

The Greening of Transportation in New Hampshire



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Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Table of Contents

Page

| | |
|------------------|--|
| 2 | Introduction |
| 6 | Air Transportation |
| 8 | Rail Transportation |
| 10 . . . | Truck Transportation |
| 12 . . . | Transit and Ground Passenger Transportation |
| 14 . . . | Scenic and Sightseeing Transportation |
| 16 . . . | Support Activities for Transportation |
| 18 . . . | Postal Service |
| 20 . . . | Couriers and Messenger |
| 21 . . . | Warehouse and Storage |
| 23 . . . | Conclusion |

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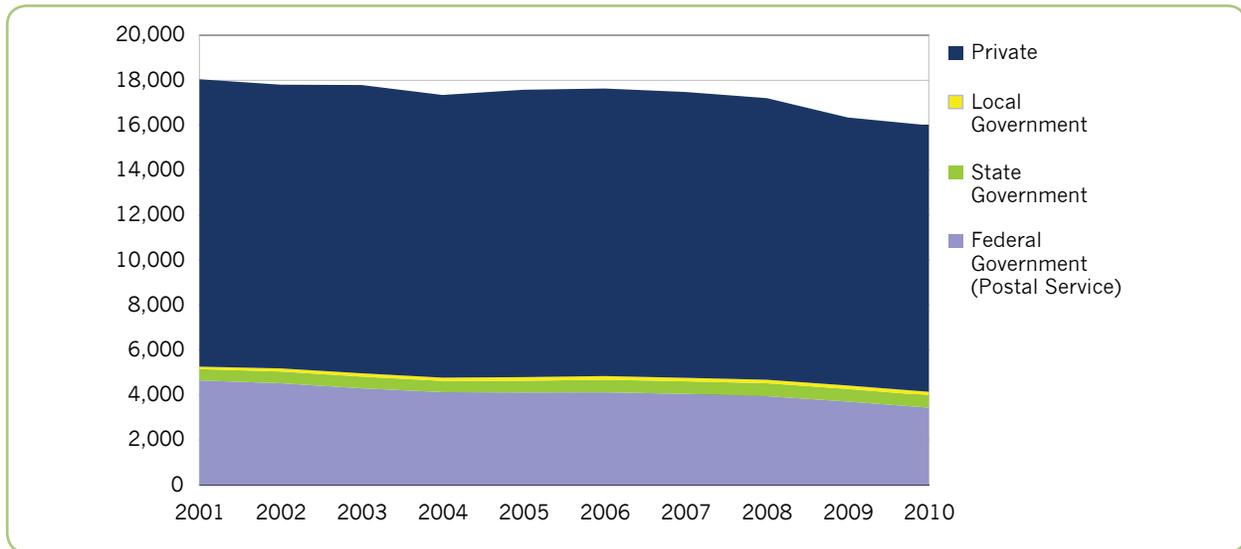
Introduction

The *Transportation and warehousing* sector includes establishments providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation, by air, rail, water,



road, or pipeline.¹ Transportation permeates every industrial sector because all businesses, from manufacturers to retailers to food producers, depend on some method of transportation to obtain and distribute goods and services. This industry by its very nature uses high volumes of fossil fuels, providing great opportunities to think about how resources are used, and to incorporate greener methods into the industry's everyday practices. Another reason for evaluating *Transportation and warehousing* from a greening perspective is that the sector includes establishments that move groups of people from one place to another. For the majority of New Hampshire commuters, the car is the primary mode of transportation to work and over time commutes have become longer. The mean travel time to work for New Hampshire residents rose from 25.0 minutes in 2005 to 25.9 minutes in 2010.^{2,3} Traffic congestion and

Covered Employment in Transportation and Warehousing Has Declined Over the Last Ten Years



1. North American Industry Classification System (NAICS) definition.
2. Commuting Characteristics by Sex. Table SO801. American Community Survey 2005. U.S. Census Bureau. 23 May 2012. <factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_05_EST_S0803&prodType=table>.
3. Commuting Characteristics by Sex. Table SO801. American Community Survey 2010. U.S. Census Bureau. 23 May 2012.. <factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_1YR_S0801&prodType=table>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

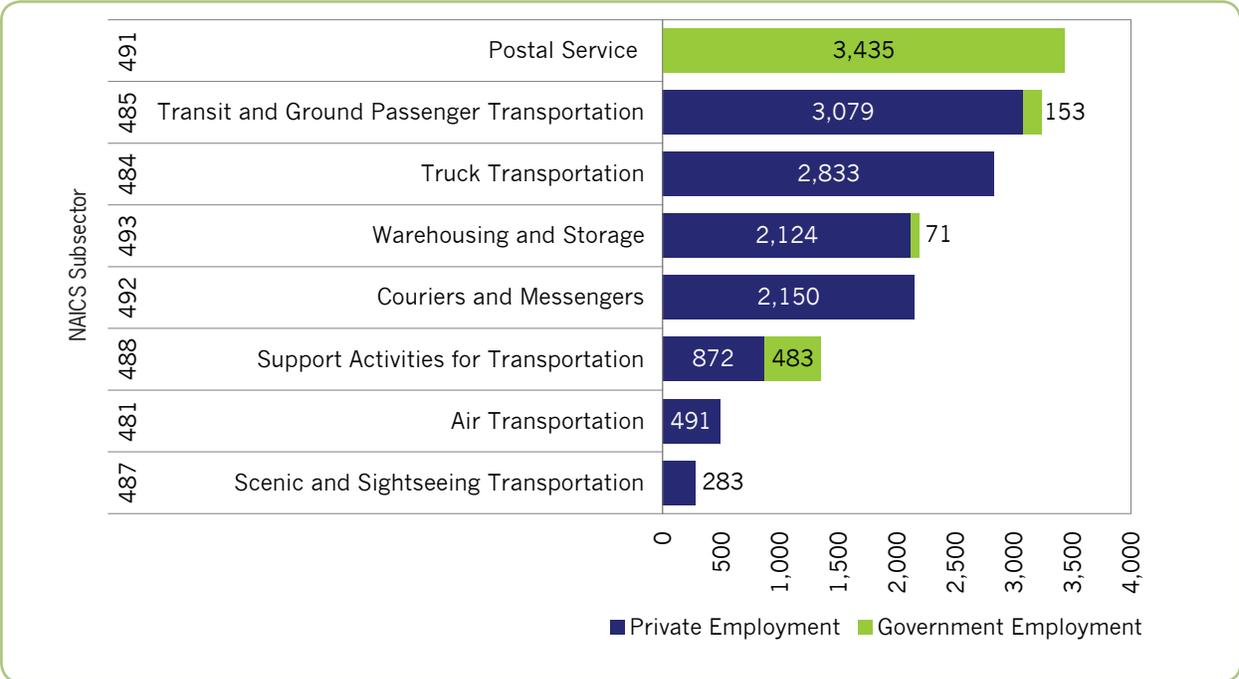
larger carbon footprint are two of the environmental impacts of individuals traveling alone by car. Establishments providing shared transportation services for groups of individuals (public transportation) are by definition considered green.

