offer tax incentives for telecommuting, ridesharing and public transit users; though the presence of a state telecommuting policy does not always translate to the practice of it. At least 34 states have adopted telecommuting programs in selected agencies and regions.¹⁸ Although telecommuting is encouraged in enabling legislation, some states have struggled to increase participation rates while others have met with positive results.

According to the Tennessee Department of Human Resources, it is at the discretion of the appointing authority of a state agency to permit telecommuting. Currently, there are no tax incentive statutes to encourage agencies to establish telecommuting policies.

There is no clearinghouse or central source that maintains a list of offices that allow or use telecommuting in Tennessee. Based on a limited and informal survey, TACIR found two other state agencies that have a telecommuting policy in place. The Department of Finance and Administration has over 30 employees who telecommute between one to four days a week. The Offices of Research and Education Accountability in the Comptroller's Office also has a policy, but it does not have regular telecommuters; employees use it on an occasional basis. However, almost all the staff in the Comptroller's Division of Municipal Audit telecommute.

In a recent news report, Metro Nashville Mayor Karl Dean was quoted as saying, "Right now, what we want to do is try to continue to offer full services to our citizens but knowing the situation with the price of gasoline, we need to tighten our belts. If we can do that through creative ideas

like four-day workweeks, we'll consider that."¹⁹ This summer, Rutherford County school district instituted a temporary four-day workweek program, in which employees work 10-hour days Monday through Thursday and offices are closed on Fridays. The Tennessee Board of Probation and Parole has also incorporated a staggered four-day work week for many of its employees who work extended hours, keeping offices open Monday through Friday.

An important step for state policymakers and administrators is to evaluate telecommuting's impact organizationally and in terms of saved miles, fuel, and emissions.

TACIR CASE STUDY

In May 2006, TACIR initiated a telecommuting program in an effort to save energy and offer employees flexible work options. TACIR staff has two alternatives: telecommute one day a week or work a compressed work week. The majority of TACIR's research staff utilizes telecommuting. Two staff members work extended hours four days with one day off each week. According to an internal evaluation of the program, TACIR staff saved over \$2,000 worth of gasoline (equal to 150 gallons) and drove 13,000 fewer miles between May 2007 and May 2008. (See Table 1.)

Table 1. Fuel Saved As a Result of TACIR Telecommuting May 2008 Gas Price Average

	Roundtrip Miles to work	Miles/gal	Total gal/wk	x \$3.80/gal
Employee	70	33	2.12	\$8.06
Employee	12	25	0.48	\$1.82
Employee	5	25	0.2	\$0.76
Employee	60	15	4	\$15.20
Employee	18	29	0.62	\$2.36
Employee	20	25	0.8	\$3.04
Employee	27	22	1.23	\$4.66
Employee	12	26	0.46	\$1.75
Employee	26	25	1.04	\$3.95
TOTAL	250		10.95	\$41.61
YEARLY	13,000		569.44	\$2,163.86

¹⁸ Christine Vestal, "Virginia Accelerates Telework Program," Stateline.org, April 20, 2006, <http://www.stateline.org/live/details/story?contentId=105725>.

¹⁹ WSMV, "Metro Could Move to Four-Day Workweek," WSMV.COM, June 3, 2008, <http://www.wsmv.com/money/16477071/detail.html?rss=nash&psp=news>.

With assistance from the Tennessee Department of Transportation's (TDOT) Environmental Division, TACIR evaluated its telecommuting program both organizationally and environmentally. TDOT assisted TACIR in the environmental analysis by calculating the emission benefits of the TACIR program and then projected potential emission benefits for a hypothetical scenario where 20% of all state employees are allowed to telecommute.²⁰

TACIR directors and staff were surveyed on the effect telecommuting had during its first year on staff productivity. The directors reported staff productivity did not decrease. Some staff members reported productivity was the same as in the office, while a few reported that productivity actually increased as a result of telecommuting. Using their emissions calculator, TDOT staff determined the emissions benefit that resulted from the TACIR telecommuting program, shown in Table 2.

**Table 2. TACIR Emissions Benefit
2006 Emission Factors
tons/year**

VOC (volatile organic compounds)	0.01
NO _x (nitrogen oxide)	0.01
CO (carbon monoxide)	0.08

With over 43,000 state employees, if 20% (8,600 employees) telecommuted and the average one-way commute was 20 miles, it would save 344,000 miles in one day. If these employees were allowed to telecommute just 44 days per year it would result in cleaner air for Tennessee

²⁰ L. Mark McAdoo, Environmental Policy Analyst, Tennessee Department of Transportation, Environmental Division.

THE POLLUTANTS

Pollution sources that move, such as trucks, snowblowers, bulldozers, and trains, are known as "mobile sources." Mobile sources produce several air pollutants, such as air toxics and greenhouse gases. Nationwide, mobile sources represent the largest contributor to air toxics. Air toxics are pollutants known or suspected to cause cancer or other serious health or environmental effects. Greenhouse gases, such as carbon dioxide (CO₂), trap heat in the Earth's atmosphere, contributing to global climate change.

