

I MINA'TRENTAI TRES NA LIHESLATURAN GUÁHAN
2015 (FIRST) Regular Session

Bill No. 85-33 (COR)

Introduced by:

T. C. Ada 

**AN ACT TO AUTHORIZE THE GUAM REGIONAL
TRANSIT AUTHORITY (GRTA) TO ENTER INTO A
LONG TERM PUBLIC-PRIVATE PARTNERSHIP THAT
WILL ENABLE AN INVESTOR FINANCED
IMPLEMENTATION OF THE GOVERNMENT OF
GUAM TRANSIT BUSINESS PLAN 2009-2015.**

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1 **Section 1. Findings & Intent.** *I Liheslaturan Guahan* finds that an effective
2 and efficient public transit system is needed to support Guam’s growing population
3 and economic development.

4 And *I Liheslaturan Guahan* further finds that a similar observation was
5 made by the Governor of Guam on February 20, 2014 through Executive Order
6 2014-04 noting that despite millions of dollars of annual subsidies, Guam’s public
7 transit system is: (1) “*lacking in timeliness, reliability, accessibility – all necessary*
8 *functions of transportation and economy...*”, and (2) “*... As the demand [for*
9 *transportation related services] grows, so do the concerns over traffic*
10 *congestion...*”, and (3) “*... improving accessibility to contemporary transportation*
11 *to all Guamanians is a priority...*”

12 *I Liheslaturan Guahan* further finds that the island’s public transit system is
13 rapidly deteriorating. Consequently the effectiveness of the current system is being
14 negatively impacted and is losing its ability to efficiently serve as an alternate

1 mode of transportation. This is evidenced by the fact that ridership has declined
2 30% in the past 4 years.

3 *I Liheslaturan Guahan* additionally finds that in a December 2008 study,
4 jointly commissioned by the Federal Highway Administration (FHWA) and the
5 Department of Public Works (DPW) and which formed the basis for the 2030
6 Guam Transportation Master Plan, the following findings were made.

7 *“Improvements to mass transit on Guam could result in a fourfold increase*
8 *in ridership... By improving service and expanding service hours, it is likely*
9 *that ridership could reach between 1.56 - 1.87 million riders, annually.”*

10 This finding is a marked contrast to the current annual ridership of 222,000. This
11 study suggests that if properly implemented the ridership could increase by as
12 much as 600%.

13 *I Liheslaturan Guahan* further finds from the same study that the current
14 vehicle fleet has long exceeded its service life and should be replaced to improve
15 system reliability. Additionally, the current number of vehicles (17) in use must be
16 increased to approximately 50 vehicles in order to provide the level of service
17 needed.

18 *I Liheslaturan Guahan* further finds the recent Pilot Program, pursuant to
19 Executive Order 2014-04, implemented between October 2014 through November
20 2014 confirmed that a nominal improvement in service levels (i.e. an addition of 3
21 service hours a day and an additional service day per week) ridership increased by
22 15%.

23 *I Liheslaturan Guahan* further finds that a GRTA Mass Transit Business
24 Plan had been developed by the consulting firm of PB Americas Inc. and adopted

1 on January 18, 2010 by DPW and FHWA. The plan outlined the steps to address
2 challenges and deficiencies identified during an operational review of Guam’s
3 public transit system. The plan included a phased-in approach to improving the
4 public transit system. However the plan was never implemented.

5 *I Liheslaturan Guahan* finds that significant investments are needed to
6 provide the vehicles, equipment, and facilities to support an effective and efficient
7 public transit system. However, given the government’s limited financial
8 resources, a long term Public-Private Partnership needs to be considered to attract
9 private sector participation and resources to upgrade and provide an effective and
10 efficient public transit system for the people of Guam.

11 *I Liheslaturan Guahan* therefore intends to authorize GRTA to enter into a
12 long term Public-Private contract and to authorize the use of investment incentives
13 to attract prospective private sector participation.

14 **Section 2.** A New Article 3, Public-Private Partnership, is added to
15 Chapter 6 of 12 GCA to read:

16 “§ 6301. **Authorization.** The GRTA is authorized to enter into a long
17 term Public-Private Partnership contract, for a base period of five (5) years and
18 three five year options to renew, for a total period of up to twenty (20) years.
19 Said contract shall be for a investor financed implementation of the GRTA
20 Business Plan 2009-2015 (See Exhibit A), as a minimum, to include the
21 procurement, operation, and maintenance of vehicle assets and equipment, and
22 the design, construction, operation, and maintenance of facilities that support
23 public transportation and public parking operations within Guam.

24 § 6302. **Purpose.** The creation of this Public-Private Partnership shall
25 be complementary to the purpose of the Authority set forth in § 6104. In the

1 event of conflict between this Article and other Articles of 12 GCA Chapter 6
2 this section shall prevail.

3 **§ 6303. Exercise of Franchise Rights.** The exercise of franchise rights,
4 pursuant to § 6102 and the Public-Private Partnership contract, for the furnishing
5 of public transportation and public parking services and for the furnishing of
6 transportation support facilities may be implemented using a Procure-Finance-
7 Operate-Maintain-Transfer or Design-Build-Finance-Operate-Maintain-Transfer
8 arrangement, or a variant thereof and as appropriate.

9 **§ 6304. Responsibilities.**

10 **a. Private Partner.** The Private Partner (Partner) *shall* be responsible
11 for the following:

12 1. **Implementation of Business Plan.** Implement the “*Transit*
13 *Business Plan 2009-2015*” (adopted January 18, 2010 under Project No.
14 GU-NH-IPMS (002)), as the minimal standard for the level of service to
15 be provided under the contract.

16 2. **Management of Services.** Plan and manage the execution of
17 transit service plans and delivery.

18 3. **Vehicles and Equipment.** Finance, procure, operate, and
19 maintain required transit vehicles, administrative support vehicles,
20 equipment, and appurtenances to support the contracted public
21 transportation services.

22 4. **Facilities.** Design, construct, finance, operate, and maintain
23 transportation facilities to include, but not limited to, public parking
24 garages, bus stops, bus transfer stations, and other facilities necessary to
25 effectively support public transit services.

26 **b. GRTA.** GRTA *shall* be responsible for the following:

1 1. Receive and disburse Federal and local funds, submit project
2 grant applications, programing of projects to Federal agencies, and enter
3 into formal agreements concerning projects with Federal agencies.

4 2. Collect, account, and disburse funds generated by use of
5 government assets.

6 3. Provide oversight on execution of provisions of, and
7 compliance with the terms and conditions of the final contract with the
8 Private Partner.

9 4. Receive and investigate consumer complaints, and document
10 Private Partner resolutions.

11 **c. Government of Guam Responsibilities.** The Government of Guam
12 agrees to provide to the Private Partner access to land, facilities, and
13 equipment under its control as needed to support public transit and/or parking
14 operations. Title on government owned land or buildings used for operations,
15 any equipment, and/or land and/or buildings purchased or constructed using
16 Federal or Local Funds, Private Activity Bonds, Federally or local
17 government backed or guaranteed loans, or any other government
18 investment/funding instrument shall remain with the Government of Guam or
19 GRТА.

20 **§6305. Public Transit Task Force.**

21 **a. Creation of Public Transit Task Force.**

22 1. The Governor shall form a Public Transit Task Force (“Task
23 Force”) to plan for the solicitation and selection of an investor/operator
24 interested in entering into a long term public-private partnership with the
25 GRТА for the exercise of the Authority given in § 6301 and § 6304(a).
26 Said Task Force shall be formed within thirty (30) days from enactment.

1 The Governor shall select one member of the task force to serve as
2 Chairperson.

3 2. The Task Force shall be composed of eight (8) members that
4 reflect the different stakeholders of the public transit system and shall be
5 comprised of the following:

6 A. The Executive Director of the GRTA, and

7 B. The Director of the Department of Integrated Services for
8 Individuals with Disabilities (DISID), or his designee, shall
9 represent Individuals with Disabilities, and

10 C. The Chairperson of the GRTA Transportation Advisory
11 Committee, shall submit to the Governor three nominations (and
12 may include himself) for the Governor to select from, and

13 D. A representative of public transit riders; the Executive
14 Director of the GRTA shall submit to the Governor three
15 nominations for the Governor to select from, and

16 E. A Veteran; the Chairman of the Guam Veteran's
17 Commission shall submit to the Governor three nominations (and
18 may include himself) for the Governor to select from, and

19 F. A representative from the Tourism industry; the
20 Chairman of the Guam Visitors' Bureau (GVB) shall submit to the
21 Governor three nominations (and may include himself) for the
22 Governor to select from, and

23 G. A representative of the Senior Citizens of Guam; the
24 Chairman of the Guam Association of Retired Persons (GARP) shall
25 submit to the Governor three nominations (and may include himself)
26 for the Governor to select from, and

1 H. A Representative from the business community; the
2 Chairman of the Guam Chamber of Commerce (GCC) shall submit
3 to the Governor three nominations (and may include himself) for the
4 Governor to select from, and

5 3. All evaluators must be impartial persons acting in the best
6 interests of the government, with sufficient knowledge of the
7 government's needs and experience to capably appreciate the nature of
8 the service being procured and independently assess and apply the
9 proposals submitted to the evaluation criteria.

10 **b. Task Force Support.**

11 1. The GRTA board secretary shall provide logistical and
12 administrative support for the task force.

13 2. The Chief Procurement officer, or his designee, shall sit on the
14 task force in an advisory capacity related to Guam's Procurement law,
15 but will not be a voting member.

16 3. The Office of the Attorney General shall from time to time
17 provide legal advise to the task force, but will not be a voting member.

18 **c. Source Selection.**

19 1. Request For Competitive Sealed Proposal ("RFCSP") or
20 Request For Proposal ("RFP") source selection methods, as described
21 herein, may be used.

22 **A. Request For Competitive Sealed Proposal (RFCSP).**

23 i. price is not intended to be a determining factor for
24 selection for award of a contract. The quality of competing
25 proposals may be compared and trade-offs made between price
26 and quality of the proposals offered as described in the RFCSP.

27 ii. The Chairman of the Task Force must make a

1 determination, in writing, that price is not intended to be the
2 determining factor for award of contract in the solicitation, and
3 that the use of the RFP method is not practicable or
4 advantageous to the Government of Guam. The determination
5 shall be part of the procurement record.

6 iii. Prior to preparing any solicitation document, the Task
7 Force shall prepare a written plan for the solicitation, using
8 the Transit Business Plan to establish minimum requirements
9 for fleet assets and public transit support facilities. The plan
10 shall be part of the procurement record.

11 iv. A specific weighting shall be applied to the price
12 evaluation factor, which must not be more than fifty percent
13 (50%) of all relevant factors. If price is intended to weigh
14 more than 50% of all evaluation factors, the Request for
15 Proposal (RFP) method, as provided in this Part, shall be
16 used. All other evaluation factors shall be as objectively
17 defined by outcomes, functions or performance specifications
18 desired, as is practicable to specify.

19 v. Evaluation Factors. The RFCP shall state the relative
20 importance of price and the factors and sub-factors, if any, to
21 be evaluated. Except for the price factor which must be
22 specifically weighted, all other factors including price must be
23 specifically weighted to provide all potential offerors
24 sufficient guidance to consider and prepare their proposals
25 and a more objectively verifiable selection process, and to
26 assure that potential offerors have sufficient information to
27 consider and prepare a proposal.

1 **B. Request For Proposals (RFP).** An alternative to the
2 RFCSP is the RFP. Implementation of this method of source
3 selection shall be as follows.

4 i. Discussions. The Task Force, or subcommittee thereof,
5 may conduct discussions with any offeror who has submitted
6 a proposal in response to an RFP, to determine such offeror's
7 qualifications and understanding of the evaluation factors and
8 services sought for further consideration. Discussions shall
9 not disclose any information derived from proposals
10 submitted by other offerors. Price is not a factor to be
11 discussed or considered until after the ranking of the offerors
12 and the process of negotiation for compensation begins.

13 **c. General Provisions.** Solicitation of proposals for the RFCSP
14 or RFP shall be issued as a written document. Proposal packages
15 shall be made available for review by downloading from the GSA or
16 GRТА websites, or may obtain a printed package from GRТА for a
17 fee. Prospective offerors wishing to participate in the solicitation and
18 receive updates must register with GRТА.

19 1. Public Notice of the RFCSP or RFP shall be advertised in
20 at least one local newspaper of general circulation and on the
21 GSA and GRТА websites. Advertisements in a local newspaper
22 shall be published at least twice and announcements on GSA and
23 GRТА website shall remain posted until contract has been
24 awarded.

25 2. Public notice of the RFCSP or RFP shall be given in
26 sufficient time, but not less than thirty (30) days prior to the
27 deadline for submittal of proposals from offerors, to allow the

1 preparation of competitive responses.