The *Transportation and warehousing* sector has 11 subsectors:

- ❖ Air transportation
- ❖ Rail transportation
- ❖ Water transportation*
- ❖ Truck transportation
- ❖ Transit and ground passenger transportation (buses)
- ❖ Pipeline transportation*
- ❖ Scenic and sightseeing transportation
- ❖ Support activities for transportation
- ❖ Postal Service
- ❖ Couriers and messengers
- ❖ Warehousing and storage

* Analysis of Water transportation and Pipeline transportation is excluded from this analysis, as there was either no employment or data was not available for New Hampshire.

New Hampshire 2010 QCEW Private and Government Employment, Transportation and Warehousing



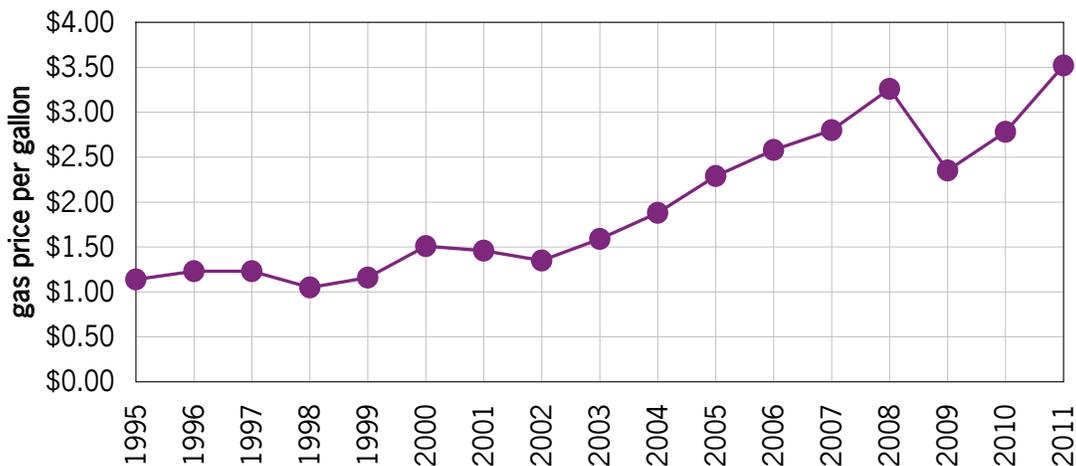
Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Labor market analysis frequently focuses on employment in the private sector, as government employment is not always summed separately by industry. For example, transportation, education, and healthcare have both public and private employment, but it is generally not broken down. This paper covers employment in both the government and private sectors, since some subsectors in *Transportation and warehousing* consist of significant amounts of government employment. In the NAICS structure, the Postal Service is a subsector of the *Transportation and warehousing* sector. Likewise, employment in New Hampshire's Department of Transportation is classified under the industry subsector of *Support activities for transportation*, but is a function of state government, not private industry. Another issue when assessing employment in *Transportation and warehousing* is that employment in rail transportation is omitted from states' covered employment and wage data, as rail employees are insured through the U.S. Railroad Retirement Board and not the individual states' unemployment insurance systems.

From 2001 to 2010, private employment in *Transportation and warehousing* declined by 7.3 percent, representing 928 jobs. In comparison, when government employment in *Transportation and warehousing* is added, total employment for this sector declined by 13.3 percent, or 2,463 jobs, from 2001 to 2010 (the overall drop was due to less employment within the U.S. Postal System). In total (private plus government), there were just under 16,000 jobs in *Transportation and warehousing* in 2010, accounting for 2.7 percent of total covered employment.⁴

Gas Prices, 1995-2011



Source: United States Energy Information Administration

4. Covered Employment and Wages (QCEW). Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

The price of fuel is one of the biggest costs a business in the transportation industry will encounter. The Environmental Protection Agency notes it is the second largest expense following labor costs.⁵ From 2002 to 2011, the price of regular unleaded gasoline has experienced a more dramatic upward trend. Annual data disguises significant month-to-month volatility.⁶ One example of such volatility is the rise from \$3.49 to \$3.93 per gallon between April and May 2011.⁷ Such volatility and increases in fuel costs over time are notable factors in the decision to adopt greener transportation choices.

5. "SmartWay Technology Upgrade Kits for Trucking Companies- An Innovative Financing Program to Reduce the Environmental Impact of Trucking." Sep 2005. SmartWay Transportation Partnership, United States Environmental Protection Agency. 12 Jun 2012. <www.marama.org/diesel/frieght/Wachovia_%20SmartWay_Concept_%20Document.pdf>.
6. Motor Gasoline Retail Prices, U.S. City Average. Monthly Energy Review; Energy Prices. United States Energy Information Administration. 15 May 2012.. <www.eia.gov/totalenergy/data/monthly/pdf/sec9_6.pdf>.
7. Ibid.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Air Transportation

Establishments classified in the *Air transportation* subsector provide air transportation of passengers and/or cargo using aircraft, such as airplanes and helicopters. Within the subsector there are two industry groups, scheduled and nonscheduled air transportation. Scheduled air carriers fly regular routes on regular schedules and operate even if flights are only partially loaded. Nonscheduled air transportation provides similar services with no regular routes or schedules, and provides specialty flying services.⁸



Employment in New Hampshire *Air transportation* has declined from 2001 to 2010, falling 45 percent, losing 417 jobs. Nationally, covered employment in *Air transportation* fell 27 percent during the same time period.⁹ New Hampshire has two commercial airports, the Manchester-Boston Regional Airport and the Lebanon Municipal Airport. Passenger traffic at the Manchester-Boston Regional Airport peaked at 4,329,478 in 2005, and has declined each year since then, dropping to 2,806,701 in 2010.¹⁰ Passenger traffic at Lebanon Municipal Airport was 14,500 in 2010.¹¹ Staffing patterns for this industry indicate that the large majority of employment in this subsector is in the Office and administrative support occupations job family. Due to the mobile nature of aviation crews, employment related to Air transportation might not be reported in New Hampshire.

The airports and airlines serving New Hampshire's airports provide numerous jobs, both stationary and mobile, that have the ability to impact the environment. Many airlines are taking proactive steps to manage their environmental footprint and improve fuel efficiency. Aircraft are upgraded to newer, more fuel-efficient models while older, less efficient models are retired. These new aircraft are lighter, requiring less fuel, and are consciously loaded with as little weight as possible. Some methods of reducing weight include measuring the amount of fuel needed for a trip and switching to lightweight cargo containers. Air traffic control advancements, including Required Navigation Performance (RNP) and the Federal Aviation Administration's Next Generation Air Transportation System (NextGen) increase capability for guiding and directing air traffic using more precise flight paths, reducing delays and eliminating unnecessary mileage.¹²

8. Air Transportation. U.S. Census Bureau. North American Industry Classification System. 15 Mar 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=481&search=2007>.

9. Air Transportation: NAICS 481. Industries at a Glance. Bureau of Labor Statistics, United State Department of Labor. 15 May 2012. <www.bls.gov/iag/tgs/iag481.htm>.

