

EXECUTIVE CHAMBER

CITY OF WARWICK



RHODE ISLAND

SCOTT AVEDISIAN
MAYOR

April 25, 2006

Mr. John Silva
Environmental Program Manager
Federal Aviation Administration
New England Region
12 New England Executive Park
Burlington, Massachusetts 01803

RE: CITY OF WARWICK COMMENTS

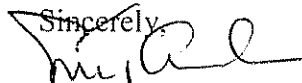
*"ALTERNATIVES ANALYSIS CHAPTER"
DRAFTED BY VANASSE HANGEN BRUSTLIN, INC., (VHB)
FOR THE T.F. GREEN AIRPORT LOCATED IN WARWICK, RHODE ISLAND
DATED MARCH 2006*

Dear Mr. Silva:

I am submitting to you the City of Warwick's review and comments of the draft "Alternatives Analysis Chapter" for the T.F. Green Airport Environmental Impact Statement (EIS) drafted by Vanasse Hangen Brustlin, Inc., (VHB) dated March 2006.

I ask you to integrate the suggested changes and supplement the technical data prior to commencing the mitigation analysis stage of the Draft Environmental Impact Statement (DEIS). I thank you in advance for your cooperation on this matter.

Should you have any questions, please do not hesitate to contact me at (401) 738-2000, ext 6200.

Sincerely,


Scott Avedisian
Mayor

City of Warwick Review and Comment
Draft Alternatives Analysis Chapter (DEIS) T.F Green Airport
Warwick Rhode Island

Warwick Planning Department
April 25, 2006

T.F. Green Airport Improvement Program
Environmental Impact Statement
Draft Alternatives Analysis Chapter
Prepared by Vanasse Hangen Brustlin, Inc. (VHB)
Watertown, Massachusetts
In association with:
Edwards and Kelcey, Inc.
T.F. Green Airport
Warwick, Rhode Island
March 2006

Section X=minor XX= major	Unsatisfactorily addressed	Supplementary Data Required	Comment/suggestion
3.1 Introduction			X
3.2 Screening Process	XX	XX	XX
3.3 Level 1 Screening – Candidate Alternatives	XX	XX	
3.3.1 Off-Airport Candidate Alternatives – Greater Use of Other Airports	X	X	XX
3.3.2 Off-Airport Candidate Alternatives – Developing a New Airport	XX	X	XX
3.3.3 Off-Airport Candidate Alternatives – Other Modes of Transportation			
3.3.4 Off-Airport Candidate Alternatives – Regional Demand Management	X	X	X
3.3.5 Non-Construction Candidate Alternatives Use of New Technology	XX	XX	XX
3.3.6 On-Airport Candidate Alternatives			
3.3.7 Summary of Level 1 Screening Results	XX	XX	XX
3.4 Level 2 Screening – Preliminary Airport Improvement Alternatives	XX	XX	XX
3.4.1 Refinement of Alternatives	X	X	
3.4.2 Level 2 Screening Criteria	XX	XX	XX
3.4.3 Safety Enhancement Elements			X
3.4.4 Efficiency Enhancement Elements		X	X
3.4.5 Summary of On-Airport Preliminary Alternatives	X	X	X
3.5 T.F. Green Airport Improvement Program Alternatives Screening	XX	XX	X
3.5.1 Airport Improvement Program Alternative A, Avoid Impacts to the North	XX		
3.5.2 Airport Improvement Program Alternative B, Avoid Impacts to the South	XX		
3.5.3 Airport Improvement Program Alternative C, Avoid Buckeye Brook	XX		
3.5.4 Airport Improvement Program Alternative D, Avoid Buckeye Brook	XX		
Minimize Airport Road Relocation			
3.5.5 Airport Improvement Program Alternative E, Avoid Buckeye Brook	XX		
Minimize Airport Road Relocation	X	X	
3.6 Draft Environmental Impact Statement Alternatives	XX	XX	XX
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**City of Warwick Comments: Draft Alternatives Analysis (DEIS)
T.F. Green Airport - April 25, 2006**

Draft Alternatives Analysis Chapter
Prepared by Vanasse Hangen Brustlin, Inc. (VHB)
Watertown, Massachusetts
In association with:
Edwards and Kelcey, Inc.
—Dated March 2006
T.F. Green Airport
Warwick, Rhode Island

Terms:
(FAA) Federal Aviation Administration
(RIAC) Rhode Island Airport Corporation
(DEIS) Draft Environmental Impact Statement
(CIP) Capital Improvement Program
(Consultant) Vanasse Hangen Brustlin, Inc. (VHB)

(Italic) City of Warwick Comments

**Alternatives Analysis
3.1 Introduction**

The purpose of this chapter of the Draft Environmental Impact Statement (DEIS) is to describe the range of Alternatives considered to meet the Purpose and Need detailed in the previous chapter and summarized below, as well as the screening process used to **identify which of those alternatives are reasonable and feasible** and considered for further analysis.

The City of Warwick is of the opinion that the screening process used to select alternatives for further review within the EIS process have omitted many reasonable and feasible alternatives that clearly meet the goals of the purpose and need statement.

To safely and efficiently meet the current and anticipated demand the T.F. Green Airport Improvement Program addresses enhancement of safety and efficiency, while seeking to avoid, minimize, and/or mitigate environmental and cultural impacts to the extent practicable.

The goals of the purpose and need might well be achieved if not limited to an unrealistic goal of 100 percent service to 100 percent of all available destinations by 100 percent of all the threshold. A more reasonable, practical and cost effective approach would be to consider the constraints presented by the existing condition when evaluating how the alternatives meet future demand. A realistic goal for servicing non-stop West Coast service must acknowledge the existing physical and landuse constraints faced by this airport.