2 3. Receipt of proposal submittals by offerors. Proposal
3 submittals shall not be opened publicly, so as to avoid disclosure
4 of contents to competing offerors. A Register of Proposals
5 received shall be prepared, but proposals shall not be opened for
6 public inspection until after contract award.

7 4. Discussions may be conducted with responsible offerors
8 who submit proposals determined to be reasonably qualified for
9 selection for award for the purpose of clarification to assure full
10 understanding of, and responsiveness to, the solicitation
11 requirements. Offerors shall each be accorded fair and equal
12 treatment with respect to any opportunity for discussion and
13 revision of proposals provided to any of them. Revisions and the
14 subject of discussions may be subjected to uniform time and
15 other limits reasonably specified by the Task Force. Revisions of
16 submissions may be permitted prior to final submissions after
17 prior submissions or in response to a request for the best and final
18 offer, but there shall be no revision allowed to a best and final
19 offer nor after award.

20 5. All discussions with offerors authorized by this method
21 shall be conducted by the Task Force, or a designated
22 subcommittee thereof, in the presence of the GSA Chief
23 Procurement Officer.

24 6. Award. Award shall be made to the responsible offeror
25 whose proposal conforms to the solicitation and is determined in
26 writing to be the most advantageous to the Government of Guam.
27 The Task Force must prepare a written explanation setting forth

1 the comparative facts and factors which form the basis on which
2 the award is made which shall be part of the procurement record.
3 Written notice of the award to the successful offeror shall be
4 promptly given to all other offerors and shall be posted on the
5 GSA and GRTA websites for a period of sixty (60) day
6 subsequent to award.

7 7. Notwithstanding any of the above, the provisions of
8 5GCA Chapter 5 shall be applicable.

9 **c. Task Force Deadlines.**

10 1. Formulation of Solicitation package. The task force shall
11 have forty-five (45) days from the date of empanelment to
12 formulate a solicitation package and transmit to the Attorney
13 General's Office for review as to form.

14 2. Review of Solicitation by the Office of the Attorney
15 General. The Attorney General shall cause the review of the
16 proposed solicitation documents within forty-five (45) days and
17 transmit to the Chief Procurement Officer for issuance.

18 3. Evaluation of submissions. The Task Force shall have up
19 to forty-five (45) working days to review and evaluate Proposals
20 and award a contract and transmit the contract documents to the
21 Legislature for approval.

22 4. Legislative Approval Required. Final contract shall be
23 transmitted to the Speaker of *I Liheslaturan Guahan* for
24 approval or disapproval, in whole. The Legislature shall, within
25 sixty (60) days from receipt of transmittal, conduct public
26 hearing. Legislative approval shall be by enactment into law.
27 Legislative disapproval shall be by Resolution. If *I Liheslaturan*

1 *Guahan* takes no action, other than the conduct of public
2 hearing, to approve or disapprove within sixty (60) calendar
3 days from the date of receipt at the Speaker’s Office, the
4 contract shall be deemed approved.

5 **Section 3.** To add a new (g) and (h) to § 6103 of Chapter 6 of 12 GCA:

6 “(g) Public-Private partnership means a contractual relationship
7 between the GRTA and a commercial entity to accomplish the
8 division of responsibilities described in this chapter.

9 (h) Private Partner means a person, company, or consortium,
10 licensed to do business on Guam.”

11 **Section 4.** § 6104 of Chapter 6 of 12 GCA is amended as follows:

12 **§ 6104. Purposes.** The Authority is created to plan services, establish,
13 develop, coordinate, and promote, own and operate facilities the efficient
14 operation of facilities and services that support public transportation and public
15 parking within Guam.

16 **Section 5.** § 6105(a)(2) of Chapter 6 of 12 GCA is amended as follows:

17 “§ 6105(a) (2) Plan public transit services, ~~devise and follow~~
18 schedules, ~~operate~~ facilities and terminals, and otherwise engage in the
19 necessary actions to provide and improve public transit service and public
20 parking management.

21 **Section 6.** § 6105(a)(6) of Chapter 6 of 12 GCA is amended as follows:

22 “§ 6105(a)(6) Impose, prescribe, revise policies and collect fees for
23 the purposes of carrying commercial advertisement on real and personal
24 property owned by the Authority ~~or used in the provision of transit services~~
25 ~~pursuant to this statute”.~~

26 **Section 7.** § 6105(b) of Chapter 6 of 12 GCA is amended as follows:

27 “§ 6105 (b) The Authority shall:

1 (1) ~~Oversee the Operate~~ operation of a system of public
2 transportation.

3 (2) In conjunction with the Private Partner ~~E~~establish
4 operational routes, schedules, fares and policies consistent with the
5 purpose of the Authority. Such services may be altered or modified
6 only after completing the following:

7 (A) Public Outreach Notice. The GRTA shall provide
8 notice no less than ten (10) working days before the effective date
9 of the proposed changes. Notices shall be posted, made available
10 and disseminated at the office of the GRTA and within vehicles
11 used to provide the services of the GRTA.

12 (B) World Wide Web Notice. The GRTA, no less than ten
13 (10) working days before the effective date of the proposed
14 changes, shall publish a World Wide Web (Web) page, available to
15 the public via the GRTA website. The Web page link shall be
16 highly visible on the GRTA's main web page, and should legibly
17 state in bold letters, "Guam Regional Transit Authority Service
18 Change Proposal".

19 (C) Public Hearing Notice. The GRTA shall hold at least
20 three (3) public hearings on proposed changes at least thirty (30)
21 days prior to the effective date of the proposed changes. One (1) of
22 the public hearings shall be held in a location in northern Guam;
23 one (1) of the public hearings shall be held in a location in central
24 Guam; and one (1) of the public hearings shall be held in southern
25 Guam.

26 (i) No public hearing shall be held unless notice of the
27 hearing has been advertised in a newspaper of general

1 circulation at least twice. The notices shall be made five (5)
2 working days and forty-eight (48) hours prior to the first
3 scheduled hearing.

4 (ii) Any interested party, in person or their authorized
5 representative, shall be afforded an adequate opportunity to
6 participate in the formulation of the proposed changes
7 through the presentation of facts or arguments or the
8 submission of written data or views. All relevant matter
9 presented shall be documented by the GRTA and officially
10 submitted to the Board for disposition.

11 (D) Notices. All notices shall include the following:

12 (i) date of notice;

13 (ii) GRTA point of contact name, telephone
14 number and email;

15 (iii) effective date of proposed change(s);

16 (iv) all public hearing dates, locations and times;

17 and

18 (v) summary of proposed change(s) to established
19 route, schedule fare or policy.

20 (E) Board Approval. The Board shall approve or
21 disapprove the proposed changes.

22 (F) Effective Date. No change(s) to established
23 operational routes, schedules, fare and policies shall be
24 effective until after compliance with the provisions of this
25 Section.”

26 **Section 7. Severability.** *If any provision of this law or its application to*
27 *any person or circumstance is found to be invalid or contrary to law, such*

1 invalidity *shall not* affect other provisions or applications of this law which can be
2 given effect without the invalid provisions or application, and to this end the
3 provisions of this law are severable.

4

Guam Islandwide Program Management Services

PROJECT NO. GU-NH-IPMS (002)

Task Order No. PB2, Work Order 2.15

TRANSIT BUSINESS PLAN

2009-2015

January 18, 2010

The Government of Guam
Department of Public Works
Department of Administration
Division of Public Transit Services
And

US Department of Transportation
Federal Highway Administration

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1.0 INTRODUCTION

The Government of Guam Department of Public Works (GDPW), Department of Administration Division of Public Transit Services in cooperation with the U.S. Department of Transportation Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) recently completed the 2030 Guam Transportation Plan (GTP). The purpose of the GTP is to present a comprehensive strategy to improve transportation infrastructure throughout Guam. The GTP documents the impacts associated with the potential U.S. Department of Defense (DOD) multiple services build-up expected to occur both in the short term (2010 to 2014) and the long term (to 2030).

During the planning process for the 2030 GTP, new goals and objectives were developed. They reflect emphasis on:

- Safety
- Integration between transportation and land use
- Military, tourist, and resident needs

The goals and objectives also provide for a wider variety of transportation options that are more consistent with the planning factors identified in the Safe Accountable Flexible Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU).

As part of the GTP, performance measures and a project prioritization process were developed to help the GDPW select projects that reflect the above objectives. Another enhancement of the GTP is the commitment to multimodal improvements. Specific goals pertinent to transit include the improvement of accessibility, mobility, and inter-modal connectivity. This is to be provided by increasing mode choice and access for the entire population including persons with disabilities, low income residents, non-English speaking citizens, the elderly, military personnel and their dependents, and off-Guam workers who may not own or have access to automobiles.

Recommendations are presented in the GTP to establish a new fixed-route transit system, bicycle and pedestrian improvements, and policies to streamline construction synchronization. Recommendations include purchasing 50 or more new transit vehicles to expand fixed-route, demand response, and paratransit service, and the development of a new facility for the operation, maintenance, and administration of public transportation services. Along with these physical improvements is the decision to establish the Guam Regional Transit Authority (GRTA), which will have responsibility for establishment and management of the new transit facilities and services.

This document, the Transit Business Plan, sets out the background, opportunities, and proposed improvement plan for the GRTA. The proposed plan includes anticipated ridership, service plans, capital and operating requirements, and a draft financial plan.

2.0 EXISTING GUAM TRANSIT SERVICES

The Guam Mass Transit services currently are provided by a private bus operator, Kloppenburg Enterprises, Inc. Kloppenburg, which also operates some of the shopping and tour buses, has responsibility for Guam Mass Transit services through month-to-month purchase orders given by the Government of Guam Department of Administration, Division of Public Transportation Services. The purchase order arrangement is an interim situation requiring early action to establish a stable and on-

going means of providing service. The purchase order arrangement is evasive regarding the applicability of federal regulations to the use of federal operating assistance provided to the Department of Administration.

This absence of any long-term contract makes procurement of new vehicles or other capital investment on the part of the contractor unsuitable because of the risk of making unrecoverable investments if use of the contractor is discontinued.

Kloppenbug Enterprises shares the provision of Guam Mass Transit services with two other bus operators, Sanko and Micronesian. The service provided is compensated under the monthly purchase orders on the basis of vehicle hours operated. The rates early in 2008 for mass transit service, including the cost of fuel and tires as well as other operating and maintenance costs, were \$47 per hour for demand-response, \$45 for fixed-route, and \$52 for paratransit. The service has been provided with a total of about 25 buses in service on weekdays, including 5 to 7 provided by Sanko, generally 10 by Kloppenburg, and the remainder by Micronesian. These are provided out of a total available fleet of 32 vehicles.

Extensive details of the existing transit system are provided in a report titled Mass Transit Conditions Assessment, April 1, 2008. Further data are available in the files of the Department of Administration and of Kloppenburg Enterprises.

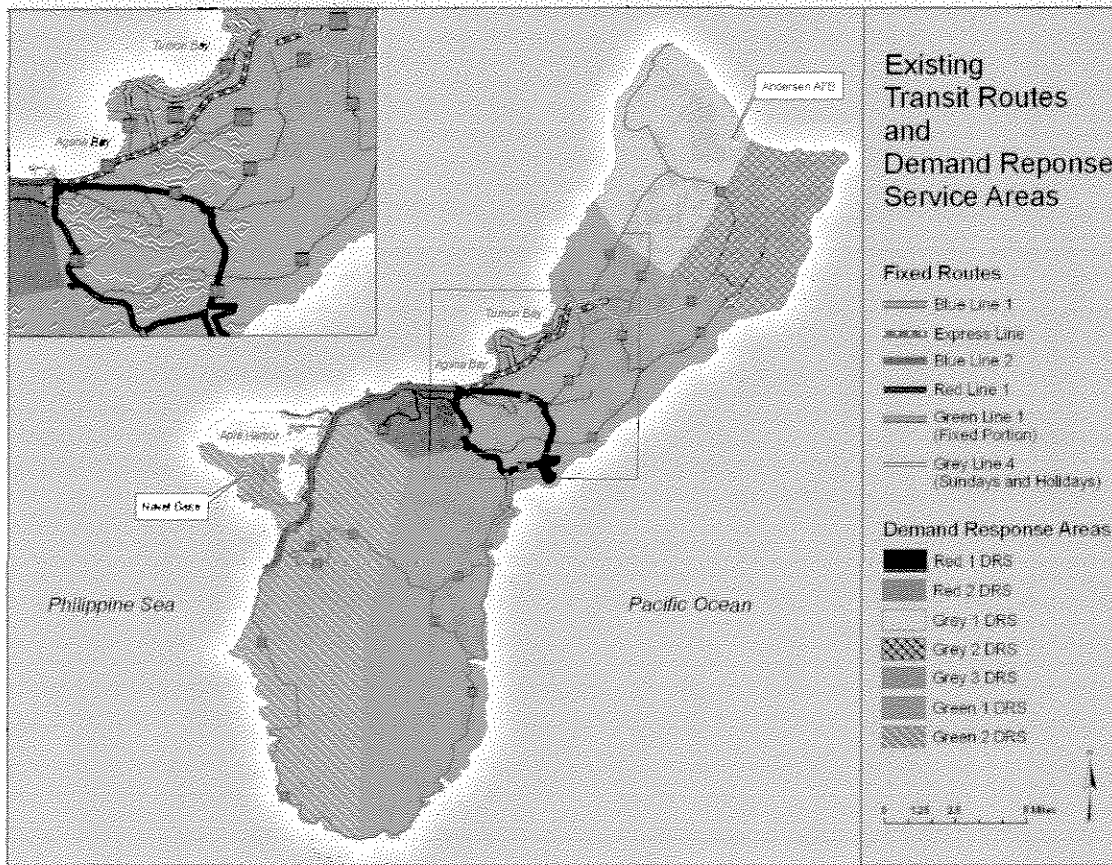
2.1.1 Guam Mass Transit Routes and Schedules: Fixed-Route

Figure 2-1 illustrates the current Guam Mass Transit fixed routes and demand-response service areas. Note that all the Monday–Friday fixed routes originate at Chamorro Village. The fixed-route service schedules are summarized in Table 2-1.