10. Manchester-Boston Regional Airport. Passenger Statistics. 8 May 2012. <flymanchester.com/airlines/activity.php>.

11. Request for Proposals. City of Lebanon, New Hampshire, Airport Department. 10 Feb 2012. <flyleb.com/wp-content/uploads/2011/02/LEB-Restaurant_RFP-all.pdf>.

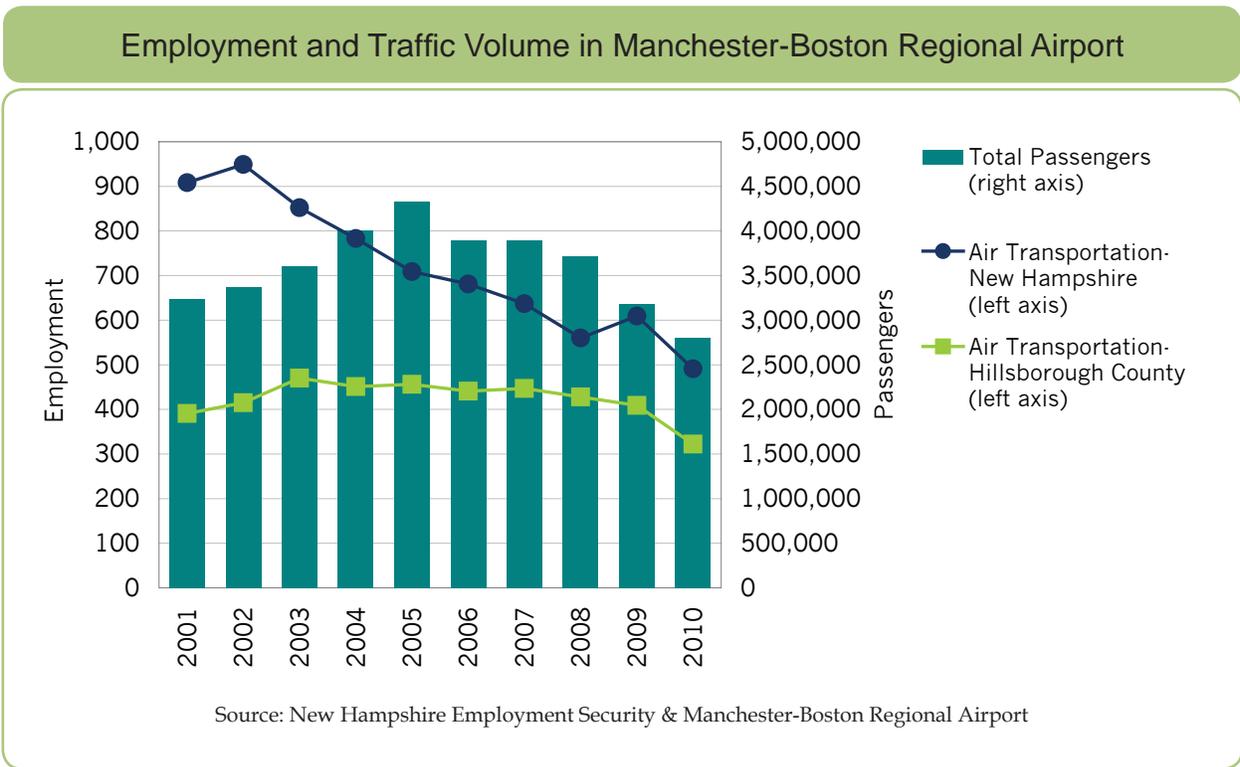
12. NextGEN. Federal Aviation Administration. 23 May 2012. <www.faa.gov/nextgen/>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Steps being taken to reduce emissions and improve fuel efficiency include utilizing continuous descent approach (CDA), which entails preparing for landing with a constant, steady decline instead of a step-down approach, reducing noise, fuel and emissions. On the ground, cargo carriers are utilizing vehicles that have either more fuel-efficient engines or are powered with alternative fuels, including electricity.^{13, 14}

Air transportation has a higher carbon footprint per mile than any other mode of transport,¹⁵ however, that does not preclude this industry subsector from experiencing “greening” of its workforce and workplace practices. Indeed, due to the higher carbon footprint, improvements may have a larger impact than other “greening” activities in the *Transportation and warehousing* sector.



13. EarthSmart-Conservation. About FedEx. Federal Express. 18 May 2012. <about.van.fedex.com/conservation>.
14. Sustainability. 2010 Corporate Sustainability Report. United Parcel Service. 18 May 2012. <www.responsibility.ups.com/community/Static%20Files/sustainability/UPS_Environment.pdf>.
15. Getting There Greener; The Guide to Your Lower Carbon Vacation. 2008. Union of Concerned Scientists; Citizens and Scientists for Environmental Solutions. 16 May 2012. <www.ucsusa.org/assets/documents/clean_vehicles/greentravel_slick_opt_web.pdf>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Rail Transportation

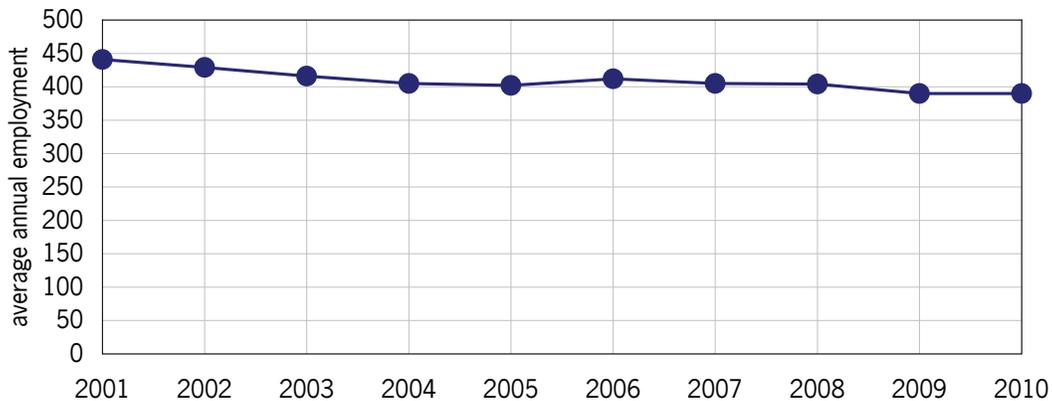
The *Rail transportation* subsector includes establishments engaged in rail transportation of passengers and/or cargo using railroad rolling stock. Railroads primarily either operate on networks, with physical facilities, labor force, and equipment spread over an extensive geographic area, or operate over a short distance on a local rail line.¹⁶



Railroad workers are insured by the United States Railroad Retirement Board. Employment counts in *Rail transportation* are reported by the workers' state of residence, and not where the actual work takes place.¹⁷ New Hampshire *Rail transportation* employment by residence saw a decline during the period of 2001-2010. Employment went from 441 workers in 2001 and fell to 390 workers in 2010, a decline of 11 percent. Nationally, employment in Rail transportation fell by about seven percent from 2001 to 2010.