Since the existing condition includes only modest West Coast service, a 80 % increase would represent more than a reasonable improvement over the existing condition that is virtually 0%. This goal is more rational than the 100 percent service goal established as the singular means to achieve the purpose and need statement for this airport.

As presented in Chapter 2 of this DEIS, the purpose of the Airport Improvement Program is to:

Enhance airport safety.

The City of Warwick has always acknowledged the importance of airport safety improvements especially important because many of our residents live and raise their families within the shadow of the airport. This study should focus on improving the safety of air quality for families around the airport as vigorously as this study promotes measures designed to protect the patrons on the aircraft.

Enhance the efficiency of the Airport and the New England Regional Airport System, to more fully meet the current and anticipated demand for aviation service.

***"To more fully meet the current and anticipated demand"** maybe accomplished with a more inclusive EIS study, a shorter runway 5R/23 as well as improvements to all of New England's Airports included Quonset Point. The runway extension at Manchester Airport has already provided the length necessary to accommodate growth in the non-stop West Coast markets within the region. However, since being constructed, the longer runway has accounted for one nonstop flight already being served by T.F. Green's 2000' shorter runway. Therefore, in practice the coveted nonstop West Coast demand at the center of the "purpose and need" is not primarily based on maximum runway length by instead solely dependent on the airlines ability to fly the city pairs for profit.*

The New England Regional Airport System should be just that; "a regional system" and not a series of airports designed to maximum runway length in anticipation of future increases in service destinations. The New England Regional Airport System must be more than an embellishment to the current competitive based approach whereby area airports are pitted against each other in a race to build ever larger infrastructure from a dwindling pool of resources. This approach is fiscally irresponsible and a waste of taxpayer funds.

Two immediate areas of reassessment must include a reexamination of Quonset Airport to complement future non-belly cargo requirements of T.F Green Airport. Secondly reassess runway length requirements within the entire New England region based on new aircraft designs and foreseeable upgrades in fleet mix.

As it stands today, a 7,500-lf runway can serve all but three West Coast destinations. Likewise, all West Coast destinations can be served by an 8,600-lf runway with the aid of new aircraft designed to capitalize on thin city pair's traditionally serviced but much larger aircraft. Therefore, The City contends that the infrastructure is already in place within the New England region to adequately serve a majority of future non-stop service to the West Coast should the airlines choose to serve these markets.

This would allow T.F. Green Airport to concentrate on efficiency improvements with a limited requirement to provide additional runway length within a highly constrained community.

The T.F. Green Airport Improvement Program is needed because:
Certain components of the airfield do not meet current Federal Aviation Administration (FAA) safety standards, including:

Runway 16-34 Runway Safety Areas (RSAs),

Obstructions within the Airport's air space, and

Inadequate separation distances between taxiways and runways.

The current facilities of the Airport cannot efficiently meet current and anticipated long-term regional demand, or efficiently serve its service area.

Anticipated demand has proven very difficult to predict as witness in the last two forecasts performed by different consultants for T.F. Green Airport. Previous forecasts turned out to be erroneous as many of the variables used in creating the forecasts are controlled by the airlines, world conditions and energy markets. The fact that a longer runway exists does not insure new destinations will be served. A preferred alternative in this built environment is to propose a flexible runway that imposes less impact and cost on the community while providing sufficient length for a majority of aircraft serving non-stop west coast destinations.

Given current fleet mix and advancement in engine and aircraft design, efficiency and demand could be achieved with a balanced approach that provides a long enough runway for a majority of the aircraft servicing T.F. Green without the need to demolish hundreds of homes and fill in acres of wetlands. Further, The City argues that the efficiency goals stated in the purpose and need cannot be met by a 9,350 lf runway alternative. The increased operations generated by said runway through new service destinations may actually cause additional air traffic delay and thereby minimize efficiency of the entire airport facility. Increasing congestion in the sky invariably results in congestion at the ticket counter, security checkpoints, and baggage claim and within area roadways and parking areas. This condition may well work to destroy the convenience and efficiency agreed by all parties to be the hallmark of this airport.

The current facilities of the Airport cannot efficiently meet current and anticipated long-term regional demand, or efficiently serve its service area. (contd.)

Without countervailing analysis of a reasonable alternative runway length, it is impossible to meet the cost/benefit requirement of the EIS because no comparative option is available to evaluate the benefit and cost of the preferred alternative runway length.

The "purpose and need" has established a need for the 9,350 lf main runway based upon operations that MAY account for only 10% of all operations occurring at T.F Green Airport by 2012. Moreover the purported need as cited within the "purpose and need" is in part being served today (Las Vegas, Phoenix) with the existing runway length.

Considering non-stop West Coast destinations up to 2100 NM can already be served by the existing 7,166 long runway does it make sense not to consider a shorter runway? A shorter 8,600 lf. runway could serve over 80% of the 10% of all projected non-stop operations flying to the West Coast by 2012 at a significantly less cost and impact on the community and without diminishing the affordable housing stock in the State of Rhode Island.

Further puzzling is the study perimeters used by VHB in the runway length analysis are based on 2006 standards when the runway will not be constructed until 2016. In this period, we can expect tremendous innovation in aircraft performance driven by high-energy prices and dynamic changes in the aviation market. The improved lift provided by progressive wing design, engine technology along with innovations such as blended winglets, and lighter composite materials extend aircraft range and reduce fuel consumption.