Table 2-1: Guam Mass Transit Fixed-Route Service Description

Route	Areas Served	Headway (hours)	Trips per Day		Scheduled Run Time Outbound (minutes)	Scheduled DR Time (minutes)	Scheduled Run Time Inbound (minutes)
			Monday-Saturday	Sunday/Holiday			
Blue Line 1	Hagatna-Tumon-Micronesia Mall (Shuttle)	2	8 out, 6 in	6	41 to 52		44 to 54
Blue Line 2	Hagatna-Agat (Shuttle)	2	8 out, 6 in	5 out, 4 in	35 to 37		32 to 35
Red Line 1	Hagatna-Mangilao (Loop)	1	14	9	22 to 28		28 to 37
Express Line	Hagatna-Micronesia Mall (Loop)	1	13.5	9	25 to 37		28
Green Line 1*	Chamorro Village-Yona (Loop)	2	8	0	10	80	20
Grey Line 4*	Micronesia Mall-Yigo (Loop)	2	0	5	39 to 40	20 to 21	48 to 49

Figure 2-1: Existing Transit Service Areas



Green Line 1 operates as a fixed route between Chamorro Village and Yona. South of Yona it provides demand-response service to Talofoto, Malojloj, and Inarajan. Grey Line 4 operates as a fixed route between Micronesia Mall and Yigo. South of Yigo it provides demand-response service.

In addition to routes Green Line 1 and Grey Line 4, which combine demand-response and fixed-route service, other routes provide demand-response service exclusively. These routes operate on Monday through Saturday only, providing the normal 5:30 a.m. to 7:30 p.m. hours of service. Demand-response routes, available on call and normally providing transportation to the nearest fixed route, include the following:

Northern shuttles

Grey Line 1, serving Dededo, Agafa Gumas, Santa Ana, and vicinity

Grey Line 2, serving Yigo, Latte Heights, and vicinity

Grey Line 3, serving Tamuning, Tumon, Harmon, and vicinity

Central shuttle

Red Line 2, serving Hagatna, Anigua, Maina, and vicinity

Southern shuttles

Green Line 1, serving Hagatna, Yona, Talofoto, Malojloj, and Inarajan

Green Line 2, serving Agat, Santa Rita, Umatac, and Merizo

2.1.2 Guam Mass Transit Routes and Schedules: Paratransit Service

Paratransit service provided by Guam Mass Transit supplies door-to-door transportation for persons with certified disabilities and is available by advance reservation. Hours of operation are 5:30 a.m. to 7:30 p.m., Monday through Saturday, and 7:30 a.m. to 6:30 p.m. on Sundays and holidays.

There are four paratransit services:

Freedom 1 (northern area) serving Yigo, Agafa Gumas, NCS, Santa Ana Subdivision, Astumbo, Dededo, Harmon, and Tamuning

Freedom 2 (central area) serving Hagatna, Agana Heights, Sinajano, Chalan Pago, Pago Bay, Mongmong, and Tamuning

Freedom 3 (southern area) serving Inarajan, Malojloj, Talofoto, and Yona

Freedom 4 (southern area) serving Umatac, Agat, Piti, Asan, Maina, Agana Heights, and Hagatna

2.1.3 Guam Mass Transit Vehicles and Facilities

The current fleet of transit vehicles that are compliant with the Americans with Disabilities Act (ADA) and ready for service is divided among the three private operators. While the private operators provide tourist shuttle service as their mainstay, each company owns and maintains its respective section of the public transit fleet—assuring the vehicles meet the requirements for service in the public sphere. Typically, vehicles with less than 30 seats are dedicated to demand-response service or paratransit service. Table 2-2 lists the fleet used for Guam Mass Transit service.

The fixed routes are serviced with Gillig/Phantoms and Bluebirds. However, non-ADA-compliant vehicles are dispatched to fixed routes occasionally because of maintenance challenges. Further, higher capacity vehicles are periodically deployed to demand-response routes for the same reasons. With current levels of service, 17 vehicles are deployed daily between the five fixed routes and six demand-response areas. The remaining 15 vehicles are either deployed in paratransit operations or they are off-network for maintenance.

Currently, capital facilities related to the day-to-day operation of mass transit service are owned separately by the three private operators. Because the companies also supply tourist bus service, operations and maintenance facilities are used for both. The costs of maintaining the public fleet, and the facilities used, are difficult to separate from those associated with the private services because both share the same facilities, mechanics, and parts. This is a two edged sword. First, there are tremendous opportunities for the private sector to partner with the Government of Guam to enter into a public private partnership and leverage public and private sector resources for the betterment of mass transit services. On the other hand, relying on the private sector for all capital facilities holds the public services hostage to these operators and could run the risk of an interruption of service.

Table 2-2: ADA-Compliant Transit Vehicles on Island and Ready for Service

Operator	Make/Model	Number of Vehicles	Passenger Capacity per Vehicle
Sanko	Gillig/Phantom	4	32
Sanko	Ford/Econo-Line	1	7
Sanko	Ford/Aerotech	1	17
Sanko	El Dorado/MST	1	18
Kloppenburger	Blue Bird	6	36
Kloppenburger	Gillig/Phantom	3	32
Kloppenburger	Ford Cut-Away	5	20
MHI	Gillig/Phantom	6	32
MHI	Ford Cut-Away	3	15
MHI	El Dorado/MST	2	25
Total On-Island ADA-Compatible Transit Vehicles		32	

Operations management and dispatching are conducted from the Kloppenburg headquarters. Kloppenburg conducts all operations management activities, including fixed-route, demand-response, paratransit, and road service dispatch, as well as system supervision. Kloppenburg also conducts paratransit scheduling, pass sales, and limited customer service. Revenue operations are divided among the private operators.

A section of the Chamorro Village, located in Hagatna, currently acts as a transit center consisting of a shared-use parking lot with two bus shelters. Only one route in the fixed-route system is not anchored by this location. In addition to the fixed routes, all demand-response routes originate and terminate at the Chamorro Village. In this respect, the

current network acts as a low frequency “pulse” system—having the majority of routes service one central location simultaneously so as to maximize transfer potential. The Government of Guam Department of Administration Transit Operations Planning Office is located adjacent to the transit center in the Chamorro Village.

2.1.4 Assessment of Existing Guam Mass Transit

The current assessment shows that current scheduling practices do not work effectively. Data collected for the Draft Mass Transit Conditions Report shows that actual running times in every case are much shorter than the scheduled times. This results in buses running ahead of schedule and having highly excessive recovery times.

The current condition of the rolling stock is poor. Of the 21 fixed-route-capable vehicles, the youngest vehicle is a six year old El Dorado MST and the oldest vehicle is a 23 year old Gillig Phantom. Of the nine vehicles best suited for Paratransit operations, the youngest vehicle is a seven year old Ford E354 van and the oldest vehicles are three 12 year old Ford E350 vans. The majority of vehicles operating on fixed routes have been in service elsewhere or on Guam for 15 to 20 years. These vehicles may have traveled one million miles or more at the present time. The expected life-cycle of these buses has expired, and this section of the fleet should be considered for immediate replacement. Table 2-3: Age of Vehicles Used by Guam Mass Transit provides data on the age of buses in the Guam fleet.

Table 2-3: Age of Vehicles Used by Guam Mass Transit

	Fixed Route*	Paratransit
Total Vehicles	21	9
Minimum Age (Years)	6	7
Average Age (Years)	15.6	8.4
Maximum Age (Years)	23	12

*Two Gillig Phantoms are not accounted for in the analysis of vehicle age due to permanent hard-down status

Normal transit system practice is to replace larger vehicles once they have been in service 12 years, and smaller vehicles usually after five to ten years. Thus most of the vehicles in both fleets should be considered for replacement. Unfortunately, there is no residual value in older vehicles due to the absence of demand for them on Guam, and prohibitive shipping charges to sell them elsewhere.

The smaller vehicles are less expensive and might not require separate shipping charges because dealers can ship this type of vehicle through their internal supply chains. Large capacity vehicles, on the other hand, are not only more expensive but also require a shipping fee and a de-vanning fee at the port. These fees add substantially to transit vehicle cost.

The fixed route operating vehicles on Guam have until now been purchased from the secondary market for transit vehicles. This is because of a general shortfall in capital (rolling stock) replacement and procurement funds and a constraint on fuel supply on the island. Currently, only conventional diesel is imported to the island. Transit vehicles manufactured for operation in the United States and Europe, however, are designed to

utilize low and ultra-low sulfur diesel fuel (less than 15 ppm sulfur). Modification or replacement of low sulfur diesel engines in new vehicles would raise the total investment for vehicle purchase to an economically infeasible level. Consequently there is a need to develop a source of low-sulfur fuel, to support importation of new vehicles for the Guam mass transit fleet. An alternative, also with fuel supply issues, would be to procure CNG-fueled vehicles.

These factors as well as the desirability of building a first-class public transportation system on Guam argue for early replacement of the entire fleet with new low-emission air-conditioned vehicles.

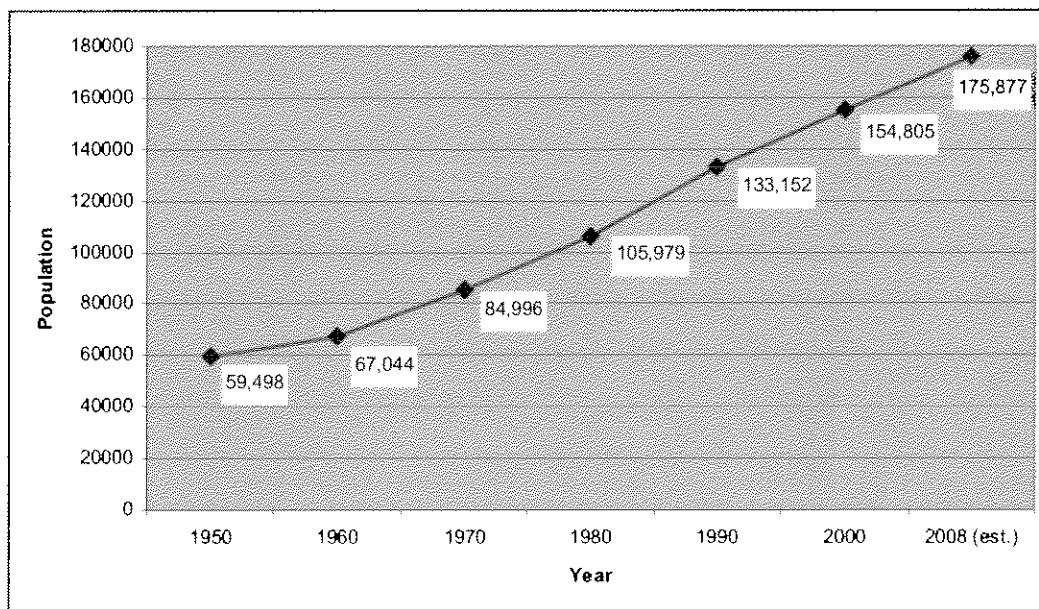
3.0 MARKETING AND SERVICE ANALYSIS

This section provides a broad overview of the demographic forces that drive transit demand on Guam. It also provides an overview of the likely island-wide impact that the military build-up will have on population, employment, and traffic. Additionally, an analysis is presented of the visitor market and the transit-dependent population as well as the disabled community. Target markets that will be highlighted include the tourist market and construction employment during the military build-up.

