

7. SPECIAL SCENARIOS

GENERAL METHODOLOGY

The study used a separate economic forecasting and simulation model to assess the longer-term impacts of policies or scenarios that affect the cost, availability and level of aviation activity in Vermont.

A version of the REMI forecasting and policy analysis system was developed specifically for the state of Vermont. The system generates year-by-year estimates of employment, income, business output and gross domestic product for the state. These estimates include a “base case” and alternative scenarios that reflect expansion or contraction of the economy in response to a variety of potential changes in relative factor costs, disposable household income, labor wage and employment conditions, labor markets, commodity prices, business production and transportation costs, and costs of living. Articles about the model equations and research findings have been published in professional journals such as the *American Economic Review*, *The Review of Economic Statistics*, the *Journal of Regional Science*, and the *International Regional Science Review*. All of these publications support the use of REMI for the special scenarios presented in this chapter.

The model was applied to examine the impacts of three scenarios:

- ***Aftermath of Sept. 11:*** the long-term economic impacts if the loss in demand for commercial air travel and shifts in corporate aviation were to continue;
- ***Aviation Insurance Crisis:*** the long-term economic impacts of continuing the dramatic rise in costs and limitations on availability of aircraft liability insurance for general aviation within Vermont;
- ***Ground Transportation Alternatives:*** assessing the value of airports in terms of their interaction with the surface transport network, how they complement each other and how aviation relieves a burden from the State's highway system.

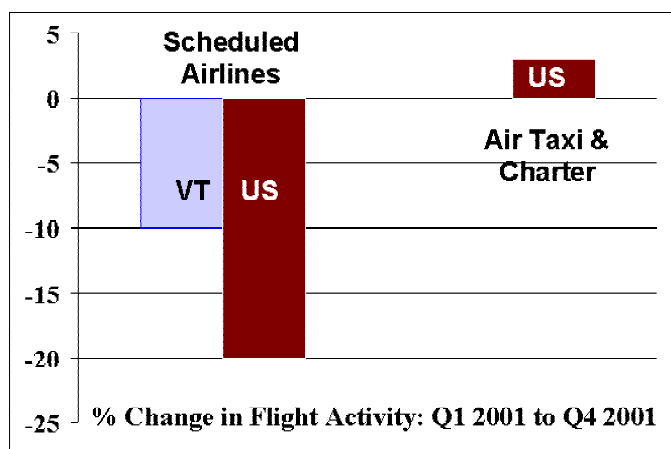
SCENARIO 1: AFTERMATH OF SEPT. 11

Following the tragic events of Sept. 11, 2001, there was a significant reduction in passenger levels for commercial aviation, due to a combination of security concerns and increases in the time required for passenger time at air terminals. There was a modest rise in activity for corporate aircraft, which was seen by some as a means of avoiding or minimizing both of the problems facing commercial air travel.

The following figure shows that from the first to the last quarter of 2001, commercial aircraft operations declined 20 percent across the US and 10 percent in Vermont. The smaller loss in Vermont can be attributed in part to the fact that Vermont airports generally lack the coast-to-coast and overseas flights which were most severely affected. Exhibit 14 also shows that scheduled departures were similarly affected, while Exhibit 13 shows that over this period, unscheduled commercial activity— charter or air taxi operations – actually increased modestly. Total corporate general aviation flight hours in 2002 are now expected to be 2.2 percent higher than in 2001. Corresponding figures were not available for Vermont. The clear point, though, is that there was a shift in the nature of demand for air travel with a net reduction in aircraft flights coming into Vermont by air.

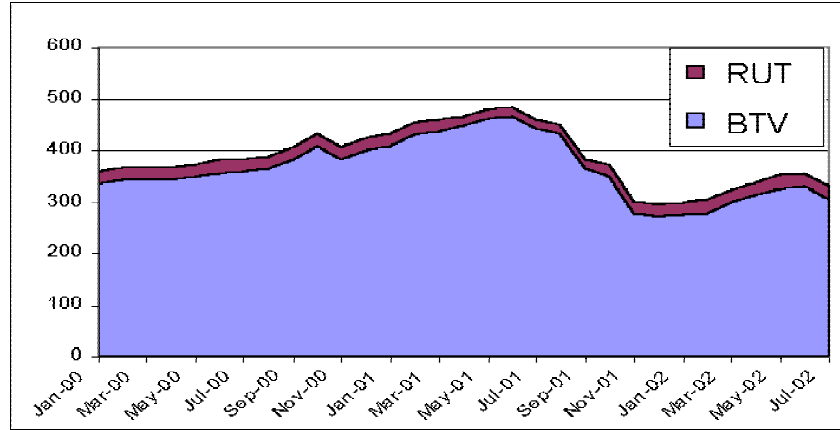
Exhibit 13

Change in Flight Operations for Scheduled Airlines, Air Taxi and Charter Aircraft