Consider this fact, aerospace innovation required only 60 years to reach the moon after the first flight of the Wright Brothers. The City estimates that a decade after this study is completed a 9,500 lf runway will not be needed to reach West Coast destinations nonstop from Providence (PVD). Runway length at non-hub airports will become a luxury not a necessity.

To corroborate this outlook one needs only to peer into today's product cycle. The newly released Boeing 737-700ER is an aircraft designed specifically for the low cost air carrier group seeking to startup or improve long distance non-stop service. This new aircraft is a cost-effective replacement to the larger older B 767 and A 330 models traditionally used to serve the domestic long haul market.

This study ignores theses real world product developments and chooses to select an outdated, out of production B 767 that the market place will force out of service in the long haul low cost carrier group. To this end, this study cannot

proceed forward until a contemporary evaluation is completed. The study must be amended to include market changes in the long haul low cost carrier group as well as reflect fleet mix changes through the reallocation (B 767) and purchase of new aircraft designed specifically to gain profitability in the non-stop long haul marketplace.

Purchase of newer aircraft by the low cost carriers specifically designed to maximize profitability on long haul non-stop routes will force the legacy airlines to compete head to head in the marketplace using larger less profitable aircraft or reallocate the larger aircraft and purchase new aircraft or simply choose not to offer non-stop service to that destination.

Contemplate the fact that the current 7,166 main runway (R5/23) is capable of providing T.F Green's largest air carrier with service destinations as far as 2100 NM including Dallas/Fort Worth, Denver International and McCarran in Las Vegas.

<u>Destinations from T. F. Green</u>	<u>Distance (Nautical Miles)</u>
Dallas/Fort Worth International Airport (DFW)	1,326
Denver International Airport (DEN)	1,505
Phoenix Sky Harbor International Airport (PHX)	1,974
McCarran International Airport (LAS)	2,047

The three remaining West Coast cities San Francisco (SFO), Los Angeles (LAX) and San Diego (SAN) are an additional 300 nautical miles further west. The 757-200 which is forecasted to comprise 14% of all aircraft flying non-stop to the west coast by 2012 will reach all west coast destinations with it's 7,800 lb runway length requirement and 2300 NM range. According to the aircraft forecast included within the T.F. Green Airport Improvement Program Environmental Impact Statement, 26.7% of total airport operations and approximately 54% of all forecasted west coast service by 2012 will be flown by 737-700 type of aircraft which when equipped with winglets will require only a 8,600 lb runway length at maximum take off weight.

The second most used aircraft type as forecasted would be a Boeing 757-200, which, as stated earlier, will account for 7% of total airport operations and approximately 14% of all forecasted West Coast service by 2012. Depending on its configuration this aircraft will require only a 7,800 l.f. Runway length at maximum take off weight with a max range distance of 2300 NM to 2750 NM.

Together the Boeing 737-700 and 757-200 will comprise approximately 68% of the fleet mix forecasted to fly non-stop to the West Coast by 2012. The design criteria used by FAA and VHB in their runway length analysis justifies the 9,350 runway length using as it's design aircraft the out of production B 767-300 aircraft which is projected to be barely 7% of all non-stop operations by 2012. A figure that could go much lower if the newer B 737 –700 ER enters the fleet mix of the low cost air carrier group. The legacy airlines when faced with direct competition in the long haul domestic market from non-hub airports in all likelihood will not be able to compete with the B 737 –700 ER with older, larger and costlier B 767 aircraft. The effect is that the "forecasted" operations will be lower than the number of operations forecasted in the FAA in their Runway length analysis. Removal of the B 767 from the runway analysis would reduce the length of runway required since the B 767 design aircraft selected is one of the most demanding aircraft in the fleet.

To further obscure the runway analysis performed by the consultant is the 2006 introduction of the Boeing 737-700ER, which is a longer-range version of the aircraft that commonly services T.F. Green. The B 737-700 aircraft most notably flown by Southwest Airlines is a staple at T.F. Green and with it's integrated winglet serves Las Vegas non-stop. The new Boeing 737-700 ER aircraft has a similar fuselage but with a larger wing area is able to double the range of the B 737-700. The aircraft was specifically designed to target the low cost carriers entering the non-stop coast to coast and transatlantic service.

According to the Boeing Corporation the extended range version of the Boeing 700 aircraft uses a larger wingspan to gives the 737-700ER a range of just over 5,000 nautical miles comparable to that of the Boeing 767-400 which is an advanced version of what was used as the design aircraft in this study's runway configuration.

The new B 737-700ER is narrowbody jet with lower operating weight and requires half the number of passengers than a A330 or B 767, and as such would be less costly to operate for low cost carriers seeking to enter non-stop west coast service as forecasted and contained within the Purpose and Need for this project. The City considers the "new technology" found in the extended range Boeing 737-700ER as potentially obviating the need for a lengthy runway extension.

The forthcoming decade will include product cycle changes in fleet mix and a reduced need for greater and greater operational runway length at non-hub airports such as T.F. Green. This study disregard the obvious fleet mix upgrade cycle and refuses to account for reasoned changes in the air service marketplace. It makes sense to embrace not ignore innovation as a means of meeting the Purpose and Need for this airport.

This entire section of the study is unsatisfactory and requires modification to integrate the aforesaid amendments.

ADDITIONAL INFORMATION SEE 3.3.5.2 New Aircraft Technology

The terminal and concourse areas are inadequate for the current passenger demand and are not adequate to meet the anticipated increase in annual passengers (from 5.5 million to 8.9 million).