3.1 Historic Population and Employment on Guam

The population of Guam is comprised of permanent residents as well as military personnel and their dependents. Since becoming a U.S. territory in 1950, Guam has experienced a moderate, steady increase in population. The U.S. Census Bureau estimates nearly 176,000 persons currently live on Guam (mid-year 2008). Although the rate of growth has slowed since 1950, the total number of residents has continued to increase. Figure 3-1 shows the historic growth trends.

Figure 3-1: Guam Total Population for Census Years 1950-2008



Source: U.S. Census Bureau

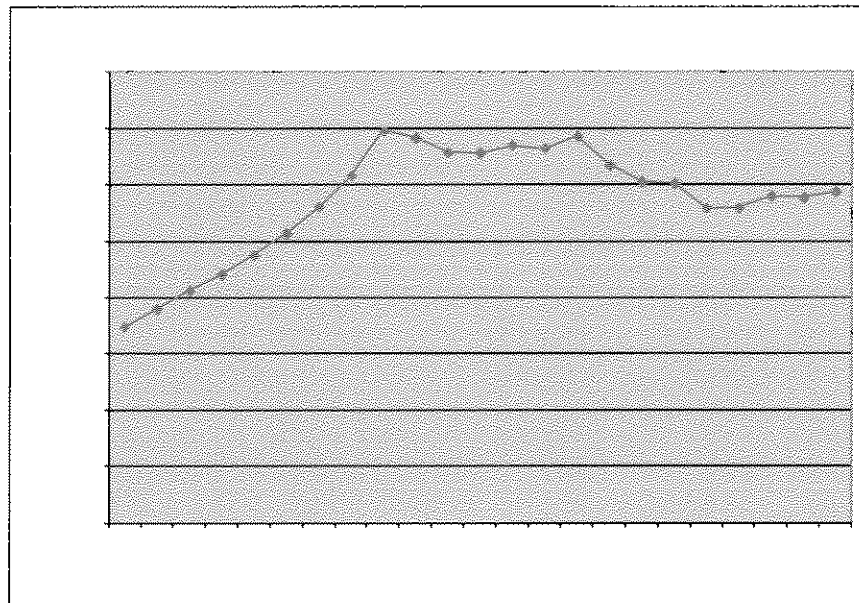
Since 1984, overall employment growth on Guam has fluctuated a great deal due to international events, U.S. events, and natural disasters. From 1984 to 1992 employment growth was very strong, primarily due to the economic boom in Asia that spurred an increase in tourism and related growth. However, the Asian stock market crash in the early 1990's and several base realignment and closure decisions by the DOD caused overall employment growth to stagnate subsequently, until about 2003 when growth resumed after further effects of major typhoons and the SARS epidemic.

Tourism, mainly from Asia (almost 80 percent from Japan), and military activity remain the central elements of Guam's economy and support employment in services related to

hotels and other tourism-based activities, as well as retail trade enterprises. The construction, transportation, and public utilities industries are also major employment sources.

Employment was approximately 65,000 in 2008. Figure 3-2 shows the 1984-2006 record of numbers of employees on Guam, not including approximately 6,000 civilians working for the military.

Figure 3-2: Employment on Guam (1984–2006)



3.1.1 Population and Employment Distribution

The population of Guam is heavily concentrated in the northern and central portions of the island, especially Dededo, Yigo, Tamuning, and Mangilao villages.

More than 60 percent of all non-military jobs on Guam are located in the central part of the island in the Tamuning/Tumon and Hagatna villages. Military jobs are concentrated in the northern and southwestern parts of the island in Santa Rita (near Apra Harbor) .

Table 3-1 shows 2008 population and employment by village, illustrating the differences between residence and job locations. These differences give rise to heavy travel movement concentrations, especially during morning and afternoon peak periods.

Table 3-1: Guam Population and Employment by Village (2008)

Village	Population	Employment
Dededo	49,137	3,502
Yigo	22,128	4,111
Tamuning	20,471	28,611
Mangilao	15,319	2,946
Barrigada	9,332	2,833
Santa Rita	8,522	6,505
Yona	7,563	696
Mongmong-Toto-Maite	6,642	1,142
Chalan Pago-Ordot	6,535	244
Agat	6,426	267
Agana Heights	4,477	732
Talofofu	3,653	134
Inarajan	3,469	146
Sinajana	3,242	302
Merizo	2,457	81
Asan	2,351	598
Piti	1,893	1,258
Hagatna	1,164	10,104
Umatac	1,009	47
Total All Villages	175,790	64,259

Figure 3-3 displays the distributions of population and jobs on Guam.

Figure 3-3: Guam Population Density (Persons per Square Mile in 2008)

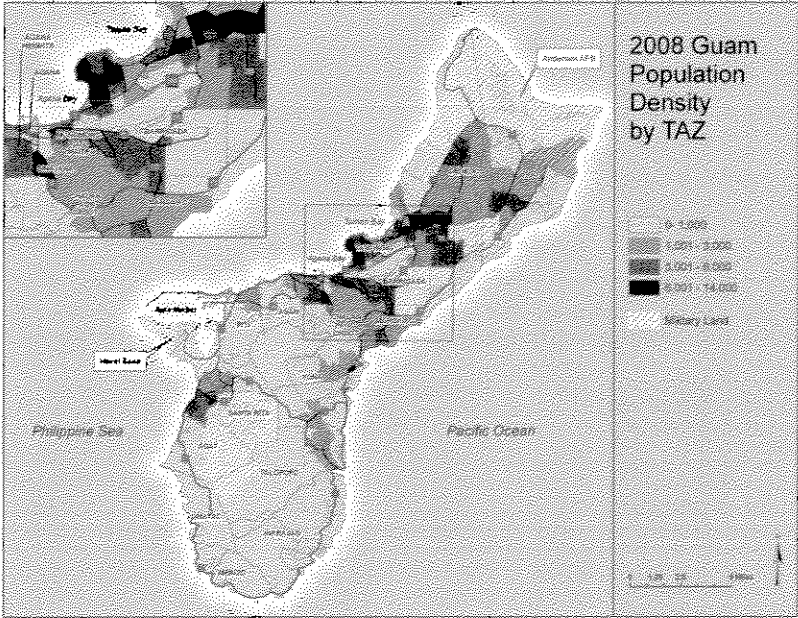
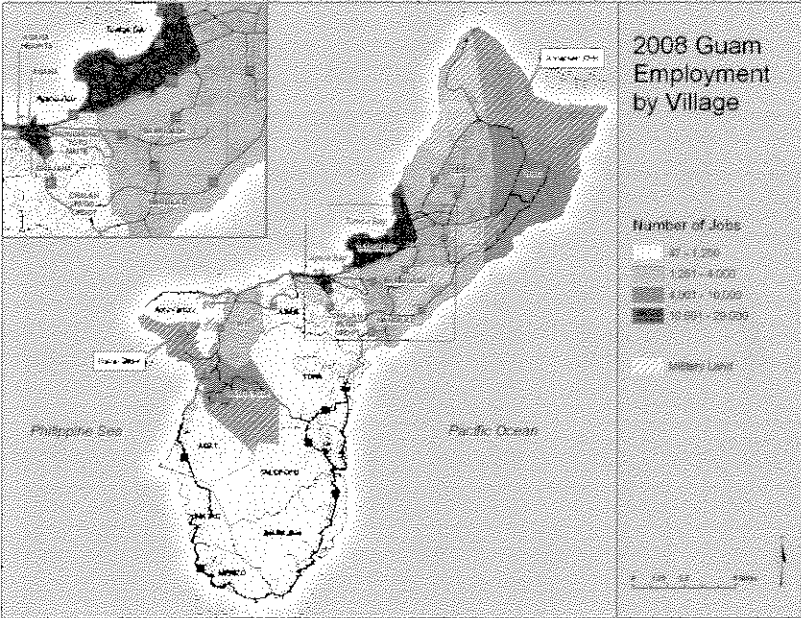


Figure 3-4: Locations of Jobs (2008)



3.1.1.1 Tourism

As mentioned previously, tourism is one of Guam’s central economic activities. Efforts are underway that will continue the focus on the development of Guam’s visitor industry, including expanding tourism from higher yield markets and expanding Guam’s current

visa-waiver program to encourage tourists from a wider range of countries. It is hoped that current efforts will further support Guam's upward trend in total visitor numbers.

3.1.2 Major Activity Centers

Major activity centers are focal points for shopping, dining, employment, and other services and activities. These areas are points for future growth and development. Maximum transit service to activity centers is highly desirable and encourages further activity. Guam's major destinations and activity centers include shopping centers, government and civic locations, resort and tourist areas, airports, cultural and historic sites, healthcare facilities, and popular scuba diving areas. These major activity centers are identified in an appendix to this report.

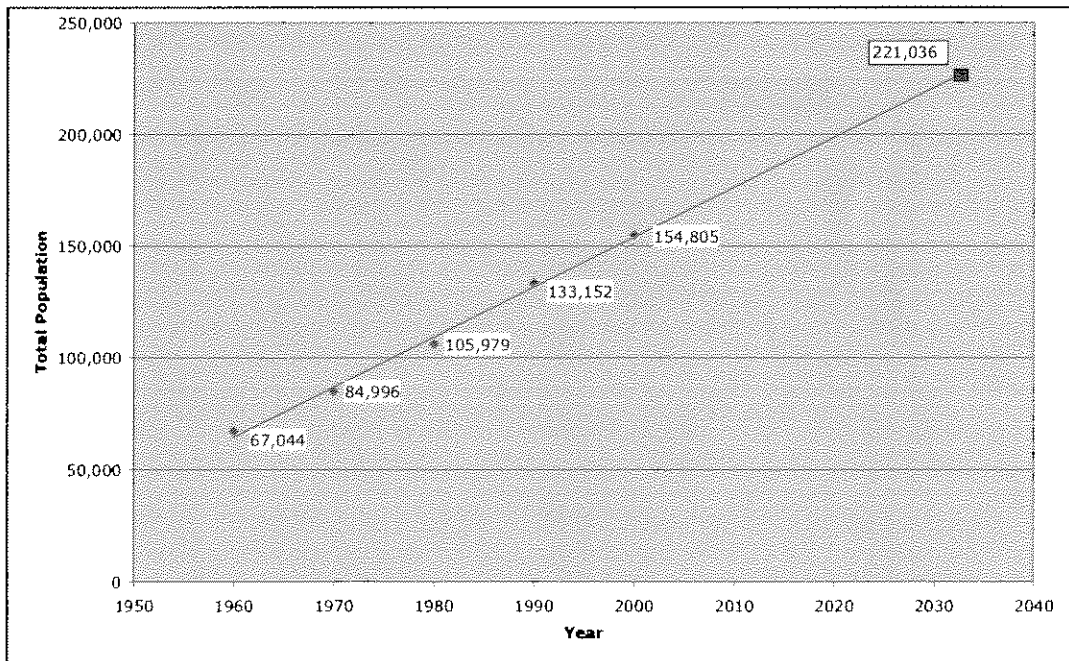
Transit services should provide connectivity between land uses and activity centers, enhancing the growth opportunities and economic development of the activity centers as well as surrounding land uses.

3.2 Future Population and Employment

3.2.1 Population Projections

Historically, Guam's population has grown at a rate of 1.5 percent annually. If past conditions remain constant and growth continues at these historic levels, Guam's population is projected to reach just over 221,000 residents by 2030, as shown in Figure 3-5.

Figure 3-5: Projected Population Growth without Military Buildup (2030)



3.2.2 Military Build-up

With the proposed DOD expansion on Guam, historic trends cannot be used as the basis for future forecasting. The military build-up will result in a population boom which will be driven by the need to construct large-scale military facilities over a four-year period. This expansion will require a non-resident labor force of approximately 16,000 temporary construction workers, with peak accumulations of up to 13,000. Because of the effects of the military build-up, new forecasts for future population and employment have been developed using information provided by the Joint Guam Program Office and the U.S. Air Force. Figure 3-6 and Table 3-2 compare the projected population growth scenarios both with and without military build-up.