Source: FAA estimates, www.aviationnow.com

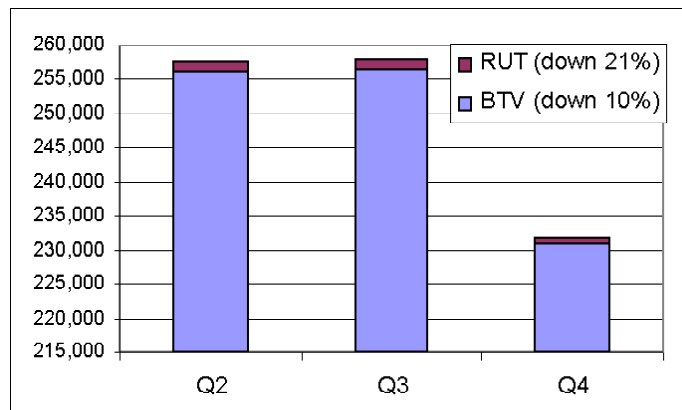
Exhibit 14
Change in Scheduled Departures at Vermont Airports



Source: Airline schedules, Official Airline Guide

Besides the change in number of flight operations, there was also a change in the volume of commercial airline passengers flying into and out of both Rutland and Burlington airports. As seen in Exhibit 15, the number of commercial airline passengers using Rutland was down 21 percent from the fourth quarter of 2001, as compared to the second quarter of 2001, while Burlington's usage was down 10 percent for the same period.

Exhibit 15
Change in Airline Passengers at Vermont Airports, 2001



Source: OD1A by Database Products Inc. and SH&E Analysis

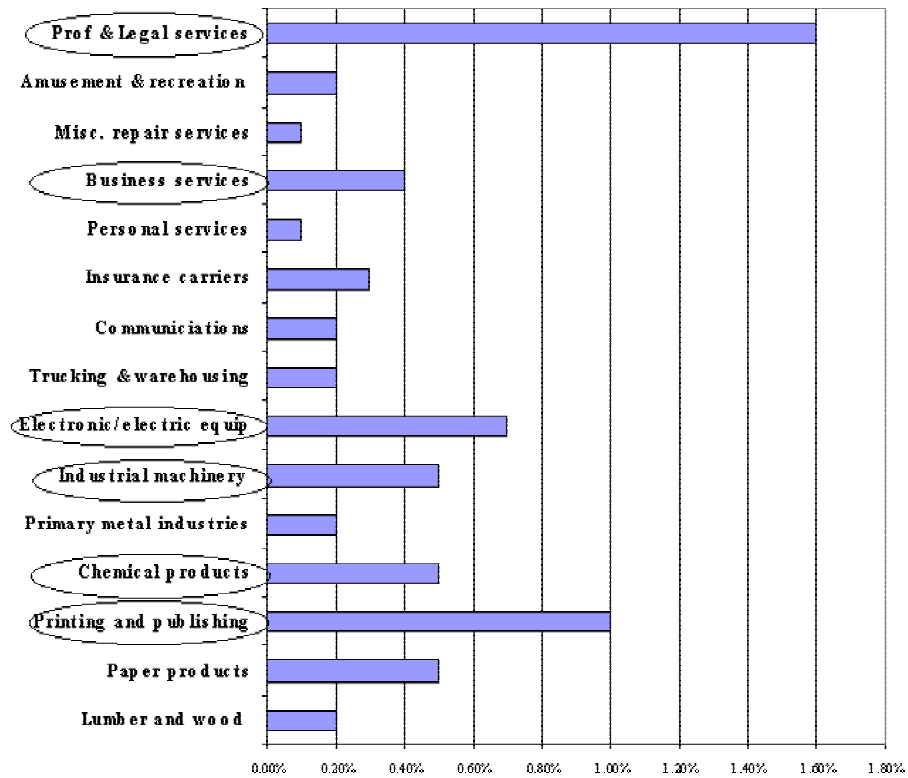
When looking at economic impacts, it is important to consider both the change in aircraft takeoffs and landings as well as the change in passenger levels. Long-term changes in the number of aircraft operations affect the level of business activity associated with aviation support – control tower, aircraft fueling, aircraft maintenance, etc. On the other hand, long-term changes in the number of passengers also affect the level of retail, lodging and other non-airport expenditures by visitors. The Study examined a scenario that assumed that both aircraft operations and visiting passenger volumes had fallen 10 percent.