As a static statement this may be true but it is important to appreciate that the preferred alternative to lengthen the main runway (9,350 lf.) may actually worsen the future conditions at the terminal similar to what transpired in 1996 when Southwest Airlines began startup service. The goal to generate additional passenger traffic through new service destinations is an uncontrolled variable because once the runway is constructed the airport and its support facilities are open to all air carriers.

This study has not adequately addresses or planned for this dynamic within the AIP or CIP. The current terminal deficiencies will be exacerbated in the future because the CIP cannot accurately predict how many, if any, new service destinations or airlines will be added. The proposed "build it an they will come" runway length will insure future instability and ineffective terminal capacity should the market decide to serve T.F. Green in a way not perceived within the forecast (similar to the Southwest effect in 1996).

This section must be amended to include acknowledgment that the RIAC and FAA do not control the future use of the terminal by airlines and that there is no legitimate means of guaranteeing that the terminal improvements sought under the CIP will be sufficient to meet the future needs of the airport should additional air carriers choose to serve T. F Green Airport.

There are inadequate parking facilities to meet current and future parking needs (even in consideration of the proposed Rhode Island Department of Transportation intermodal facility located close to the Airport).

The lack of parking is a condition that requires resolution in a manner that presents no impact on the community. Parking needs shall not require purchase of "outside the fence" properties that are currently providing real estate taxes to the City. The screening process must eliminate all alternatives that require "takings" of properties "outside the fence" for the construction of parking areas to serve the airport land use.

Belly cargo and integrated cargo areas are inefficient and do not provide sufficient space to accommodate future cargo demands.

The City of Warwick has already requested a more detailed analysis of alternate cargo opportunities at Quonset Airport including the review of the Master Plan for the entire Quonset Point Industrial Park which has received significant resources to improve the facility as a premiere state asset. To date, the study of the facility as a partial alternative for integrated cargo is wholly inadequate.

The terminal roadway access system is inefficient and operates at unacceptable levels of service causing backups and delays on-Airport roadways.

The alternatives terminal roadway selected are unacceptable to the City because the design impairs access to Post Road. The single alternative forwarded for review does not allow direct egress onto Post Road from the departing roadway structure causing hardship for businesses on Post Road. Travelers unfamiliar with the area would follow the terminal roadway directly to the airport connector and out of the City removing capital, that may have otherwise been spent at local restaurants, hotels, retail stores and gas stations.

The fuel farm is undersized and has capacity only to hold a two-day supply of fuel.

Runway lengths are inadequate to allow non-stop air service to long-distance destinations for the range of certain aircraft that serve T.F. Green Airport now and are anticipated in the future.

"Inadequate" and "anticipated" are the operative words in this statement. Stated for the record runway 5R/23 at T.F. Green Airport in Warwick, Rhode Island (PVD) is capable of serving non-stop service to destination of some 2100 nautical miles with the aircraft used predominately by the largest air carrier serving T.F. Green Airport.

In fact, runway 5R/23 as it exists today provides sufficient runway length for nonstop service to Las Vegas. The commencement of non-stop service to this highly coveted destination was an awkward embarrassment to the Master Plan Study and forecast that claimed this destination was out of reach for non-stop service given the length of runway 5R/23. This destination was alleged not to be serviceable without a longer runway.

This misstep proves the consultant analysis is at best a weak guide not as principled as current regulation would suggest. Therefore, to lengthen the main runway in a quest to induce passenger growth is an educated guess but what are certain are the long-term ramifications on the host community and the environment.

To build in capacity as proposed within the DEIS is to lean toward a future with greater congestion and delays relaying even more costly infrastructure such as parallel runways. These factual consequences must be reflected and planned for in this document. Each indefinite variable used in this study requires clear identification and assumptions require discussion as to the rational used in gaining said assumptions; i.e. Fleet mix, operations, market conditions, energy costs, reaction to world events, anticipated demand, low cost effect, legacy carriers etc.

The host community's constraints must also be reflected as an integral part runway length analysis plainly identifying that the preferred runway alternative is based on a unconstrained landuse condition not found at T.F. Green Airport. The screening process must be amended to include these facts in an unadorned fashion.

COMMENTS CONTINUE - see 3.3.5.2 New Aircraft Technology

3.2 Screening Process

The overall intent of this screening process is to identify all reasonable and feasible alternatives that meet the general performance measures identified in the previous section. In order to identify alternatives that could feasibly and reasonably achieve the goals of the Purpose and Need, the following process was used, and is shown in Figure 3-1.

Level 1 Screening - Candidate Alternatives - This **analysis presents a reasonable universe of alternatives** and evaluates the ability of each alternative to reasonably, or practicably meet the Purpose and Need of the Airport Improvement Program.

The analysis includes a range of on- and off-Airport alternatives, including non-construction alternatives identified through the NEPA scoping process, and by the FAA and RIAC. Alternatives that do not meet the Purpose and Need of the Airport Improvement Program totally or in part were eliminated from further consideration in this level of screening. At this stage, alternatives were identified and evaluated for each program element.

The screening process is unsatisfactory and requires additional parameter based factors that reflect the existing constraints of the surrounding landuse and impact on the community. Contrary to aforementioned statement the Draft T.F. Green Airport Improvement Program Environmental Impact Statement fails to include "a reasonable universe of alternatives" analysis especially within the areas of runway length, integrated cargo facility, traffic circulation and parking.

The screening process must be amended to reflect the myriad of impacts and limitations of the community and capable of evaluating practical alternatives against the preferred alternative prior to entering in the mitigation phase of the EIS process.