Figure 3-6: Population Growth Scenarios

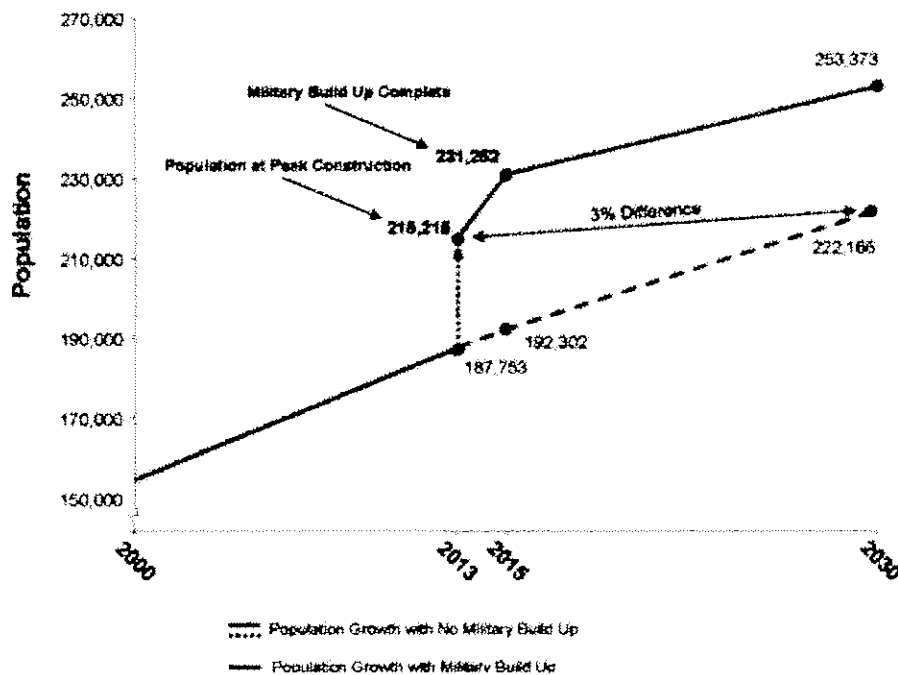


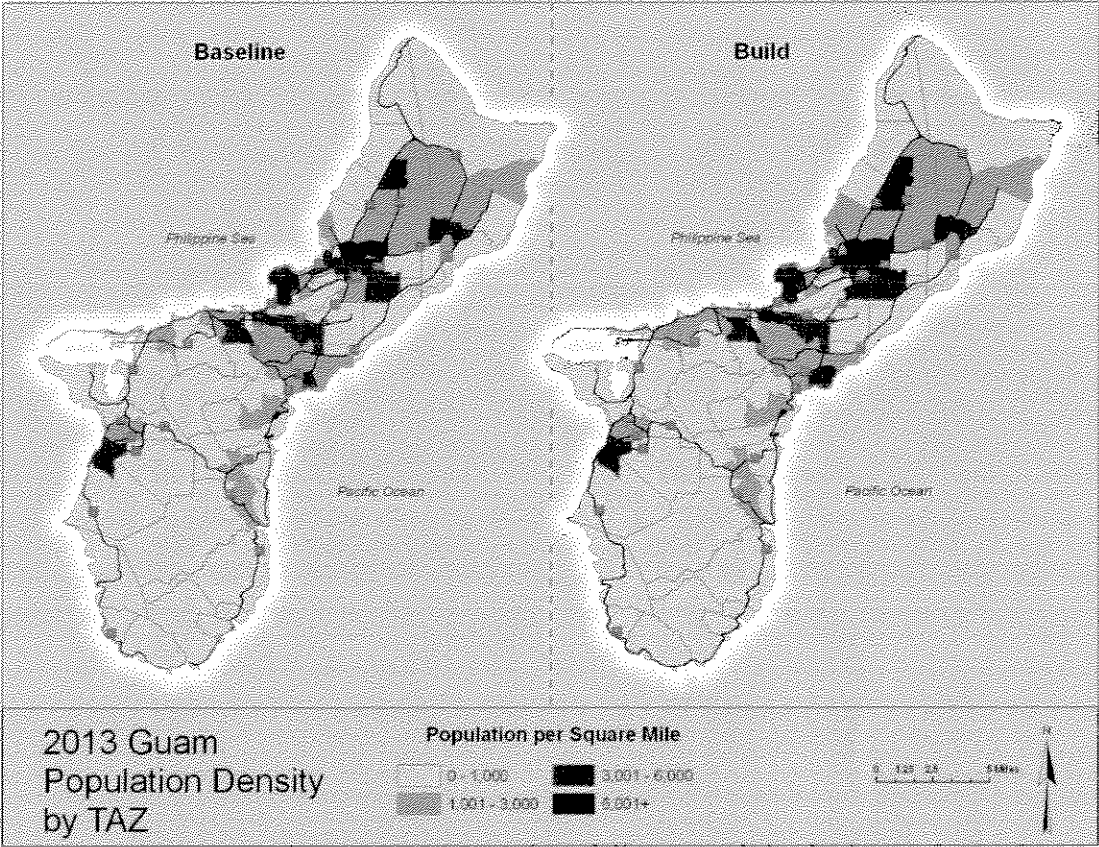
Table 3-2: Population Increase (2008–2030)

Current 2008 Population	Without Military Build-up		With Military Build-up	
	2030 Population	% Increase (2008-2030)	2030 Population	% Increase (2008-2030)
176,000	222,000	26%	253,000	44%

The resulting impact is that by 2013 (year of peak construction), Guam will have more than 215,000 residents, a 22-percent increase over the 2008 population; Guam will experience nearly 20 years of its typical growth in only five years.

Where people live on Guam in future years will have a tremendous impact on the transportation system. The villages in the northern part of the island (Dededo and Yigo) and the central villages, such as Barrigada, are expected to continue to attract new residential development. Military personnel will, for the most part, be housed on military bases: NCTS Finegayan (Dededo) for the Marines, Navy Base Guam (Santa Rita) for the Navy, and Andersen Air Force Base (Yigo) for Air Force personnel. Projected population density in 2013 is shown in Figure 3-7.

Figure 3-7: Population Density in 2013



3.2.3 Distribution of Future Employment

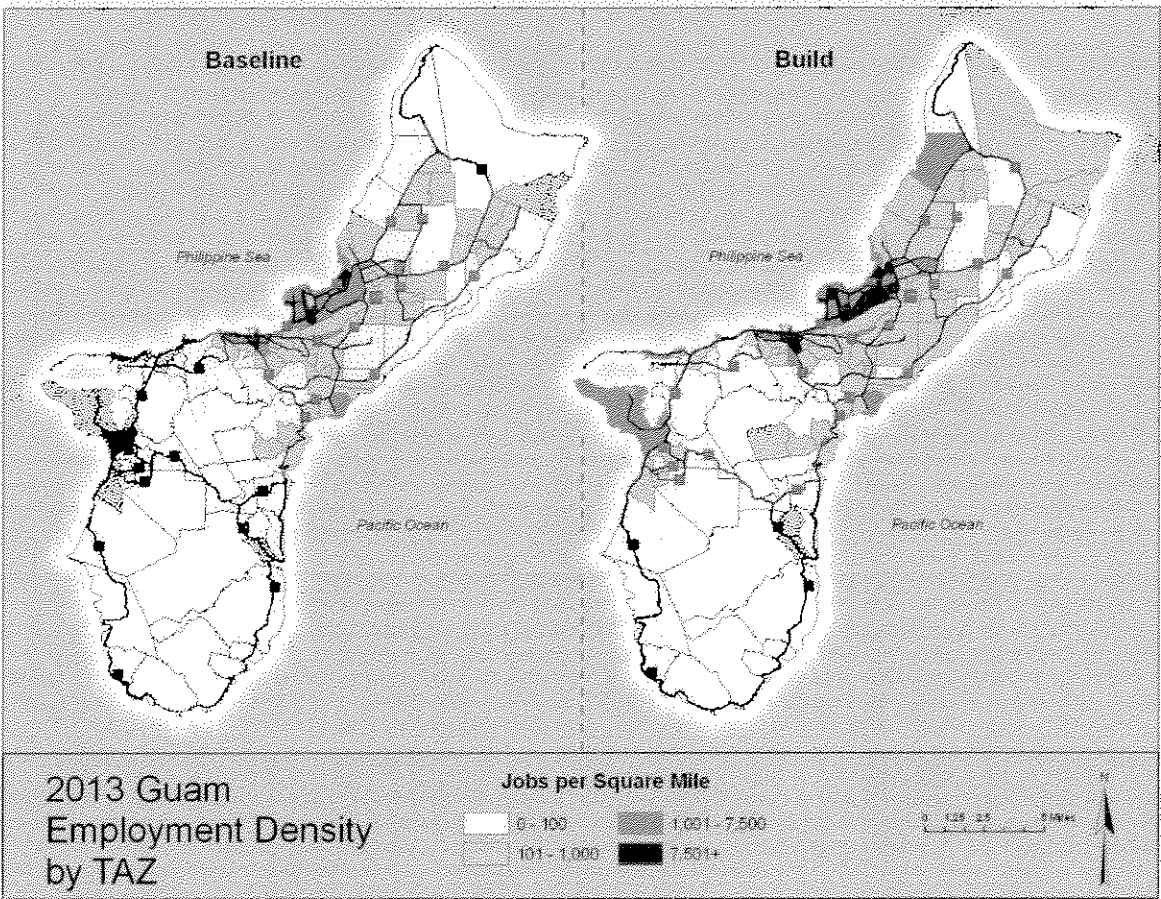
The economic forecast for Guam is strong largely due to the planned increase in military presence, which will induce more jobs across all sectors of the economy. Unemployment is forecasted to be near four percent in 2013, which is significantly lower than the current unemployment rate of 11 percent.

The lasting employment effect of the military build-up will be over 14,000 new indirect jobs on Guam to support the increased military and construction worker population. Projected jobs details are provided in Table 3-3. The location of jobs in 2013 is shown in Figure 3-8.

Table 3-3: Jobs Projected during Peak Construction (2013) and Military Buildup (2015)

Year	Total Construction Jobs Expected	Total Indirect Jobs Expected	DOD Civilian Jobs Filled by Guam Residents	Total Jobs
2013	15,913	20,095	250	336,258
2015	6,240	14,354	2,500	223,094

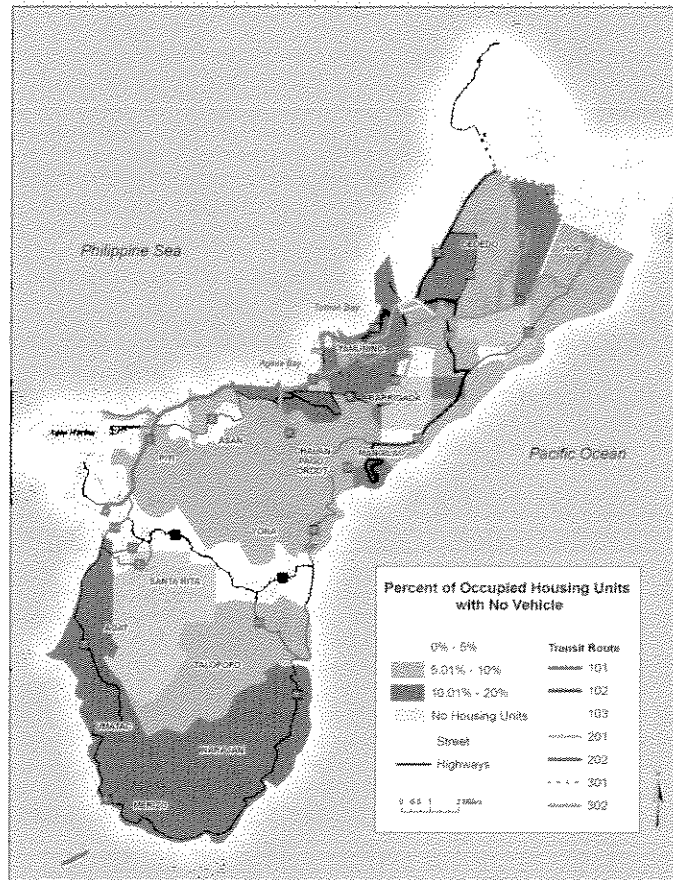
Figure 3-8: Employment Density by Traffic Analysis Zone (2013)



3.2.4 Population, Income, and Auto Ownership

The median household income for Guam in 1999 was \$39,317. Low income households often do not own or have access to automobiles, and therefore are more likely to use other modes of transportation such as take transit, bicycle, or walk. According to the 2000 Census, seven percent of Guam households had no car available. Figure 3-9 shows the percent of occupied housing units with no vehicle.