A final form of economic impact is the additional wait time necessitated by increased security measures. Rutland and Burlington have not experienced lengthened wait times since September 11th. However, travelers to and from Vermont certainly experience lengthened waits at airports on the other end of their itineraries.

While additional wait time is a real loss for all commercial airline travelers, businesses can bear an additional cost of paying workers (and forgoing productivity or sales) who have to arrive earlier and wait longer at the airport. Based on survey data, it was assumed 40 percent of Vermont travelers are on business and 50 percent of these are employed by Vermont businesses. An additional average travel time of 60 minutes was assumed, based on nationally reported figures. The extra travel time was allocated to various Vermont industries based on data indicating their relative level of dependence on air travel, as shown in the following chart.

Exhibit 16

Percent of Total Business Operating Cost Associated with Air Travel



Source: Transportation Satellite Accounts -- US Bureau of Economic Analysis and US Bureau of Transportation

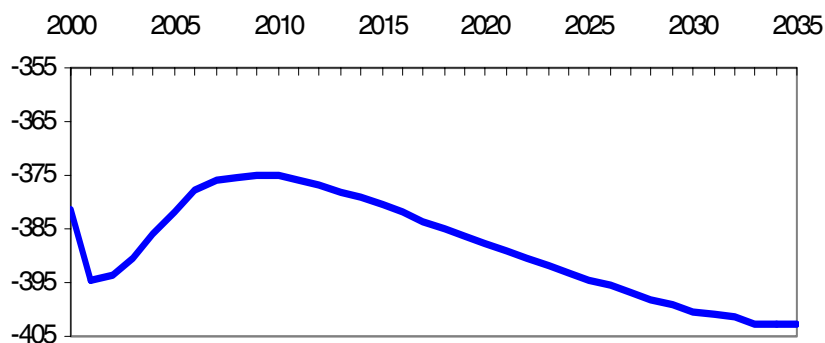
The overall result of this analysis was that, were it to continue indefinitely, the 10 percent loss of aircraft operations would lead to a loss of \$1.5 million per year in commercial aviation industry business sales. In addition, the 10 percent loss of air visitors to Vermont would lead to a \$4 million loss of visitor spending (representing a \$1.3 million loss of retail sales activity measured in terms of the local sales markup that would otherwise be gained). Finally, the added 225,000 annual hours of additional delay for business travelers would translate into \$6.8 million of additional business cost, if this downturn were to continue to compound over time.

When these costs and activity changes are entered into the REMI model, the result is a forecast of a larger loss of jobs, income and business sales over time. The total estimated impact on the Vermont economy is a loss of 395 jobs, \$13.4 million of personal income annually, and \$27.8 million of annual business sales.

The REMI model forecasts that these losses would be particularly significant in the first three years, would be slightly smaller in the following years as some economic adjustment occurs, and would then continue to increase in the longer term. However, as Exhibit 17 shows, the actual statewide loss of Vermont jobs remains within a fairly close range of 350 to 400 jobs over the next 35 years, which is the horizon of the REMI model.

Exhibit 17

Change in Employment



While there is no assumption that the downturn will be sustained for as many years as discussed here, it is important to note what kind of impact these events could have on the economy in the long term.

SCENARIO 2: INSURANCE CRISIS

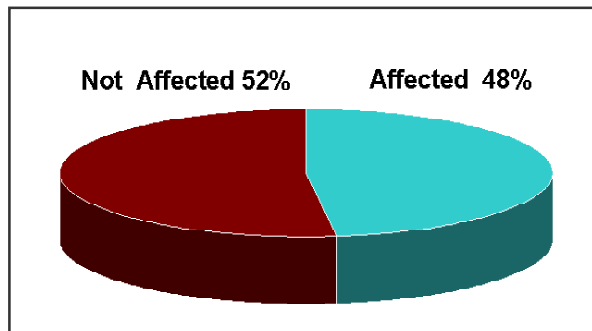
In recent years, many aircraft owners were affected by the thinning of the general aviation insurance market. For some owners, premiums have gone up; others cannot secure insurance at all. Small commercial GA operations saw their largest insurance carrier, AVEMCO, pull completely out of the market. The “general aviation insurance crisis” most affected hull, liability and premises insurance for flight schools, fixed based operators, and charter operators.