The development and screening of several alternate designs is critical in determining the scale and degree of environmental impact associated with the preferred alternative. In this case, the screening process is adept at reviewing only one runway length option (not including no-build) with the unsubstantiated notion that that alternative is the only alternative that meets the Purpose and Need of the project. This assumption and analysis fails to accurately consider alternatives that through further evaluation may meet the Purpose and Need with less overall impact on the community. The ability to recognize and adjust to the existing shortcomings of the airport's location will only assist in advancing a project that not only meets the Purpose and Need but also minimizes environmental impact in a reasoned responsible manner

The Candidate Alternatives **evaluated in the Level 1 Screening** that may meet the Purpose and Need of the Airport Improvement Program include off-Airport and on-Airport options:

The entire section does not provide the detailed analysis necessary to establish a conclusion that the alternatives forwarded are reasonable, cost effective and practical. In many instances the impedance cited is the same or less than that faced in the T.F. Green DEIS. This section is unsatisfactory and provides merely "lip service" in an attempt to meet the NEPA requirements for alternative analysis.

Greater use of one or more existing airports in southeastern New England;

See 3.31

Development of a new airport in southeastern New England;

3.3.2.1 Airport Template

The airport template was based on providing a medium hub replacement airport capable of accommodating the existing and projected aviation demand (aircraft operations, cargo, and passenger traffic) for the service area of T.F. Green Airport. The general design parameters used as a basis for the template were derived from the Master Plan and included accommodating over 11 million passengers per year by 2025 and providing dual parallel 9,500-foot runways capable of independent arrivals and departures...

The total acreage is approximately 6,000 acres (9.45 square miles). This area is sized to accommodate dual independent parallel runways 10,200 acres for a terminal facility, full FAA-required safety areas and Runway Protection Zones, a 350-acre corporate aviation and air cargo facility, 400 acres for auto parking, and 350 acres for hotels and commercial development.

This section applies unrealistic parameters and criteria for the construction of a new airport that is unattainable in the best of circumstances. The FAA should balance this unrealistic bureaucratic guideline with a realistic study that averages size and constraints found in surrounding airports. The resulting parameters would replicate the scale found in commercial airport in the region and therefore maintain a far greater theoretical value than what was applied in this study.

The City requests independent study to review the factual potential of improving existing airport infrastructure in the region and/or creating new smaller airports designed to improve niche markets in the regional demand.

...Constructing a new airport to replace T.F. Green Airport is eliminated from further review because:

-There are no suitable sites within the analysis area where the development of a new airport could be built without very significant environmental and incompatible land use impacts.

-There are significant environmental impacts associated with the construction of a new airport within the one-hour drive time from the Providence metropolitan area population center. The most significant impacts are to densely populated communities and wetlands. Land acquisitions are not only required to develop a 6,000 acre airport but are also required to protect surrounding air space and runway approaches, and mitigate for aircraft noise. Extensive wetlands would have to be filled to construct a new airport.

The grounds cited in this study for elimination of "new airport" alternative are in many ways the same as those issues faced within the City of Warwick. Especially significant is the disproportionate burden the proposed improvements at T.F. Green position on families who reside within airport effected areas. This factor is not discussed in this study. The creation of a new airport by the consultant's own admission, would be located in a rural area which would have significantly less impact on residential population specifically in terms of noise exposure and degraded air quality. So why is this fact not listed as an advantage to this approach possibly trumping some of the more esoteric reasons selected for removal of this alternative?

Considering the so-called "improvements" at T.F. Green have occurred over several years the incremental impact is obscured from immediate view because there is no tangible baseline for comparison. This study must rectify this deficiency by adopting a comparative analysis approach to all pre-screened alternatives.

The screening portion of the study must be restructured in a format that positions relational based impact analysis alongside established baseline data to compare cost/benefit and impact of the preferred alternatives with "reasonable like alternatives". Testing impact/benefit analysis of the new airport alternative against the cumulative impact sustained by the community over the last 15 years would gain a more balanced conclusion for it would have to include years of intense social consequences that have occurred in the community and are not present in the "new airport" alternative.

Displaced families, reduced housing stock, air/noise pollution, reduced tax base; reduced real estate values and social impacts are elements not present in the "new airport" alternative and therefore must be reflected in the verbiage and selection process. It is essential that identifiable benefits of a "new airport" alternative be included in both the narrative and as a component the screening alternatives.

Other (non-aviation) modes of transportation;
Regional demand management;

3.3.4 Off-Airport Candidate Alternatives - Regional Demand Management

Airport and **regional demand management techniques** to meet the service demands of T.F. Green Airport have been eliminated from further review because they do not meet the Purpose and Need:

-Airport demand management does not address the Purpose and Need of meeting the current and anticipated need for long-haul commercial air service to the West Coast, nor is it applicable to any other component of the Purpose and Need.

The elimination of this technique is based on an assertion of "anticipated" non-stop West Coast service. The said "need" is already partially in place at T.F. Green Airport and has not come to fruition at a comparative airport in three years (Manchester International Airport) since the construction of a 9,350 ft runway. This verity is testimony to the inherent inaccuracy of forecasting. While forecasting routinely continues with all its ailments, demand management techniques have never received a sincere and thorough evaluation.

In order to justify removal of this technique this study must provide factual evidence to prove that this technique cannot improve efficiency at T.F. Green Airport. Without this pretext, the technique was removed from consideration. Conversely the City believes that Demand Management has a role in improving efficiency and does fit with the Purpose and Need for this project.