Figure 3-9: Percent of Occupied Housing Units with No Vehicle

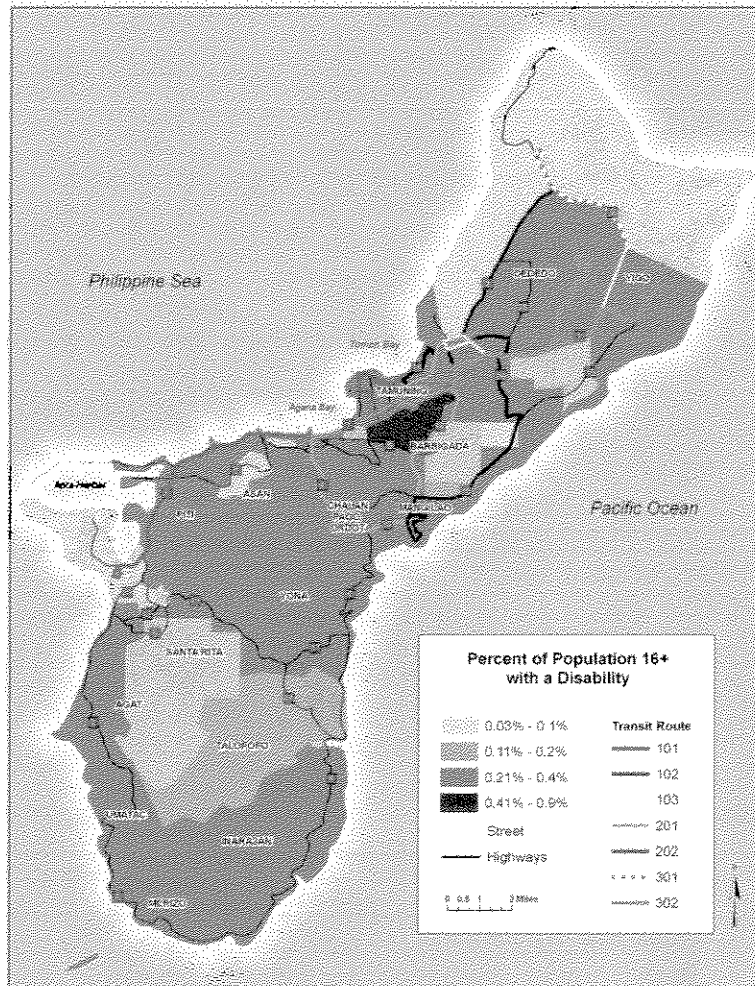


3.2.5 Population with Disabilities

As with the low-income populations, it is vital for the populations with disabilities to have proper transportation options, especially those who are mobility impaired. Figure 3-10 shows the areas on Guam that have higher concentrations of people with disabilities, and their relation to existing transit services. These populations may need paratransit or demand-response transit services.

The population over 65 years of age also is to be considered when planning for transit, including paratransit and demand-response services. From 2000 Census data, 5.3% of Guam's population was 65 years old and older.

Figure 3-10: Percent of Population 16+ with Disabilities



3.3 Transit Service Coordination Requirements

There are human services coordination requirements for Guam’s transit system. Transportation Coordination Plans are specifically mandated in SAFETEA-LU legislation, as well as in subsequent guidance from the Federal Transit Administration (FTA). Beginning in 2007, local Transportation Coordination Plan development is required for funding under FTA’s Section 5310, 5316, and 5317 programs; Section 5311 and 5307 projects have been added to this list. With the development of the Guam Regional Transit Authority, a coordination plan will be required to reflect the changes in transit services associated with the implementation of this business plan.

A summary of these FTA programs is provided below:

Section 5310 – Elderly Individuals and Individuals with Disabilities - Provides capital funding for transportation projects that serve the elderly and individuals with disabilities.

Section 5316 – Job Access and Reverse Commute (JARC) – Provides operating, administrative and capital funding for transportation projects that serve low income individuals who need transportation to work or to work-related activities.

Section 5317 – New Freedom – For new programs providing transportation services beyond the requirements of the Americans with Disabilities Act (ADA).

Section 5311 – Rural Public Transit – Provides operating, administrative and capital funding for public transit projects in Non-Urbanized Areas.

Section 5307 – Urban Formula Program – Provides operating, administrative and capital funding for public transit projects in Urbanized Areas.

The Transportation Coordination Plan should include methods and measures to coordinate public transit, specialized transportation programs, and unmet needs. These plans should include health and human service agencies, which often require transit services for their clientele.

3.3.1 Program Priorities and Evaluation Criteria

Service priority identifiers were established for consideration of funding under the FTA 5310, 5311, 5316 and 5317 programs. These, to be refined in future years, are:

1. **Need:** projects that address a demonstrated need.
2. **Effective use of funds:** projects that provide (or facilitate) a high volume of trips relative to the resources expended.
3. **Collaborative process:** projects developed through a collaborative planning (project development) process.
4. **On-street coordination:** projects that demonstrate sharing of resources. For example, projects showing multiple client use of vehicles will have a higher priority than single-agency services.
5. **Operational capability:** projects that are operationally feasible and demonstrate accessibility, safety/training and effective maintenance.
6. **Management capability:** grantee agencies demonstrating strong management.

Regional evaluation teams will provide initial review of applications for FTA Projects (excluding 5307). This review process was initially established to assess and rank FTA 5310 applications each year (5311 projects are evaluated through a separate process). Given changes included in SAFETEA-LU legislation and subsequent FTA guidance, a “mobility management” function is now included as an allowable expense under the 5307, 5310, 5311 and 5316 programs for which the GRTA may be applying. GRTA will make a determination relative to these mobility management applications outside of the “regular” project review process, based on its evaluation of how effectively such a function will support coordination goals and objectives.

3.3.2 Coordination Plan Elements

The Coordination Plan should include the existing public transit service in the area as well as additional information on specialized transportation providers. More importantly,

the Plan must look for solutions and opportunities to address unmet needs and potential coordination strategies. Possible strategies to address unmet needs may consider:

- Vouchers for taxis for ADA Eligible clients

- Student rides for reduced rates

- Explore outside funding and grants for Senior Citizens Transportation

- Driver Training for Special Needs vans

- Schedule Brochures displayed at locations such as the Chamber of Commerce, City Hall, or Community Centers.

- Expanded locations where bus passes are sold

A next step would be to transition the current transit planning process to include ongoing coordination with human service agencies. This may include establishing an advisory committee that includes human service agencies and organizations serving clients with employment needs or issues related to aging or disabilities.

Projected additional coordination efforts include the following:

- Cut outs on Highways for bus stops

- GPS location systems and on board computers

- Centralized dispatch

- Marketing for transit services

- Mobility manager

- Rideshare program

- Centrally located Transit Centers

Beyond coordination between transit providers, there are several capacities for coordination with Health and Human Service Agencies on Guam. In particular, with such an extensive history and current condition of military personnel presence on the island, the Veteran's Administration (VA) would be a key player in coordinating with the transit services on Guam.

Recommended future transportation investments, as identified in the 2030 GTP, respond to the determined transit service needs. Through coordination with the VA, an entity whose clientele may very likely be transit dependent, those improvements can be scheduled and provided in cooperation with the VA program growth and expansion.

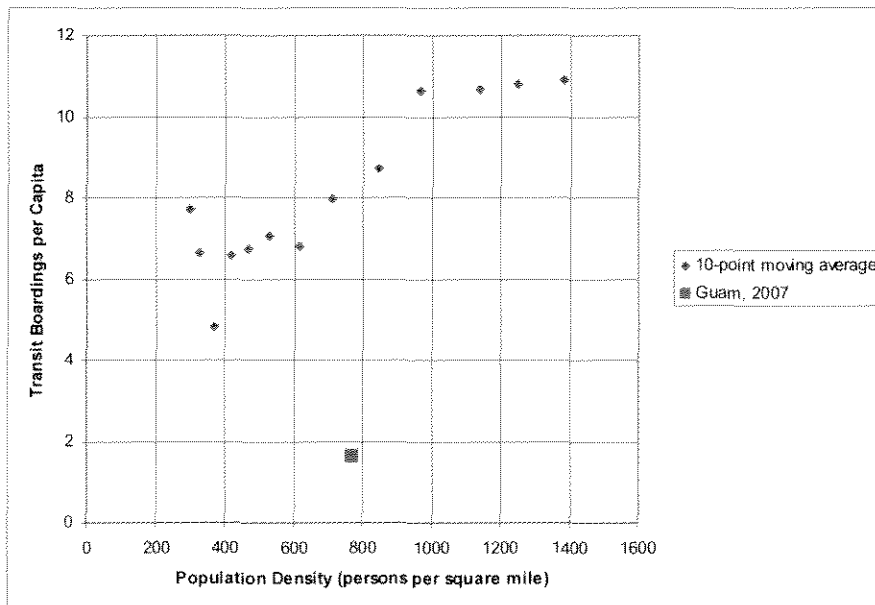
4.0 RIDERSHIP POTENTIAL

4.1 Evaluation of Current Ridership

Initial review of Guam Mass Transit data indicated that service deficiencies result in substantially lower transit use than could be expected. Consequently a comparison with peer transit systems was undertaken. The best known data source for this purpose is the FTA's National Transit Database (NTD), which is collected from US transit systems annually. Using the 2005 NTD, a sample of transit systems was selected to encompass a range of geographic area served and population served that would be broadly similar to these statistics for Guam. The selected sample contains data for 22 systems, reporting geographic areas ranging from 65 square miles to almost 800 square miles, and in population served from 100 thousand to 200 thousand.

The sample data were analyzed to assess whether the current level of transit use on Guam is within an appropriate range, considering the population and area served by Guam Mass Transit. For this purpose, transit passenger boardings per capita were calculated and compared with the NTD data. The data were plotted according to population density, and using a ten-point moving average. Figure 4-1 provides the results.

Figure 4-1: Population Density and Transit Use



Source: Parsons Brinckerhoff analysis of selected US transit systems.

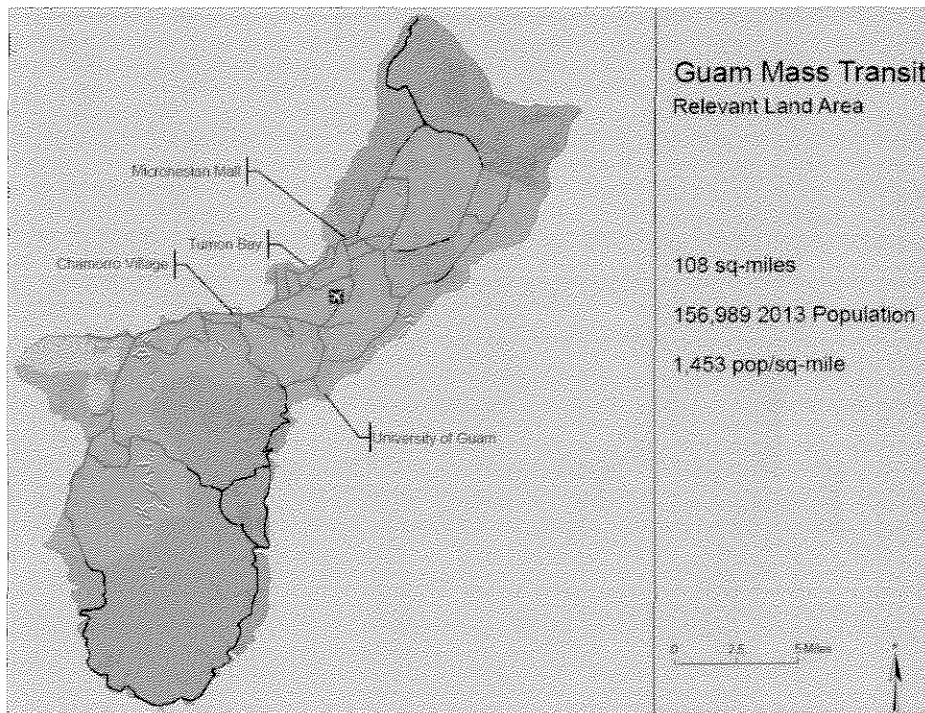
These results indicate that Guam Mass Transit might be expected to have as much as four times the current level of ridership. Further investigation, using regression analysis of transit ridership per capita, was conducted on the selected cities from the same data, combined with information from the 2002 US Census. Results of the analysis, which considered unemployment, high school graduation, transit service area, and revenue service hours provided, are presented in the Appendix. Potential non-military annual transit ridership was projected by applying the regression analysis results to Guam

population projections. Table 4-1 lists the resulting potential ridership levels based on a range of assumed service levels. The service area was restricted, as illustrated in Figure 4-2, in an effort to reflect actual populated areas. Population estimates in these areas were taken from Guam Transportation Analysis Zones.

Table 4-1: Non-Military Annual Transit Ridership Potentials on Guam in 2013.

Annual Service Supply (Revenue Service Hours)	Passengers per Revenue Service Hour	Potential Non-Military Annual Transit Ridership
25,000	3 – 20	147,000 – 502,000 (3 PSH) – (20 PSH)
50,000	12 – 18	583,000 – 893,000 (12 PSH) – (18 PSH)
100,000	14 – 18	1.4 Million – 1.8 Million (14 PSH) – (18 PSH)
150,000	15 - 18	2.3 Million – 2.7 Million (15 PSH) – (18 PSH)

Figure 4-2: Service Area Considered for Non-Military Transit Ridership Projections



These results are consistent with the more general indication of ridership potential demonstrated in Figure 4-1, at the beginning of this chapter.