Rail transportation exemplifies an employment dynamic also seen throughout other transportation subsectors, where an increased volume of goods transported does not necessarily result in increased employment. Instead, by transporting an increased volume of goods

New Hampshire Employment - Railroad Transportation



Source: United States Railroad Retirement Board. Financial, Actuarial and Statistical Historical Data. Annual Railroad Retirement Act and Railroad Unemployment Insurance Act Reports. Total Railroad Employment by State and County. 2001-2010.

¹⁶. Rail Transportation. U.S. Census Bureau. North American Industry Classification System. 23 May 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=484&search=2007>.

¹⁷. United States Railroad Retirement Board. Financial, Actuarial and Statistical Historical Data. Annual Railroad Retirement Act and Railroad Unemployment Insurance Act Reports. Total Railroad Employment by State and County. 2001-2010.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

more efficiently, employment tends to decrease. With each additional railroad car added to a scheduled run, fuel costs increase but additional labor to operate the train is typically not required, allowing carriers to transport large volumes of goods with fixed labor costs. It is only the frequency of trips that would potentially increase employment and the employment related to loading and unloading of goods.

Passenger rail transportation in New Hampshire is of very limited capacity at this date. In 2007, the Governor signed legislation creating the Rail Transit Authority with the aim of restoring rail access to Merrimack, Nashua, Bedford, Manchester, Hooksett and Concord, connecting to Boston. It is expected that the restoration of rail service to these areas would increase employment due to increased access. The areas served by rail would also benefit from an increase in spending by those utilizing the train service. There is a potential for non-tangible effects in the form of reduced traffic volume into Boston and shorter commute times, as well as reduced pollution levels. The future of this project is not known at this time.

Amtrak™ is the only passenger rail transportation provider in New Hampshire, currently servicing two routes: the Vermonter, traveling from Washington DC to Vermont with a stop in Claremont, NH, and the Downeaster, traveling from Portland, Maine to Boston with stops in Dover, Durham and Exeter. However, these stations are all unstaffed. Amtrak™ has taken several steps towards efficiency, including decreasing the Btu¹⁸ expended per passenger by upgrading to more efficient trains and phasing out older models. The Amtrak™ website promotes rail travel as more efficient than either airplane or automobile travel on a per-passenger mile basis. The company has also implemented green practices such as wide recycling on their trains, in stations and within their mechanical facilities. It is not only paper, plastic and glass that are recycled at Amtrak™. At the company's mechanical facilities steel, metal, oil, cable and wire, batteries, textiles, and mattress foam are recycled. Many of the employees who interact with passengers wear "Ask Me About Recycling" pins on their uniforms to further promote recycling awareness.¹⁹

The majority of New Hampshire's employment in the *Rail transportation* subsector is related to freight transportation. The Association of American Railroads (AAR) reports that in 2010, American railroads moved a ton of freight 484 miles on one gallon of fuel, and allowed goods to be transported with 75 percent fewer greenhouse gas emissions than trucks. According to AAR, there were nine freight railroads operating in New Hampshire as of 2009. The primary goods being transported on rail lines with traffic terminating in New Hampshire include coal (789,000 tons) and cement, paper and chemical (109,000 tons). The primary good being shipped on rail lines with traffic originating in New Hampshire is stone, sand and gravel (58,000 tons).²⁰

18. Btu: British Thermal Units. The amount of energy needed to raise one pint of water one degree Fahrenheit.

19. "Amtrak Recycles; Taking More Steps to Travel Greener." Travel Green. Whistlestop. Amtrak. 12 Jun 2012. <www.amtrak.com/servlet/ContentServer?c=WSArticlePage&pagename=WhistleStop%2FWSArticlePage%2FBlank_Template&cid=1246042675359>.

20. Freight Railroads in New Hampshire. Apr 2011. Association of American Railroads. 4 May 2012. <www.aar.org/Railroads-States/New-Hampshire-2009.pdf>

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Truck Transportation

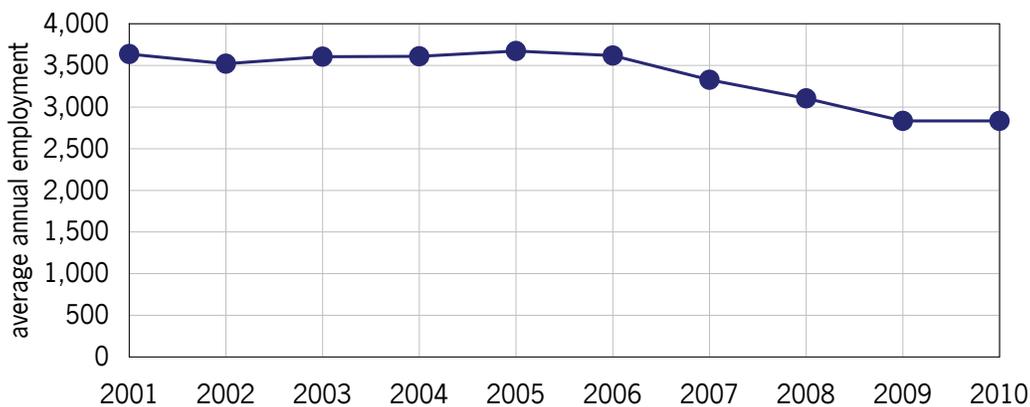
Establishments classified in the *Truck transportation* subsector provide over-the-road transportation of cargo using motor vehicles, such as trucks and tractor trailers. The subsector is subdivided into general freight trucking and specialized freight trucking. These two industry groups reflect differences in equipment



used, type of load carried, scheduling, terminal, and other networking services. General freight transportation establishments handle a wide variety of general commodities, generally palletized, and transported in a container or van trailer. Specialized freight transportation is the transportation of cargo that, because of size, weight, shape, or other inherent characteristics, require specialized equipment for transportation.²¹

Annual average employment levels in *Truck transportation* were nearly unchanged from 2001 to 2006, and then declined annually until 2009. Over the ten year period, employment dropped by 22.1 percent, a loss of 804 jobs. Due to the nature of trucking, many businesses which operate in New Hampshire are not based in the state. However, trucking companies operate on a local or regional basis and have agreements with other trucking companies which allow them to provide coast-to-coast service. Only those workers based out of an office or a garage located in New Hampshire are included in the state's employment count.

New Hampshire Employment - Truck Transportation



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Note: Data includes only private covered employment

²¹. Truck Transportation. U.S. Census Bureau. North American Industry Classification System. 6 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=484&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Movement of goods by truck is a primary method of transportation in both New Hampshire and the United States as a whole. Because freight transportation by truck is such a popular option, attention is being paid to both greenhouse gas emissions released by these trucks, as well as their fuel economy. In the trucking industry, there are independent organizations that provide certifications regarding environmental sustainability. Some businesses will only ship their goods on carriers who have been certified.