New Technology; and
On-Airport improvements

This section is vitally important because the fleet mix used in the study is largely based on old technology. Over the years market conditions and rising energy, costs have driven the aerospace industry to build aircraft with improved lift and better performance. The innovations in the aerospace industry are remarkable and have resulted in aircraft that are able to travel longer distances with a greater numbers of passengers. To this end, the City of Warwick would request that the consultant revisit this issue and include review of both current and future aircraft sales and trends including consultation with officials from Boeing and Airbus to gauge sales and customer demands.

This forward thinking approach would greatly assist in forecasting future fleet mix and determining "reasonable runway length". The City considers this comprehensive approach prudent considering the impact this proposal will have on the host community. If similar studies were initiated in the past, we would not have been shocked to observe non-stop service to Las Vegas. This information is compulsory from the cost benefit side of the issue particularly should the future innovations and aircraft design reduce the total runway length necessary to accommodate non-stop West Coast service.

Level 2 Screening - Preliminary Alternative - The purpose of this step is to refine and further screen the alternatives for each program element retained from the previous step, and to eliminate any alternatives that, on more detailed evaluation, are found to be not feasible, **nor reasonable**, nor meet the Purpose and Need.

"Reasonable" is a highly subjective term that requires more specificity if it is to be used as a parameter in judgement and dismissal of a proposal within the screening process.

I suggest adding a precise definition of this term within the screening process for all study areas. As an example, quality of life would address specific criterion as primary factors of evaluation within the screening process. The quality of life element would include quantitative analysis ranking all alternatives for; pollutants introduced, noise footprint, housing impacts and ecosystem impact. The City recommends screening of the preferred alternatives against "reasonable alternative runway lengths" already considered practical in previous studies i.e. 7,500 lf. and 8,500 lf. The City contends that the assessment is a sensible use of expended resources and a practical means of prescreening impact.

Level 3 Screening - T.F. Green Airport Improvement Program Alternatives Analysis

The Level 3 screening develops and evaluates combinations of on-Airport program elements (particularly the Runway 16-34 and Runway 5-23 improvements) that collectively form the Airport Improvement Program Alternatives. These Alternatives were screened to determine whether they are reasonable and feasible and should be retained for detailed environmental evaluation.

This screening alternative is unsatisfactory because it fails to evaluate the preferred alternative relative to other reasonable practical alternatives such as the 5R/23 8,500 l.f. In addition, 7,500 l.f. as discussed above. The screening process fails to include detailed evaluation such as obvious impacts on essential environmental resources such as Buckeye Brook and other area waterways. Additional areas include apparent impacts on air pollution, noise, wetlands, and landfills.

The screening process is most notably silent in the consideration of community impact and compatibility with the City of Warwick Comprehensive Plan including important value based recreational impacts. The screening process also fails to assimilate and evaluate comparative impact by and between the preferred alternatives and reasonable alternatives based on conspicuous negative impact such as the wholesale filling of wetlands or the removal of hundreds of single family homes.

3.3.1 Off-Airport Candidate Alternatives - Greater Use of Other Airports

...From a technical and operational standpoint, this alternative does not have the necessary infrastructure (runways and runway length to reach long-haul markets, taxiways, terminal building, parking, etc.) to be of any effective benefit over T.F. Green Airport.

This study promptly dismisses the potential improvements to the New Bedford Regional Airport due to EIS concerns over wetland impact. However, no such concern is mentioned in the study of improvements at T.F. Green Airport. The City suggests that if the EIS at T.F. Green Airport had to include all impacts from incremental "improvements" completed in the last 15 years the aggregate impact on wetlands and displaced residents would challenge the impact that has dissuaded the FAA to further review airport improvements at New Bedford Regional airport.

The City suggests this study review the viability of going forward with selected improvements at the New Bedford regional airport as a means of enhancing overall aviation capacity within the region.

Quonset Airport does not currently have, nor will it have, within a reasonable planning horizon, the facilities needed to meet the Purpose and Need of the Airport Improvement Program, and has been eliminated from further consideration

The analysis of Quonset Airport is grossly inadequate in even the most basic areas of study. This draft study arrived at a conclusion without review of the Quonset Industrial Park Master Plan and planned infrastructure improvements. The study must re-examine future use of the Quonset facility as a supplement for future charter and non-belly cargo operations when T.F. Green arrives at build out.

The City of Warwick submits that sufficient evidence has not been offered in this study to eliminate any of the aforementioned off-site alternatives. We recommend a more detailed study of both the aforementioned alternatives including hybrid versions of each independent scope of improvements. Even minor improvements at these outlying facilities would assist air service in the greater regional system. The section requires the addition of a less detailed benefit-cost analysis that compares the economic, social and environmental costs of the longer runway at T.F. Green Airport with the cost and benefits associated with improving elements of surrounding airports.

3.3.5.2 New Aircraft Technology

While improved takeoff performance and increases in payload range is sufficient to allow certain aircraft to provide non-stop service to some destinations, such as Las Vegas, it is not sufficient to reach the West Coast or the long-haul Caribbean destinations that have been identified as future service needs at T.F. Green Airport.

Technological improvements will continue to evolve in the commercial airline market, providing benefits to airports, airlines, and the traveling public. While new technology has improved the performance characteristics and range of certain aircraft types operating in the fleet at T.F. Green Airport, the present runway length does not allow most aircraft (including the 737-800, the most common aircraft at T.F. Green), at their maximum gross takeoff weight (MTOW), to reach West Coast or other long-haul markets. Without a lengthened runway, new aircraft technology, by itself, cannot provide non-stop long-haul service from T.F. Green Airport and thus cannot meet the Purpose and Need.

For these reasons, new aircraft technologies have been eliminated from further review.