4.2 Projected Future Ridership by Market Sector

The target markets that the new Guam transit system will serve include the military, the general population, and those who are disabled or elderly. Specific actions for the new transit

system include restructuring the routes to connect the population to a broader range of potential destinations, including health care and social service facilities, and resort worker jobs. The route structure will connect Dededo and the Tamuning villages to better access tourist facilities and retail complexes. The new route structure also provides basic connectivity to school facilities to help students, teachers, and staff reach these major activity centers.

Other transit initiatives include upgrading the management of paratransit services. With the expansion of the fixed-route system and acquisition of new accessible vehicles, the paratransit system will be able to focus on better serving the disabled community. Coincidentally, the DOA/Division of Public Transit Services is working with the FTA to acquire four new paratransit vehicles.

Transportation demand management and better connectivity between transportation and land use planning will be required. With the military build-up, construction contractors will be required to provide shuttle services for off-island workers to work sites. These services should be coordinated with and integrated into the transit system. Additionally, effective management of site selection for the off-island laborer housing can enhance the efficiency of transit shuttle operations as well as make a major contribution to travel demand management during the critical construction period.

4.2.1 Paratransit

Americans with Disabilities Act of 1990 (ADA) states that public entities operating fixed route transportation service for the general public must also provide complementary paratransit service to persons unable to use the fixed route system. This regulation applies to the current and planned fixed route transit services on Guam.

The paratransit services on Guam will continue to need expansion over time as the fixed-route system expands to meet the increased needs. The 2030 GTP recommends programming an additional 20 vehicles to serve the increasing demand for paratransit. Moreover, the Government of Guam will need to upgrade the eligibility process to bring the Government of Guam into conformance with the requirements of the Americans with Disabilities Act of 1990.

The ADA Paratransit Handbook provides insights into the expected number of people that are ADA eligible for each of the three categories of eligibility noted above. In summary, the report indicates that, on average about 2.5 percent of a community's population is ADA eligible.

Accordingly, it is assumed that approximately 2.5 percent of the residents who are located within $\frac{3}{4}$ of a mile of fixed route services are ADA eligible. The result as applied to Guam is an estimated paratransit passenger trip rate of 0.41 passengers per capita.

4.2.2 Ridership on GRTA Fixed-Route and Demand Response Services

Future transit ridership on Guam will be influenced not only by the future quality and quantity of service, but also by the changing demographics of the population. The large increase in the number of military personnel and their dependents will tend to raise transit passenger trip rates, because of the unique characteristics of that population. Of potentially even greater effect, albeit temporarily, will be the presence of construction workers responsible for building military facilities on the island during the major expansion period.

Still another important factor in projecting future ridership is the level of fares charged. Fare levels influence ridership negatively, as one would expect. These estimates incorporate the

assumption that fare levels will be similar to those now in effect. Better route connectivity, with consequent reduced need for passenger transfers, can be expected to raise the average fare per passenger boarding from the present level of 51 cents to an assumed level of 60 cents, at current price levels.

Table 4-2 presents a summary of potential ridership that can result as population growth occurs and suitable levels of transit service are provided. Over the years, there will be a synergistic effect on ridership as a result of growing population density and rising levels of transit service. The detailed estimate is provided in the Appendix. The summary table includes estimates for fixed-route service, limited supplemental demand response service, and needed levels of paratransit service. Intended total annual revenue bus hours are also indicated in the table. Also included is shuttle service for temporary construction workers – as discussed in the next section of this document.

Table 4-2: Analysis of Guam Transit Ridership, Selected Years

	Baseline Future	2011	2014	2019	2030
Passenger Boardings					
Active Military	23,338	59,760	153,643	179,300	179,300
Military Dependents	33,648	78,090	176,520	223,824	223,824
Transient Military	-	29,900	96,424	385,070	385,070
Total Military	56,986	167,750	426,587	788,194	788,194
Temp. Constr. Labor+Dependents	-	271,740	767,664	-	-
Civilians in Fixed-Route Svc. Area	267,058	1,008,429	1,460,066	1,572,906	1,784,653
Totals, Fixed-Route Transit	324,044	1,447,919	2,654,317	2,361,100	2,572,847
Temp. Constr. Labor Work Shuttles	-	-	6,591,000	-	-
Demand Response	18,705	41,914	73,047	78,693	89,287
Island-wide Paratransit	52,737	75,366	78,809	84,899	96,329
Totals, All Transit	395,487	1,565,199	9,397,173	2,524,692	2,758,463
Annual Revenue Vehicle Hours					
Fixed-Route Rev. Veh. Hours/Year	65,500	120,000	140,000	145,000	150,000
Worker Shuttle Rev. Veh. Hr./Yr	-	-	185,480	-	-
Demand Response Rev. Veh. Hr./Yr	4,676	10,478	18,262	19,673	22,322
Paratransit Rev. Veh. Hr./Yr	32,961	47,104	49,255	53,062	60,205
Total Revenue Vehicle Hours	103,137	177,582	392,997	217,735	232,527
Overall Boardings per Rev. Veh. Hr.	3.83	8.81	23.91	11.60	11.86

Source: Parsons Brinckerhoff

4.2.3 Transit for Temporary Construction Workers

Travel to and from work sites by temporary construction workers, as mentioned above, constitutes a major additional component of potential transit ridership. Preliminary consideration of this travel requirement has considered two scenarios that represent the extreme possibilities.

In one scenario, most of the peak accumulation, 13,000 workers during the period 2013-2014, will have temporary housing within about two miles of the main construction sites. They will be transported to and from work by means of shuttle services that may be contracted with the GRTA. Assuming an equivalent 2.5 work shifts per weekday, peak one-way flows of 5,200 passengers will occur at shift-change times. This will require about 12 buses to be dedicated to employee shuttle services during shift-change hours. Peak driver and vehicle

requirements may be reduced further by setting different shift-change times at the various construction sites. In that case, GRTA will have adequate numbers of buses available, outside of peak travel hours, to serve this demand in a very efficient way. This scenario also would have the important benefit of minimizing traffic congestion impacts associated with worker travel between housing sites and work sites.

In the second scenario considered, workers would be housed at sites remote from the construction sites, and require, in the example used, travel distances of 20 miles or more for most workers. The effects of this scenario include high demand for a dedicated fleet of transit vehicles to provide shuttle service (40 or more buses), substantial shuttle transit operating costs, and also significant additions to vehicle miles traveled over some of the more congested roads on Guam. Again, serving the work trip travel of temporary construction workers in this scenario could not be provided by using available GRTA buses.

Temporary construction workers will have other travel needs as well, and these can be served directly by GRTA routes, or by means of shuttle routes linking worker housing sites to the nearest regular GRTA route. The GRTA fixed-route component of this non-work travel is included in the primary ridership forecast presented above.

5.0 SERVICE PLANS

The research conducted shows that the mass transit system on Guam has much room for improvement. Operational practices related to scheduling can vastly improve the reliability and accessibility of the fixed-route system. The current fleet of vehicles is also inadequate. They are old, expensive to operate, and, in some cases, do not meet ADA requirements. To address these and other deficiencies, the 2030 GTP developed an action plan.

The central recommendation of the 2030 GTP is the development of an expanded fixed-route system with more frequent service, a limited complementary demand-response service, and ample paratransit service. In the long-range component of the plan, it is anticipated that high-capacity transit improvements will be needed to support mobility for residents, visitors, and military personnel traveling Route 1. It is recommended that high-capacity transit concepts for Marine Corps Drive be implemented to enhance service and connectivity to the Tamuning/Tumon Bay area.

Initial transit operations under the GRTA service contract will continue essentially the present service, but with scheduling improvements. This level of service can be supported by continued use of the existing bus fleet. At present there are five fixed-route services and one route that is partly fixed and partly demand-response service in the southeastern sector of Guam. Other low-density areas of the island are served by five demand-response routes. Finally, there is island-wide paratransit service addressing needs of the mobility-impaired population. Two of the fixed-route services provide hourly service, while the other three operate on two-hour headways.

While continuing this operation, the GRTA will proceed with the acquisition of a fleet of new buses. Also during this interim period, the GRTA will procure a site and construct new transit facilities including fleet storage, fleet servicing, maintenance and repair, operation of service, and system administration. A technical memorandum (Mass Transit Implementation: Site Selection Study for Vehicle Operation, Maintenance, and Storage Facility) describes site and facility requirements and indicates a suitable site.

Once the new bus fleet and the operating and maintenance facility are available, the GRTA through its service contractor will initiate operation of the redesigned and expanded route structure and service plan.

5.1 Fixed-Route System

Four “snapshot” scenarios for development of future bus routes and operating plans are outlined in this section. The four fixed route service plans include the augmented existing system, the baseline future system and enhanced system A and enhanced system B. Each of these systems is explained below.

Table 5-1: Service Hours and Vehicles by Phase

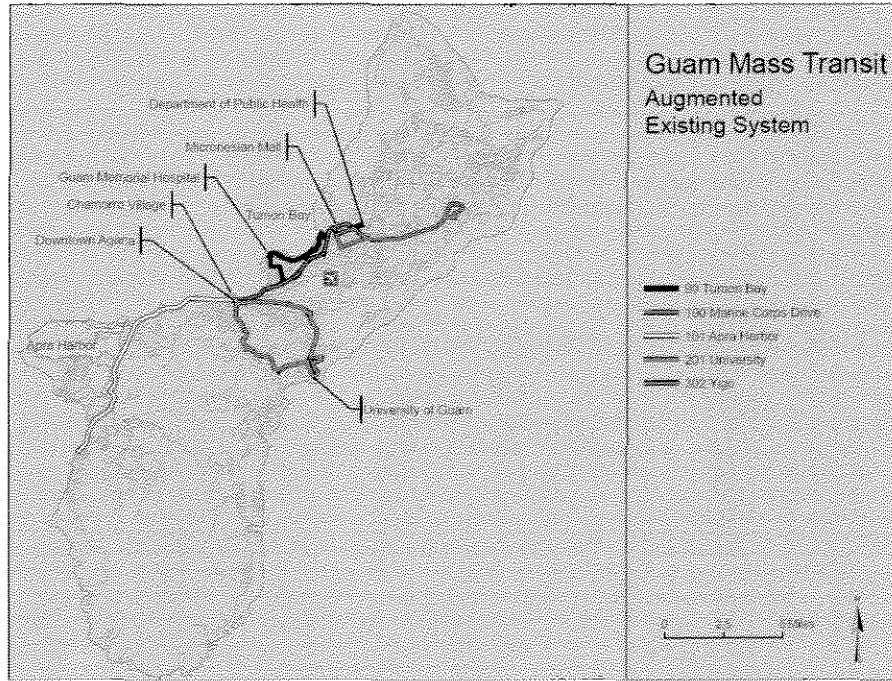
Phase	Total Service Hours	Peak Vehicles Required for Service	Fleet
Augmented Existing	59,000	11	14
Baseline Future	75,000	15	18
Enhanced Future A	110,000	20	24
Enhanced Future B	100,000	28	34
Military Extension	26,624	6	8

Augmented Existing System (Tables 5-1 and 5-2 and Figure 5-1) – The augmented existing system entails improvement of the existing routes and schedules by providing two-direction service throughout, and hourly service rather than the longer headways currently provided. This service plan is operable, by means of interlined operations, with the existing fleet, and offers 59,000 revenue bus hours per year. The augmented system can be implemented through direction to Kloppenberg or through the multi step bid process as year one of the new operation.