CaseStack[®] is a private logistics provider that offers “complete supply chain solutions to companies selling products to retailers, distributors and other manufacturers.” CaseStack[®] works with both businesses on their shipping/logistics needs as well as carriers. Their processes reduce waste and maximize efficiency, including consolidating trips and utilizing effective routes. CaseStack[®] offers a “Green Carrier” program, identifying those carriers with fuel efficient fleets. Among requirements for the “Green Carrier” designation are; engine modifications, use of alternative fuels, tire and body modifications and industry or governmental certifications. CaseStack[®] also offers businesses a “Delivered Green” Certification, awarded to businesses that ship their goods on Green Carriers at least 40 percent of the year.²²

In the delivery industry, the cost of fuel is a significant component of operating expenses, and increasing fuel efficiency or decreasing the amount of fuel used reduces overhead. The EPA’s SmartWay program includes fuel reducing components such as idling reduction technologies and “upgrade kits” which reduce fuel consumption. Both are aimed at reducing overall costs to the business as well as the amount of fuel consumed. The EPA estimates a truck idling six to eight hours per day for anywhere from 250 to 300 days per year wastes \$6,000 in fuel annually.²³ Knowledge of these newer tractor trailer features, the suggested driving methods for improved mileage and fuel consumption, and their environmental benefits, are examples of the new skills drivers, transportation managers, and industry professionals in the transportation sector will need. The EPA offers grants for businesses interested in acquiring SmartWay tractor trailers as well as identifying several lenders approved for offering SmartWay loans. These loans must offer lower costs to the buyer in the form of lower interest rates or a longer term for paying back the loan. For individuals, an online directory lists all vehicles with their environmental ratings, and identifies which meet SmartWay requirements. According to the EPA, tractor trailers “are outfitted at point of sale with equipment that significantly reduces fuel use and emissions.”²⁴ The owner may label the vehicle as SmartWay Certified, giving a competitive advantage and indicating a certain level of commitment to the environment.

The move towards sustainability, managing operating costs, and increases in the cost of fuel have encouraged trucking companies to re-evaluate their driving rules and regulations in an effort to increase efficiency and decrease costs. While becoming certified may give a degree of competitive advantage, many undertake fuel saving measures because it allows them to remain cost competitive.

22. CaseStack. 12 Jun 2012. <ww2.casestack.com>.

23. Verified Idling Reduction Technologies. SmartWay Technology Program. United States Environmental Protection Agency. 10 Feb 2012. <www.epa.gov/smartway/technology/idling.htm>.

24. Ibid.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

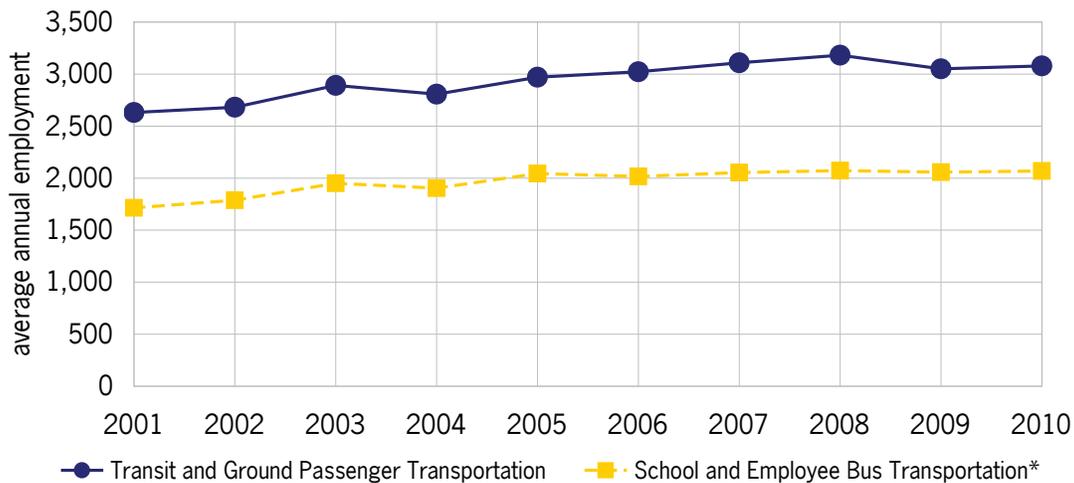
Transit and Ground Passenger Transportation

Establishments classified in the *Transit and ground passenger transportation* subsector include a variety of passenger transportation activities, such as urban transit systems; chartered bus, school bus, and interurban bus transportation; and taxis. These activities are identified based primarily on such factors as vehicle types, routes, and schedules.²⁵



Employment in *Transit and ground passenger transportation* has seen an uptick in employment levels in New Hampshire from 2001 to 2010. Private employment in this subsector rose 17 percent over the period, adding 448 jobs, and is currently the largest private employment subsector in *Transportation and warehousing*. About two-thirds of the employment in *Transit and ground passenger transportation* is in the industry group *School and employee bus transportation*. In New Hampshire, the majority of *School and employees bus transportation* employment is private, as the bus services provided for students are contracted out to private firms by local (public) school districts.

New Hampshire Employment - Passenger Transportation



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

* School and Employee Bus Transportation is within the Transit and ground passenger transportation subsector
Note: Data includes only private covered employment

²⁵. Transit and Ground Passenger Transportation. U.S. Census Bureau. North American Industry Classification System. 7 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=485&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Mass, or public, transportation is generally considered a green activity because it transports large numbers of people in one vehicle, reducing the number of personal vehicles on the roadways. The Union of Concerned Scientists reported in *Getting There Greener* that “motorcoach transportation is the greenest transportation choice.”²⁶ State subsidies have allowed New Hampshire-based bus companies the opportunity to develop routes and establish a ridership base. The state has observed large increases in the number of commuters taking advantage of bus transportation options.²⁷ In addition to the environmental benefits of transporting groups of commuters together and removing those corresponding cars from the road, individual savings on gas, parking, and vehicle wear and tear are reasons attracting daily riders. Beyond individual savings, bus lines themselves seek to increase fuel efficiency, by driving at lower speeds and limiting idling.

26. *Getting There Greener; The Guide to Your Lower Carbon Vacation*. 2008. Union of Concerned Scientists; Citizens and Scientists for Environmental Solutions. 16 May 2012. <www.ucsusa.org/assets/documents/clean_vehicles/greentravel_slick_opt_web.pdf>.