The reasons cited to eliminate new aircraft technologies are unequivocally false and based on an embarrassing lack of research and discussion regarding the potential for new orders of the 737-700ER and like aircraft should the low cost air carriers decide to enter non-stop west coast and transcontinental markets.

This study exploits old technology without retirement schedules to make the argument that a 9,350 ft. runway is necessary. Absent is the anticipation of new order based on innovative aircraft technology. The "3.3.5.2 New Aircraft Technology" section simply ignores new aircraft designed specifically for the needs of the low cost carrier group. The use of the out of production 767-300 with the least effective engine configuration is the basis of "backing into" the operational length requirement of 9,350 ft for the main runway. This length is universally used across the country based on aircraft performance that is 9 years old.

City review of existing and future market conditions finds that the most probable fleet mix upgrades will occur within the low cost carrier group to serve to long haul point to point market. As this sector transforms to more point to point non-stop service so will the demand increase for aircraft that fly longer hauls at lower costs than the traditional 767 or A330 aircraft. To support non-stop service many factors are involved but given today's newest innovation in aircraft design runway length is becoming increasing less important.

Not reflected in this section of the draft EIS is the fact that newer aircraft play a large role in servicing the goals of the Purpose and Need for this project. The aerospace industry is building aircraft with performance and seating capacity in line with threshold requirements of the non-stop service marketplace achieving high efficiency and lower support costs.

The implications of these advancements will allow the marketplace not the FAA or RIAC to serve the anticipated air service requirements of the future. The consultant must amend this section to include the impending changes in the airline industry most notably the fleet mix change to lower cost narrowbody jet for domestic service and the redeployment of larger B757/767 to higher-yielding transatlantic routes.

The B 767 used in this study as the design aircraft is too large and does not accurately reflect future fleets mix in this rapidly changing market. The B 737-700ER offers an immediate solution to air carriers wishing to branch out into non stop west coast service with a demand for low passenger seat costs.

In detail the City believes that the 737-700ER is, a logical fit for future operations by Southwest Airlines with a fleet mix almost entirely 737's extended efficiency to service and maintenance of the entire fleet. The City requests the entire 3.3.5.2 New Aircraft Technology section of the DEIS be redrafted to address the potential changes.

This section must include research and reporting as well as trend analysis within the long haul domestic air service market including impending aircraft purchases, retirement schedules and reallocation of aircraft within the fleet mix serving T.F. Green by 2012. The operation of newer aircraft designed for the low cost carrier group requires special attention and study because the City believes that new technology has a major role in meeting the purpose and need for this airport.

3.6 Draft Environmental Impact Statement Alternatives Appendix A -Runway Length Analysis

The City of Warwick has evaluated other airfield expansion alternatives that may serve as potential substitutes for the proposed 5R/23-runway extension to 9,350 l.f.

Study within the mitigation portion of the DIES is specifically dependent on one alternative length of 9,350-lf for R5/23. It is our opinion that consideration must be given to the previous forwarded 7,500 l.f. and 8,600 l.f. alternatives which are viable alternatives not considered in the DEIS process.

FINAL - T. F. GREEN AIRPORT
MASTER PLAN SUPPLEMENT March, 2004

Prepared for:
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Prepared by:
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The percentages shown in the table represent that portion of the fleet that is capable of nonstop west coast operations at various runway lengths. In summary, the payload analysis found that the length for the main departure runway at T. F. Green should be:

- 9,500 feet in order to serve 100 percent of the nonstop west coast capable fleet in 2009.
- 9,000 feet in order to serve 92 percent of the nonstop west coast capable fleet in 2009.
- **8,500 feet in order to serve 83 percent of the nonstop west coast capable fleet in 2009.**
- 8,000 feet in order to serve 33 percent of the nonstop west coast capable fleet in 2009.
- 7,500 feet in order to serve 22 percent of the nonstop west coast capable fleet in 2009.

Using the March, 2004 "Runway 5-23 Length Analysis" prepared for the Rhode Island Airport Corporation by Landrum & Brown, Inc. the City has established that the fleet mix used in March, 2004 report differs greatly from the fleet mix serving T.F. Green airport today and in the future. According to the 2004 Landrum & Brown INC. study, an 8,500-foot long main runway would be capable of serving 83 percent of the non-stop West Coast capable fleet in 2009.

The fleet mix used in their calculation did not account for the higher percentage of 737 aircraft equipped with winglets which allows Southwest airlines to fly non-stop to Las Vegas on the existing 7,166 foot longer runway.

The non-stop service provided together with aviation innovation suggest that future fleet mix has the potential to reach most west coast destinations, non-stop, without the need for a runway longer than 8600 l.f. Additionally, the weight penalties assessed as part of this study are based on old technology and does not account for the improvement in engine design and changes in engine configuration and new aircraft.

Employing the finding of the aforementioned 2004 runway analysis, 83% penetration in a market that is only 10% of all operations by 2012 is more than reasonable. Improved aircraft entering the fleet mix will also have less weight to passenger penalties increasing the cost effectiveness of the flights. This scenario advances the 8,600-foot runway length to a reasonable practical alternative with less overall cost and impact on the community.

In addition should the new B 737-700 ER become a component of the fleet for the low cost carrier group the use of the B 767 will most likely have to be curtailed because it would be less profitable to fly than competitors using the lower cost 737 –700 ER with a higher net profit per passenger.

The City of Warwick requests the consultants develop a comparative study based on runway length and several fleet mix scenarios. The existing fleet mix included in this study must also be amended to include the differing engine configurations of B 767 –300 as a subset of the aircraft model. Also included; a projected phase out, retirement schedules and reallocation of the B 767. The consultant must clearly verify all data, assumptions and conclusions used in the modified runway length analysis.