Nitrogen oxides can travel long distances, causing a variety of health and environmental problems in locations far from their emissions source. These problems include ozone and smog, which are created in the atmosphere from nitrogen oxides, hydrocarbons, and sunlight. On smoggy days, you might notice difficulty breathing or trouble seeing objects in the distance. Nitrogen oxide emissions also contribute to the formation of particulate matter through chemical reactions in the atmosphere.

Carbon monoxide is harmful because it reduces oxygen delivery to the body's organs and tissues. It is most harmful to those who suffer from heart and respiratory disease. High carbon monoxide pollution levels also affect healthy people. Symptoms may include visual impairment, headache, and reduced work capacity. Unlike many other air pollutants, carbon monoxide levels in the outside air typically peak during colder months.

Source: The Environmental Protection Agency (<http://www.epa.gov/otaq/inventory/overview/pollutants/index.htm>)

through reduction of mobile source emissions annually by

- 16.40 tons of VOC
- 10.93 tons of NOx
- 141.87 tons of CO
- 0.2 tons of particulate matter
- 0.14 tons of SO₂ (sulfur dioxide)
- 1.68 tons of NH₃ (ammonia).

TELECOMMUTING IN OTHER STATES

A Vermont senator wants state government and public schools to move to a four-day work week with longer hours before the end of the year.²¹ In Lakewood Ranch, a Florida town, local officials are considering a four-day work week with limited services offered on Friday. Lakewood Ranch's community manager is currently studying the feasibility and seeking input from town employees.²² Misericordia University in Pennsylvania will be testing four-day work weeks for one month. Employees can choose which day they would like to take off, but the campus will be open every day, no office can close. It is projected this will save staff over 600 gallons of gas.²³ In Utah, there is a mandatory four-day work week for almost 80% of state employees.²⁴ Governor Jon Huntsman believes this will reduce the state's carbon footprint, increase energy efficiency, improve customer service and provide workers more

²¹ Peter Hirschfield, "Illuzzi proposes 4-day work week for state and schools," Times Argus, June 17, 2008, <http://www.timesargus.com/apps/pbcs.dll/article?AID=/20080617/NEWS01/806170372>.

²² Richard Dymond, "4-day work week mulled for LWR Town Hall," Bradenton Herald, July 1, 2008.

²³ Mike Trim, "4 Day Work Week at Misericordia U," WBRE, June 30, 2008, <http://pahomepage.com/content/fulltext/?cid=29321>.

²⁴ Larry Copeland, "Most state workers in Utah shifting to 4-day week," USA Today, July 1, 2008, http://www.usatoday.com/news/nation/2008-06-30-four-day_N.htm.

flexibility.²⁵ Public universities, Utah's court system, prisons and other critical services will maintain a regular business week.²⁶

All across the nation, public and private employers are looking for ways save energy and reduce gasoline costs for employees. Telecommuting is not just a solution to high gasoline and energy prices, but it improves health and the environment as well.

WHERE DOES TENNESSEE RANK?

- Ranked 5th in Toxic Air Releases (2005)²⁷
- Ranked 20th in Motor Gasoline Expenditures Per Person (2005)²⁸
- Ranked 16th in Petroleum Consumption (2005)²⁹
- Ranked 30th in Urban Interstate Congestion (2006)³⁰
- Davidson, Knox, and Shelby counties received Fs and Hamilton County received a D in the American Lung Association's 2008 (particle pollution) *State of the Air* report.³¹

²⁵ Ibid.

²⁶ Ibid.

²⁷ Anne Paine and Sheila Wissner, "State 5th nationally in toxic releases," Tennessean, April 6, 2007.

²⁸ Energy Information Association, "Motor Gasoline Prices and Expenditures Ranked by State, 2005," Table R2, http://www.eia.doe.gov/emeu/states/sep_sum/plain_html/rank_pr_mg.html.

²⁹ Energy Information Association, "Energy Consumption Ranked by Source and Total Consumption Per Capita, Ranked by State, 2005," Table R2, http://www.eia.doe.gov/emeu/states/sep_sum/plain_html/rank_use_per_cap.html.

³⁰ David T. Hartgen and Ravi K. Karanam, 17th Annual Report on the Performance of State Highway Systems (1984-2006) (Los Angeles, CA: Reason Foundation, 2008).

³¹ American Lung Association, 2008 State of the Air Report (New York, NY: American Lung Association, 2008).

Tennessee Advisory Commission on Intergovernmental Relations (TACIR)

The Commission was established by the General Assembly in 1978 to:

- Monitor the operation of federal-state-local relations,
- Analyze allocation of state and local fiscal resources,
- Analyze the functions of local governments and their fiscal powers,
- Analyze the pattern of local governmental structure and its viability,
- Analyze laws relating to the assessment and taxation of property,
- Publish reports, findings and recommendations, and draft legislation needed to address a particular public policy issue, and
- Provide a neutral forum for discussion and education about critical and sensitive public policy issues.

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Staff Information Reports, Staff Briefs, Staff Technical Reports, Staff Working Papers and TACIR Fast Facts are issued to promote the mission and objectives of the Commission. These reports are intended to share information and research findings relevant to important public policy issues to promote wider understanding and discussion of important policy concerns facing the citizens of Tennessee.

Only reports clearly labeled "Commission Reports" represent the official position of the Commission. Others are informational.



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