As seen in Exhibit 18, the survey of general aviation aircraft owners indicated that 48 percent had been affected by a change in aircraft liability insurance, through either a loss of insurance availability or a dramatic increase in its cost. The reported increase ranged from 30 percent - 300 percent, which is in line with reports from the adjacent state of New York (NYS DOT, Aviation Services Bureau, “General Aviation Insurance Rate Increases: The Effects on General Aviation in New York, November 2000) and those from the U.S. Government (NATA Special Report, “The Realities of the Aviation Insurance Market”), all but one of the fixed based operators at state-owned airports reported that they have eliminated or curtailed at least some of their aircraft rental or training activities due to the insurance issue.

Exhibit 18

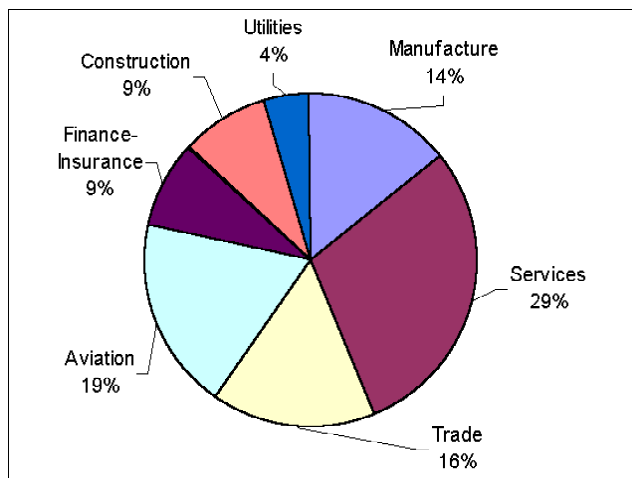
Survey Results: Changes in General Aviation Liability Insurance

(including aviation businesses and other businesses owning aircraft)



Source: Survey of corporate aircraft owners, SH&E, 2001

It is difficult to identify the full range of long-term consequences for aviation that can result from reducing the availability of flight training and rentals in Vermont. The most basic impact, however, is an estimated loss of \$7 million per year in income from these activities. The Study also estimated the added cost in operating an aircraft due to the change in liability insurance costs. Using data from the aircraft owner survey, an average cost impact of \$6,000 per business aircraft was multiplied over 230 corporate aircraft to represent a total additional business cost of \$1.2 million per year. The Study allocated the extra costs to various Vermont industries based on results from the aircraft owners survey, which indicated the following mix of industries owning aircraft:

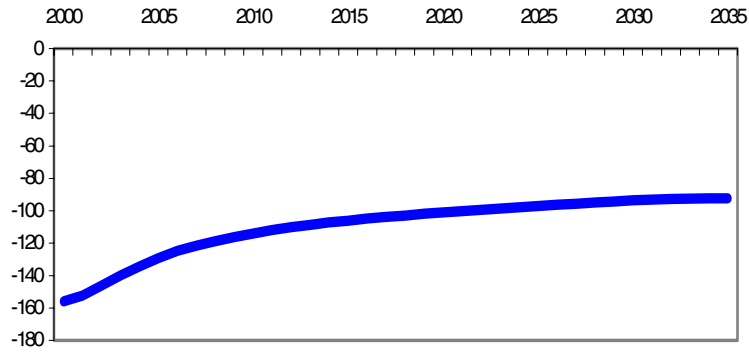
Exhibit 19**Mix of Businesses Owning General Aviation Aircraft in Vermont**

Source: Survey of aircraft owners, 2001

When these costs and activity changes are entered into the REMI model, the result is a forecast of a larger loss of jobs, income and business sales over time. The total estimated impact on the Vermont economy is a loss of 155 jobs, \$5 million of personal income annually, and \$11.6 million of total business sales annually.

The REMI model forecasts that these losses would be in the range of 155 jobs within Vermont in the first year, with a gradual adjustment over time as fixed based operators move into different areas of activity and people adjust to alternative locations or activities for flight training (Exhibit 20). However, the long-term impact is forecast to remain as a continuing loss of over 100 jobs spanning REMI's 35-year horizon of analysis.