27. Email correspondence with Ben Blunt. Boston Express. 30 Sep 2010.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Scenic and Sightseeing Transportation

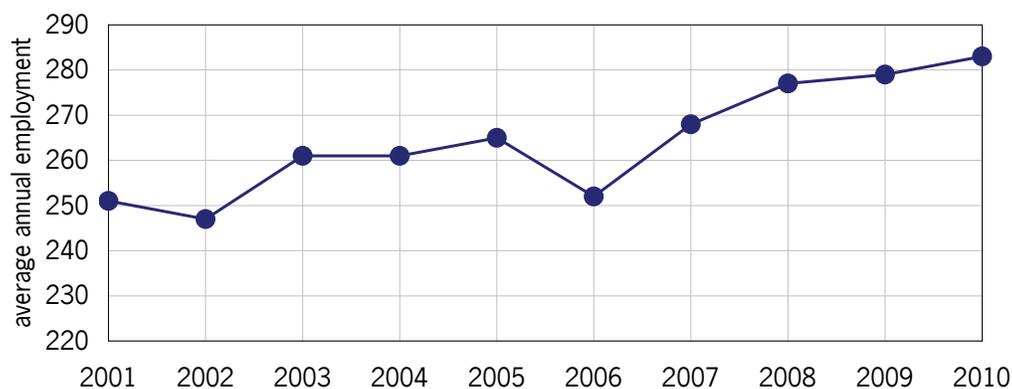
Establishments classified in the *Scenic and sightseeing transportation* subsector utilize transportation equipment to provide recreation and entertainment. These activities are different from passenger transportation carried out for the purpose of other types of for-hire transportation. Service providers do not emphasize efficient transportation; in fact, such activities often use obsolete vehicles, such as steam trains, to provide some extra ambience. The activity is local in nature, usually involving a same-day return to the point of departure.²⁸



In New Hampshire, employment growth in the *Scenic and sightseeing transportation* subsector has been fairly steady between 2001 and 2010. Employment increased by almost 13 percent over the ten year period, adding 32 workers. Average annual employment in 2010 was 283 workers.

Though the definition of this industry subsector specifically indicates that efficiency is not a primary goal, in New Hampshire there are several rail-based scenic and sightseeing transportation operators incorporating green initiatives, such as alternative fueling methods for railway engines. As fuel storage is less of an obstacle for rail transportation (additional railway cars are used for fuel storage), this mode of transportation is well suited for fueling methods not

New Hampshire Employment - Scenic and Sightseeing Transportation



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Note: Data includes only private covered employment

²⁸. Scenic and Sightseeing Transportation. U.S. Census Bureau. North American Industry Classification System. 6 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=487&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

feasible in other areas of transportation. According to the National Biodiesel Board, Biodiesel is one such option for both traditional rail transportation and those businesses operating in *Scenic and sightseeing transportation*. Biodiesel is a “renewable, clean burning diesel replacement that is ... made from an increasingly diverse mix of resources such as agricultural oils, recycled cooking oil and animal fats [and] meets the strict specifications of ASTM D6751.”^{29,30} The Mount Washington Cog Railway in Bretton Woods is embracing biodiesel in an effort to reduce emissions and environmental impacts of the traditional coal-fueled locomotives.³¹ Evaluating environmental impact may be particularly relevant to a business in *Scenic and sightseeing transportation* whose livelihood depends on the beauty of the natural environment, as well as conserving the state’s heritage.

29. The National Biodiesel Board. 10 Feb 2012. <www.biodiesel.org>.

30. ASTM D6751: Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels. The American Society for Testing and Materials (ASTM) is an international standards organization. More information can be found at <www.astm.org/ABOUT/aboutASTM.html>.

31. “Governor Dedicates the Mount Washington Cog Railway’s First Biodiesel Locomotive.” 6 Sep 2008. The Mount Washington Cog Railway. 12 Jun 2012. <www.thecog.com/biodiesel_dedication.php>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

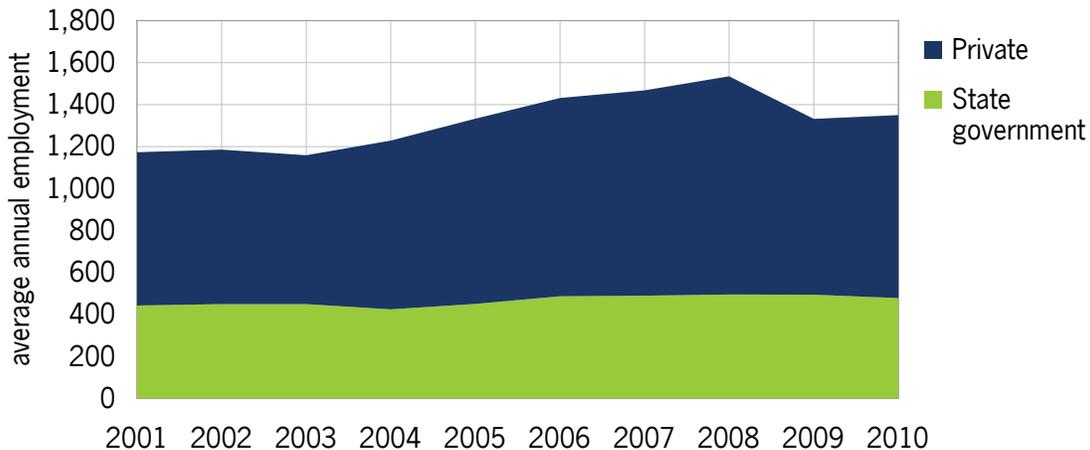
Support Activities for Transportation

Businesses in the *Support activities for transportation* subsector provide services such as weigh station operations, and arrangement of carpools.³² Support activities are directed towards all transportation subsectors: air, rail, water, and road. The New Hampshire Department of Transportation (NH DOT) is a public sector employer, whose workers mostly fall under *Support activities for transportation*. The NH DOT plays a role in the state's sustainable development, land use, environmental enhancement as well as preserving the unique character and quality of life in New Hampshire.³³



Total employment in this subsector is split between the private and public sectors, with about 60 percent in the private sector. Private employment in *Support activities for transportation* rose by just under 20 percent from 2001 to 2010, adding 142 jobs. The employment level peaked in 2008 at 1,039 and receded to 872 by 2010. During the same time period, state government employment in *Support activities for transportation* rose 8 percent, adding 35 workers. In 2010, there were 478 state government jobs in this industry subsector.³⁴

New Hampshire Employment - Support Activities for Transportation



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

- ³². Support Activities for Transportation. U.S. Census Bureau. North American Industry Classification System. 6 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=488&search=2007>.
- ³³. Purpose. About New Hampshire DOT. New Hampshire Department of Transportation. 15 May 2012.. <www.nh.gov/dot/aboutus/>. Information also gained from interview with Andrew Hall, New Hampshire Department of Transportation. September 28, 2010.
- ³⁴. Covered Employment and Wages (QCEW). Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

The NH DOT manages all transportation policies and logistics in the State of New Hampshire. These responsibilities include aviation, rail and transit, bridges, highway, traffic, turnpikes, and the environment. NH DOT provides year-round maintenance services for bridges and highways. As a state agency managing a variety of transportation avenues, NH DOT has a wide focus, ranging from researching materials to maintaining the roadways. With a variety of workers in research, construction and maintenance, NH DOT is able to explore a variety of products to fulfill the goal of maintaining a safe transportation system. The department has begun incorporating recycled material into their products and projects. Recycled materials include pavement, combustion byproducts, concrete, rubber and aluminum. The department also hopes to include recycled asphalt shingles in new pavements.³⁵

Apart from measures NH DOT has undertaken to use products that are better for the environment, they have also implemented the Rideshare program. This program connects drivers with others who have similar commutes in an attempt to encourage carpooling and reduce both traffic and emissions. Though it does not result in any direct jobs, the Rideshare program has several positive benefits. Carpooling relieves individuals of having to drive daily, reducing stress, and conserves gas and reduces both traffic and pollution by cutting down on the number of cars on the road. The NH DOT and the Rideshare program maintain Park and Ride lots, which allow commuters to leave their cars and either carpool, or utilize public transportation. Through this program, residents can be directed to information on transit routes, and upon request individuals can receive information on biking and walking routes.³⁶

³⁵. New Hampshire Department of Transportation. 12 Jun 2012. <www.nh.gov/dot/>.