Appendix A -Runway Length Analysis

The City of Warwick contends that there are two runway extension options for 5R/23 that are substantially shorter than 9,350 feet long runway proposed in the DEIS. The City believes that both the proposed alternatives meet the requirements set out in the purpose and need statement and as such should receive equal assessment as the preferred alternative prior to initiating the mitigation phase of the DEIS process.

The runway length assessment, included in the Draft EIS for T.F. Green Airport is the acceptable runway length only if all the surrounding uses were compatible and the host community was not adversely impacted. We know this is not the case and as such the study needs to consider more reasonable variants in the length of runway 5R/23.

Understanding that "acceptable" runway length is more than an exercise in prediction. Determining appropriate runway length must include all variables in a more detailed manner than what has been included in the Draft EIS. As prepared, the runway length analysis estimates future operations based on past occurrence and does not accurately depict advancements in technology and changes in market conditions. The analysis relies too heavily upon broadly defined and typical operating conditions based on the past and not in context with contemporary changes in the low cost and legacy carrier group. The draft study suggests the only manner in which to meet the objectives within the Purpose and Need is to study the "longest" runway without constraining factors such as environmental considerations, cost and physical property limitations.

The City reasons that the "longest feasible" runway removes from consideration the known constraints faced by this airport. The current DEIS fails to address the specific analytical engineering-based assessment of runway length without detailed investigation into the myriad of variables and assumptions used in the runway length analysis. We cannot ignore the community factors when calculating the optimized length of a proposed runway. Runway length must balance today's air service goals with that of land use restriction and account for future technological changes in carrier fleet mix.

The Draft EIS as written obliges a trade-off between "unconstrained" runway length and increased environmental impact on the host community. The primary purpose of the proposed reduction in runway length would be to reduce economic, social and environmental impact on the host community as well as ease traffic burden on area roadways. The reduced runway length would be operationally effective and eliminate the need to remove hundreds of "starter" homes from the housing stock in the State of Rhode Island in the midst of a self declared affordable housing crisis.

Appendix A -Runway Length Analysis (cntd.)

The City's evaluation finds that a shorter 8,600 l.f. runway would serve 68% of the fleet mix forecasted to fly to the West Coast by 2012 without innovations such as the 737-700ER. The City believes that a fiscally responsible approach would be to use the projected 68% of the fleet mix forecasted to fly to the West Coast by 2012 as the design criteria for the runway length.

In the City's view, the acceptable runway length should be one that balances the concerns of the host community with the desires of RIAC and the FAA.

Additional Comments:

Justification for the 9,350 l.f. runway length included in all the alternatives is based on a 767-300 aircraft that is forecasted to comprise only 7% of all operations serving the West Coast by 2012. This methodology is contrary to current market transformations in domestic and international air service.

The B 767-300 design criteria used by FAA and VHB in its runway length analysis does not reflect the majority of aircraft forecasted to fly to the West Coast. Further, the actual B 767-300 engine configuration used in the VHB analysis assumes use of all older engine configurations requiring longer runway length. It is not reasonable to use older aircraft configuration in the long term forecast for the entire fleet mix attributed to this aircraft type. The EIS must be expanded to research extended range aircraft and improved engine configuration of new aircraft models requiring shorter runway length.

For the immediate time accepting the forecasted B 767-300 configuration forwarded in the study, the operations still account for only 3.8% of total overall operations and merely 7% of all forecasted West Coast service by 2012. While the design criteria used by FAA and VHB uses the B767-300 aircraft this represents merely 7% of all forecasted West Coast service by 2012. Moreover, the B 767-300 engine configurations of later models have much better performance characteristics requiring shorter runway length than that included in the study. The runway length analysis must update and define this data used as a critical baseline in the runway length analysis.

The 500 annual operations threshold cited so often by FAA essentially dilutes the need for a shorter runway with the larger older aircraft using the older engine configuration (B767-300). The runway length design is based on an assumption that all B 767-300 is equipped with an older engine configuration.

The 9,350 l.f. main runway (R5/23) is based on a B 767 –300 operation that is projected to incident 8 times the established criteria while the 8,600 l.f. runway is projected to endure an incident rate of 77 times the threshold criteria by 2012. Additionally with the knowledge that the B 767 use in domestic long haul non-hub airports market is short-lived, the forecasted operations may be significantly lower than that anticipated in the study.

2012 Forecasted Fleet Mix

Aircraft Type	FAA Threshold Minimum annual operations	2012 annual operations	Total % of operations serving West Coast by 2012	Minimum Threshold exceeded *	Runway length	NM Range West Coast Rqd.
737-700w	500	30,711	54%	61 x	8,600 l.f.	2,100 NM
757-200	500	8,052	14%	16 x	7,800 l.f.	2,300 NM
767-300	500	4,392	7%	08 x	9,250 l.f.	2,300 NM

38,763 operations out of a total of 43,155 in year 2012 operations will require less than an 8,700 l.f. runway

68% of all operations by 2012 will be flown by aircraft requiring less than an 8,700 l.f. runway

It is 77 times more likely that threshold operations by 2012 will require less than an 8,700 l.f. runway

The preferred alternatives forwarded within this draft are far in excess of what is required to meet the intent of the "purpose and need". Therefore, the economic and ecological costs to be studied under "mitigation" cannot be justified.

The draft alternative analysis is in part based on unsubstantiated need and deficient analysis of less costly options designed outside the context of conditions provided within the host community.