Exhibit 20
Change in Employment



SCENARIO 3: GROUND TRANSPORTATION

Airport activity in Vermont relies upon on the State’s surface transportation system. While it is not easy to measure the relationship between air transportation and the surface transportation system, the intermodal link is obvious. Without a well-planned and well-maintained system of roads, access to Vermont’s public-use airports would certainly be compromised. The surface transportation system allows employees to get to work, customers to get to their commercial or private aircraft, and businesses to move freight and parcels through air transportation. The intermodal link between the ground transportation and air transportation system is key to the viability of both.

There are two commercial airports within the state (Rutland and Burlington), with a variety of other commercial airports within a few hours of drive time in adjacent states (including Montreal, Albany, Plattsburgh, Manchester, Lebanon, and Hartford).

The existence of commercial airports within Vermont represents a clear convenience and savings in ground travel time and distance for passengers and cargo with origins or destinations in Vermont. The value of that convenience and savings can be calculated, and its economic benefits estimated, by examining the consequences of a scenario in which there is no commercial airline service in Vermont. Under that scenario, all passengers and freight now using Vermont airports would have to travel by highway to/from airports in other states.

The assumed diversions are shown in the map which follows. They include diversion of Burlington air travelers primarily to Montreal, Plattsburgh, Albany and Manchester. Rutland air travelers would be assumed to divert primarily to Albany, Manchester and Hartford, with a very small number going to Lebanon, NH.

Exhibit 21
Ground Transportation Routes for Diversion of Vermont Airline Travelers to Airports in Other States



This scenario would affect a total of 1,060,792 airline passengers annually. The corresponding increase in ground travel would be an additional 119 million vehicle-miles of travel (VMT) per year, and an additional 2.6 million vehicle-hours of travel (VHT) per year. The corresponding distance and time involved in the diversion of 628,234 general aviation travelers would be smaller, due to the presence of a larger (and typically less distant) set of airport options in adjoining states. The estimated impact for them would be

an additional VMT of 32 million and additional VHT of 0.7 million annually. Adding cargo movements, the estimated grand total impact on ground transportation activity would be an increase of roughly 162 million of VMT and 3.3 million of VHT per year.

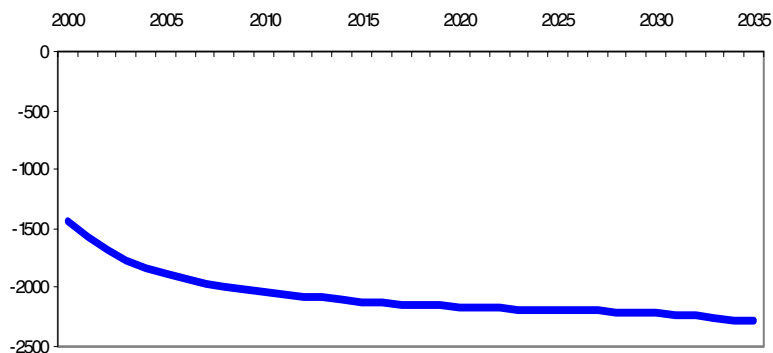
The increases in VMT can be translated into dollar costs for fuel and vehicle operating cost (roughly \$0.20 per mile for cars and \$0.50 per mile for trucks), which are borne by businesses and by households. The increases in VHT can also be translated into dollar values (using FAA guidelines of roughly \$34 per hour for business travel and \$20 for personal travel), though their economic consequences vary. For businesses, the additional value of driver time and “on-the-clock” worker time represent additional business operating costs. For personal travel by households, the additional travel time represents a loss but it does not necessarily affect the flow of dollars in terms of income or spending.

These direct impacts were input to the REMI model as a loss of \$84 million in business cost and disposable income. This is in addition to the loss of jobs and business activity that would otherwise be occurring at Vermont’s airports. The result was a REMI model forecast of larger losses to the Vermont economy over time. These losses would start at 1,430 jobs, \$42 million of personal income and \$97 million of business sales annually.

As shown by Exhibit 22, the REMI model forecasts that the contraction in Vermont’s economy would gradually increase over time from 1,430 to 2,110 jobs over a period of 20 years, as the Vermont economy grows slower than would otherwise have occurred.

Exhibit 22

Change in Employment



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