³⁶. NH Rideshare. Bureau of Rail and Transit, New Hampshire Department of Transportation. 23 May 2012. <www.nh.gov/dot/programs/rideshare/>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Postal Service

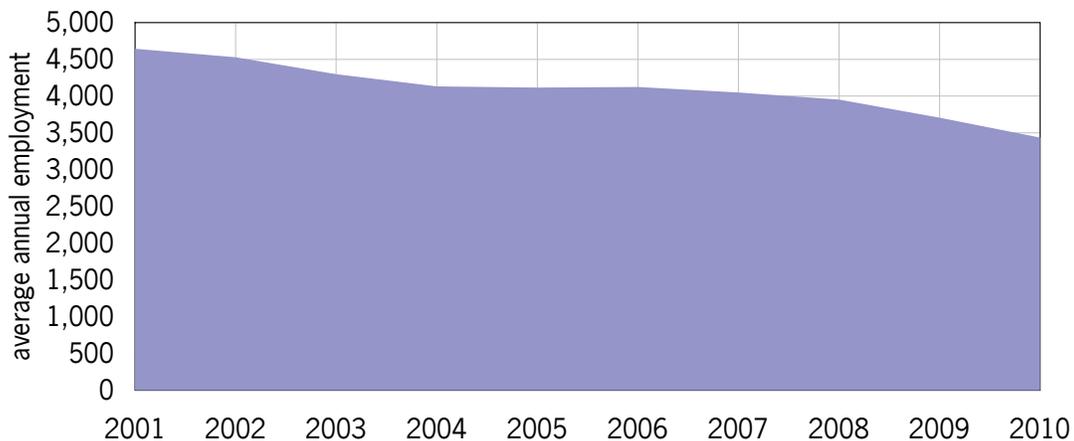
The *Postal service* subsector includes the activities of the National Post Office and its subcontractors operating under a universal service obligation to provide mail services, and using the infrastructure required to fulfill that obligation. These services include delivering letters and small parcels.³⁷ While private postal service employment is classified in this subsector, private employment for this subsector in New Hampshire is very minor and not included in this analysis.



Employment in the *Postal service* subsector has seen steady decline over the last decade. Nationally, *Postal service* employment declined by 213,431 workers, or nearly one quarter of its workforce, between 2001 and 2010. Within New Hampshire, the subsector lost 1,210 workers, or 26 percent of its workforce. Budget shortages and decline in mail volume have contributed to the reduction in workforce.

As the national mail delivery service, the United States Postal Service (USPS) maintains a significant fleet of vehicles for pickup and delivery of mail. Mileage, fuel, and energy needs are

New Hampshire Employment - Postal Service



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Note: Federal government ownership only

³⁷. Postal Service. U.S. Census Bureau. North American Industry Classification System. 6 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=491&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

several areas where the USPS has undergone changes to improve efficiency in their operations, saving both money and the environment. Currently, hydrogen, ethanol and natural gas are used in over 43,000 postal vehicles. Routes are scrutinized and streamlined to reduce driving time and fuel use.³⁸ These practices resulted in 15,144 routes being eliminated while maintaining customer service and an 8 percent reduction in total miles traveled nationwide between 2008 and 2009.³⁹ Other alternative vehicles are utilized, including both electric and fuel cell vehicles in small, specific metro areas around the United States.⁴⁰

Mail delivery, and delivery occupations in general, are a labor and fuel intensive activity. The United States Postal Service is “adopting a culture of conservation” that reaches out to all employees to encourage conservation and reduction of resources used in processing and delivering mail. As a national mail carrier, the above mentioned practices are carried out on a state-wide and national level. The USPS has made a commitment to the reduction of greenhouse gas emissions, to reduce fuel use and pledged to increase the use of alternative fuels for energy. Nationally, USPS has set goals of reducing petroleum use by 20 percent by 2015 and increasing the use of alternative fuels by 10 percent annually.⁴¹

Practices and policies for “going green” at USPS vary from agency-wide recycling combined with recycling bins in post office lobbies, to efforts that allow consumers to save time, money and fuel by ordering online and receiving delivery with their regular mail. Using online services, customers can order stamps, print postage, order boxes and have a carrier pick up packages that are ready to be shipped. Though this may appear oriented towards consumer convenience, the underlying philosophy is that greenhouse gas emissions are avoided by having the carrier deliver these items on the regularly scheduled trip and avoiding the customer driving to get them. This practice is growing in popularity, increasing 13 percent between 2008 and 2009.⁴²

38. Sustainability. About. United States Postal Service. 15 May 2012. <about.usps.com/what-we-are-doing/green/welcome.htm>.

39. USPS 2009 Sustainability Report. Key Indicators. United States Postal Service. 15 May 2012.. <about.usps.com/what-we-are-doing/green/report/2009/key_indicators.htm>.

40. Sustainability. About. United States Postal Service. 15 May 2012. <about.usps.com/what-we-are-doing/green/welcome.htm>.

41. Summary of Goals. FY 2010 U.S. Postal Service Strategic Sustainability Performance Plan Overview. 2010. United States Postal Service. 15 May 2012. <about.usps.com/what-we-are-doing/green/sspp/2010/overview/summary.htm>.

42. Sustainability in Operations. USPS 2009 Sustainability Report. United States Postal Service. 15 May 2012. <about.usps.com/what-we-are-doing/green/report/2009/ops_processing.htm>.

Couriers and Messengers

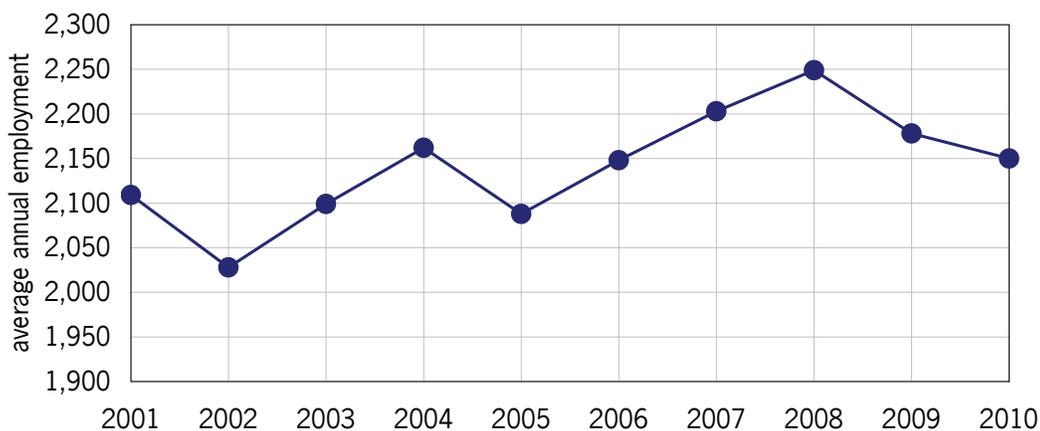
Businesses classified in the *Couriers and messengers* subsector provide intercity and/or local delivery of parcels and documents (including express delivery services) without operating under a universal service obligation.⁴³



Employment in the subsector *Couriers and messengers* increased slightly over the period of 2001-2010. Overall, employment grew by 1.9 percent during the ten year period, adding 41 jobs. However, the subsector peaked in employment levels in 2008, and while there has been a net gain in jobs, employment levels decreased by about 4 percent from 2008 to 2010.

Delivery services offered by couriers and messengers include more than just small parcels and envelopes. Businesses in this subsector may also deliver legal documents, medical supplies, automotive parts, groceries and may even deliver food from a restaurant. Businesses in the *Couriers and messengers* subsector may aim to increase fuel efficiency. Businesses must remain cost-competitive or risk being priced out of the market. Using electric vehicles, reducing driving speeds and limiting idling are some methods being utilized to conserve fuel. In addition to delivery in a vehicle, the use of bicycle messengers is popular in metro areas as they are able to travel in traffic congested areas, and use no fuel.

New Hampshire Employment - Courier and Messenger



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

⁴³. Couriers and Messengers. U.S. Census Bureau. North American Industry Classification System. 7 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=492&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Warehousing and Storage

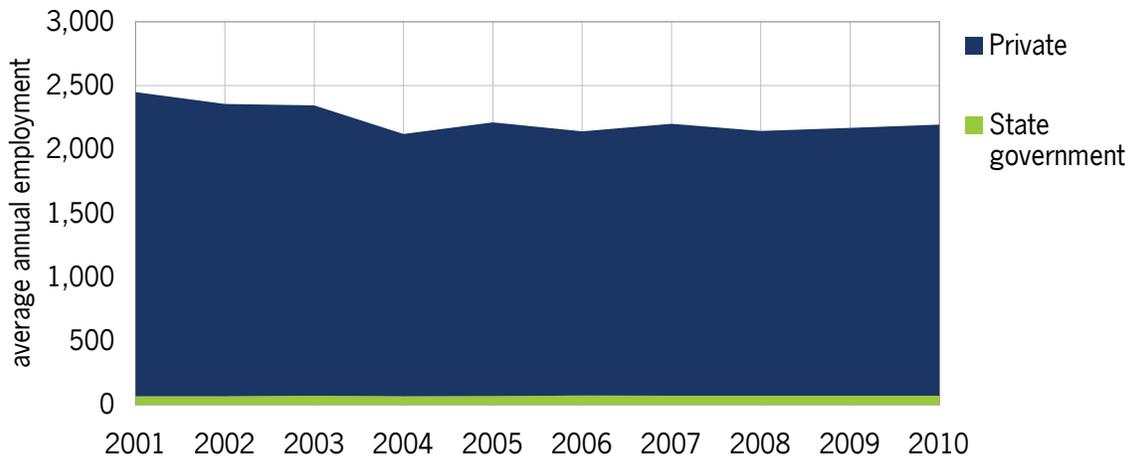
Businesses in *Warehousing and storage* are primarily engaged in the storage of general merchandise and refrigerated goods. General merchandise is handled in containers, such as boxes, barrels, and/or drums, and using equipment like forklifts, pallets, and racks. Establishments in this industry may also provide



logistics services, related to the distribution of goods. Logistics services can include labeling, breaking bulk, inventory control and management, light assembly, order entry and fulfillment, packaging, pick and pack, price marking and ticketing, and transportation arrangement.⁴⁴ Even though the establishments in this subsector are not directly involved in transporting goods, *Warehousing and storage* is an integrated part of the distribution chain.

Warehousing and storage is one of the larger subsectors in *Transportation and warehousing*, employing more than 2,100 workers in 2010. From 2001 to 2010, employment in this subsector declined by 11 percent, shedding 260 jobs. However, the employment drop occurred primarily from 2001 to 2004, and employment showed almost no change from 2007 to 2010.

New Hampshire Employment - Warehousing and Storage



Source: Quarterly Census of Employment & Wages, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

44. Warehousing and Storage. U.S. Census Bureau, North American Industry Classification System. 16 Feb 2012. <www.census.gov/cgi-bin/sssd/naics/naicsrch?code=493&search=2007>.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Because physical buildings are needed, this industry is well positioned to take advantage of energy-saving initiatives used in the *Construction* industry. Warehouse structures can be designed to maximize the use of natural light. Energy efficient lighting or motion sensor lights can reduce electric load. A building's air seal can be tightened, and efficient heating and cooling systems can monitor and control temperature, automatically changing when the building is not occupied. The use of solar panels or wind turbines can reduce electricity costs by generating electricity in-house.

Beyond energy efficiency measures that can be installed in the actual building, there have been advances in the operation of warehouses. Many of the pieces of equipment used in warehousing and storage facilities are now offered in environmentally friendly models. Examples of this equipment include: dock levelers, dock seals, cold storage doors, screen doors, solar powered fans and energy efficient warehouse lighting.⁴⁵ Focusing attention on dock doors is of particular importance, as these are a primary source of heat loss/heat gain. Within the building, storm water can be saved and re-used, low-flow water fixtures can be used, and natural vegetation can be planted around the facility to reduce landscaping watering needs. Embracing environmentally friendly warehousing and storage solutions could be the next logical step for a business trying to improve the sustainability of their supply chain or adhere to a client's environmental policy.

⁴⁵. McKinley Equipment Corporation. Eco-Friendly Products. 22 Feb 2012. <www.mckinleyequipment.com/eco-friendly-products.html>.

Conclusion

The transportation industry affects virtually every aspect of the economy. Businesses involved in the movement of goods and people have significant labor and fuel costs associated with operation. Businesses in the transportation industry have undertaken measures to increase efficiency and reduce costs, creating a workforce that is becoming greener.

Embracing energy-saving technologies may give a competitive advantage to a business beyond fuel savings. Many businesses in other sectors may prefer or even require products be transported using environmentally-friendly vehicles. Reducing fuel consumption, reducing speed and idling time, or simply taking the most direct route are as significant to the bottom line as to the environment.

The main incentive for the *Transportation and warehousing* sector towards becoming green is the reduction in reliance on fossil fuel. There is great potential for improvement in this sector, for which fuel constitutes one of the largest costs of doing business. As examples have shown, almost every industry sub sector has undertaken modifications or enacted green policies aimed at conserving fuel and increasing efficiency. Because this industry sector uses such large volumes of fuel, even small improvements can reap tremendous fuel savings. Over time, as technologies become more fuel-efficient and cost-effective, and businesses add or replace aging fleets, the sector should experience additional greening.

Greening of Transportation in New Hampshire

New Hampshire Employment Security, Economic and Labor Market Information Bureau

Greening of Transportation in New Hampshire

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