Table 5-2: Augmented Existing System

Route	Weekday Headway (min)				Non-Weekday Headway (min)			
	Off-Peak	AM	MD	PM	Off-Peak	AM	MD	PM
100 – Marine Corps Dr.	60	30			60			
101 – Apra Harbor	60				60			
105 – Tumon Bay	60				60			
201 – University	60				60			
303 - Yigo	60				60			

Figure 5-1: Augmented Existing System

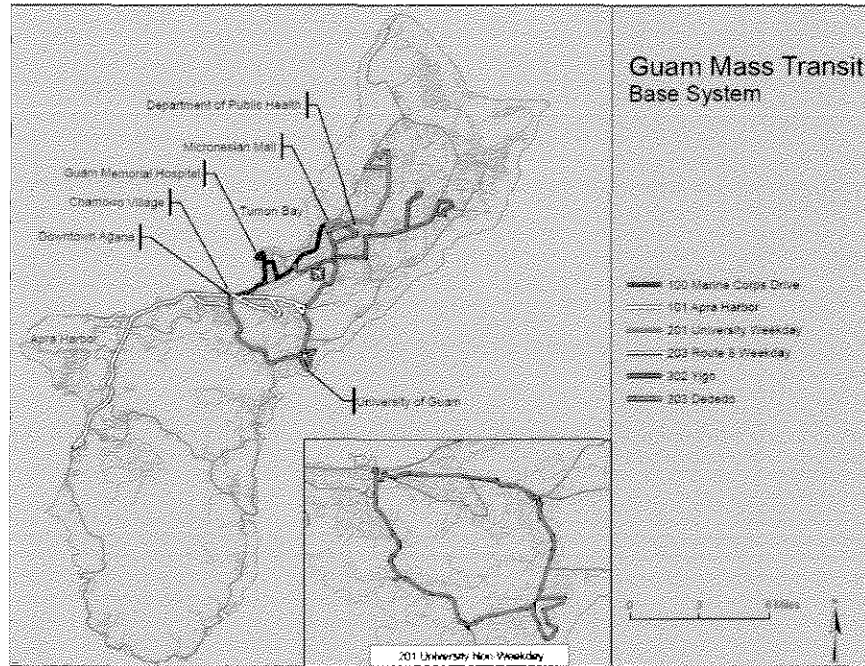


Baseline Future System (Table 5-3 and Figure 5-2) – The baseline future system is a re-design of service, expanding route coverage especially to the north. Headways would be hourly. The 99-Tumon route is discontinued in this system. Service is extended into Tumon Bay through cooperation with the private operators. The 201-University deviates from Route 8 and continues north to the Micronesia Mall. The 203-Route 8 is created to continue service along Route 8 in both directions. The 302-Yigo is extended north into Dededo and Yigo through a branch (renamed the 302-Dededo/Yigo), and south past the airport to Route 1.

Table 5-3: Baseline Future System

Route	Weekday Headway (min)				Non-Weekday Headway (min)			
	Off-Peak	AM	MD	PM	Off-Peak	AM	MD	PM
100 – Marine Corps Dr.	60	30			60			
101 – Apra Harbor	60				60			
201 – University (Weekday)	60				N/A			
201 – University (Non-Weekday)	N/A				60			
203 – Route 8 (Weekday)	60				N/A			
302 – Dededo/Yigo	60 (120 in A & B branch)				60 (120 in A & B branch)			
303 – Yigo	60				60			

Figure 5-2: Baseline Future System

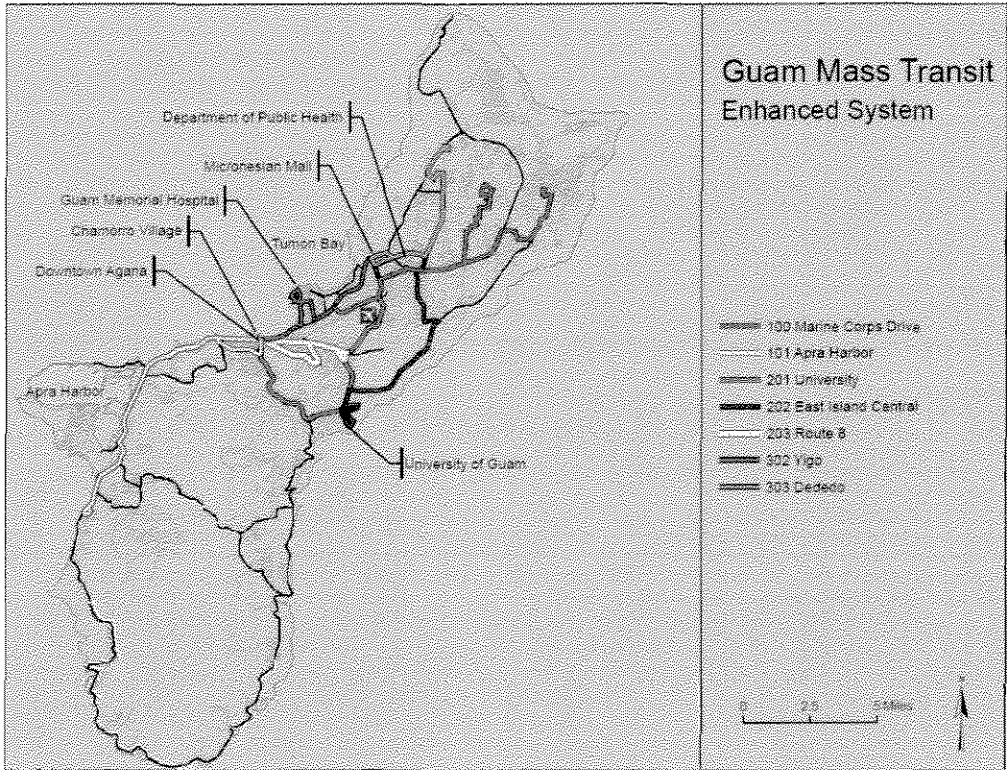


Enhanced Future System A (Table 5-4 and Figure 5-3) –The enhanced future system A is an extension of the Baseline system, with the addition of a route connecting the University of Guam and the Micronesian Mall, but with service along Route 15, Route 26 and Route 1. Geographic service is extended north on the 302-Yigo and 303-Dededo. The 201-University and 203-Route 8 extend to all operating days.

Table 5-4: Enhanced Future System A

Route	Weekday Headway (min)				Non-Weekday Headway (min)			
	Off-Peak	AM	MD	PM	Off-Peak	AM	MD	PM
100 – Marine Corps Dr.	60	30			60			
101 – Apra Harbor	60				60			
201 – University	60				60			
202 – East Island Central	60				60			
203 – Route 8	60				60			
302 – Dededo/Yigo	60 (120 in A & B branch)				60 (120 in A & B branch)			
303 – Yigo	60				60			

Figure 5-3: Enhanced Future System A

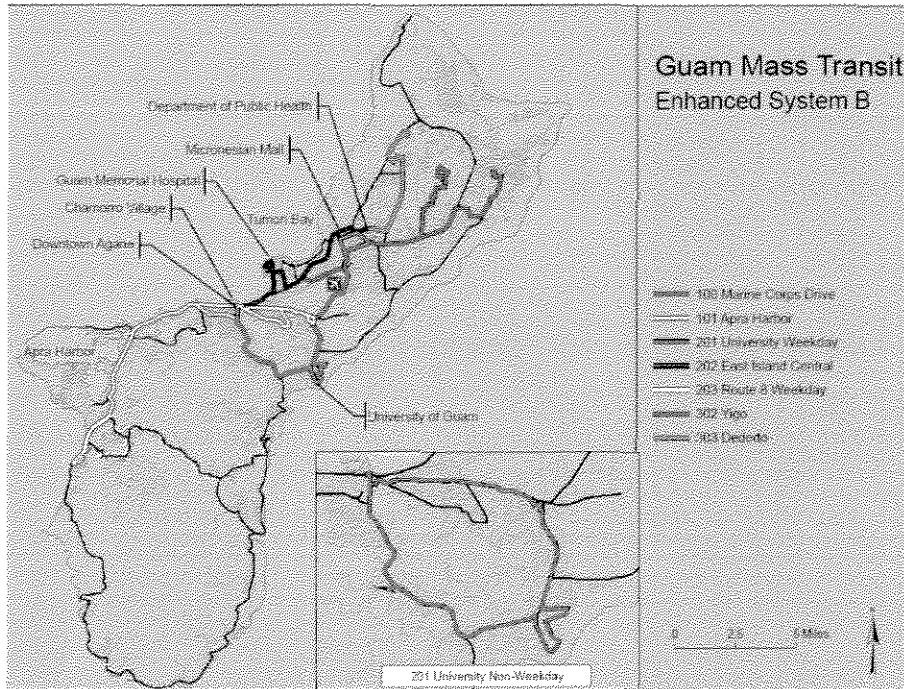


Enhanced Future System B (Table 5-5 and Figure 5-4) – The enhanced future system B does not include Route 202-East Island Central and the 201-University extends to the Micronesia Mall only on weekdays. However, 101-Apra, 201-University and 101-Apra operate at 30-minute headways during weekday days. The 302- Dededo/Yigo operates 30-minute headways in the trunk and hourly in the branches during the AM and PM peak periods.

Table 5-5: Enhanced Future System B

Route	Weekday Headway (min)				Non-Weekday Headway (min)			
	Off-Peak	AM	MD	PM	Off-Peak	AM	MD	PM
100 – Marine Corps Dr.	60	15	30	15	60			
101 – Apra Harbor	60	30			60			
201 – University (Weekday)	60	30			N/A			
201 – University (Non-Weekday)	N/A				60			
203 – Route 8 (Weekday)	60	30			N/A			
302 – Dededo/Yigo	60 (120 branches) OP,MD 30 (60 branches) AM,PM				60 (120 in A & B branch)			
303 – Yigo	60	30			60			

Figure 5-4: Enhanced Future System B



Military Extensions (Table 5-6 and Figure 5-5 through Figure 5-7) – The military extensions are routes that access Andersen Air Force Base and Navy Base Guam. It is expected these routes would be especially well patronized during heavy visitation period by the U.S. Navy’s CVNs and support ships.

Table 5-6: Military Extensions

Route	Weekday Headway (min)				Non-Weekday Headway (min)			
	Off-Peak	AM	MD	PM	Off-Peak	AM	MD	PM
900 – Air Force/USMC	60				60			
901 – Navy	60 (30 in trunk)				60 (30 in trunk)			

Figure 5-5: Base Future System with Military Extensions

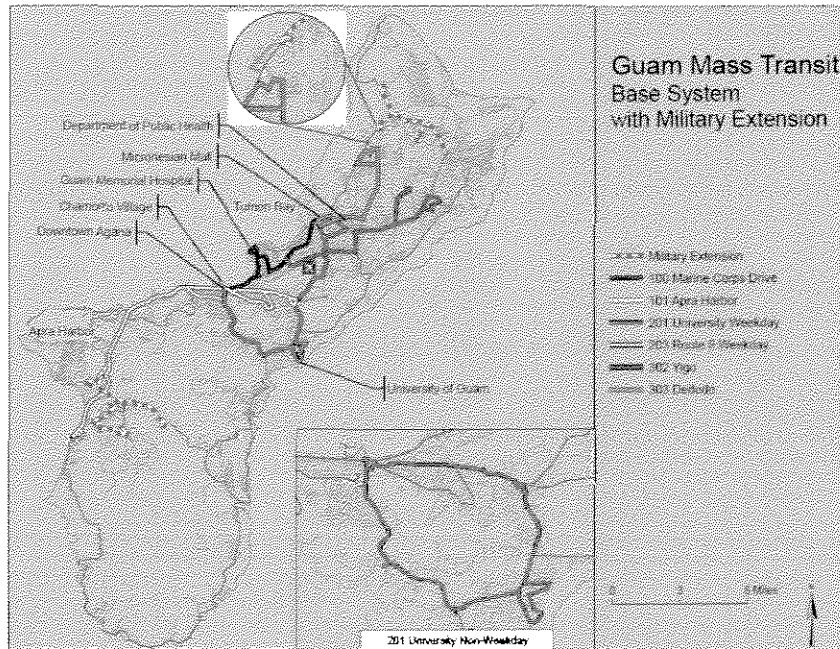


Figure 5-6: Enhanced Future System A with Military Extensions

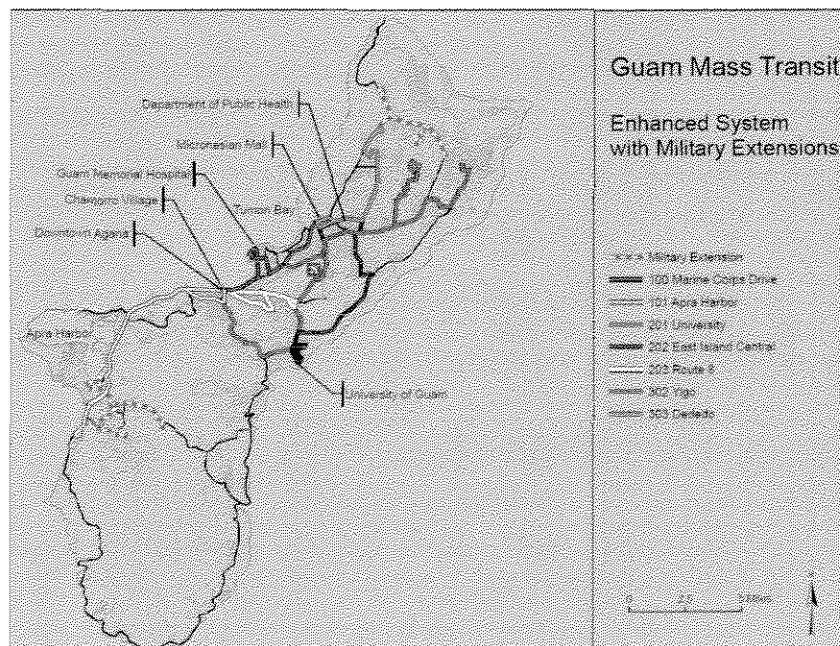
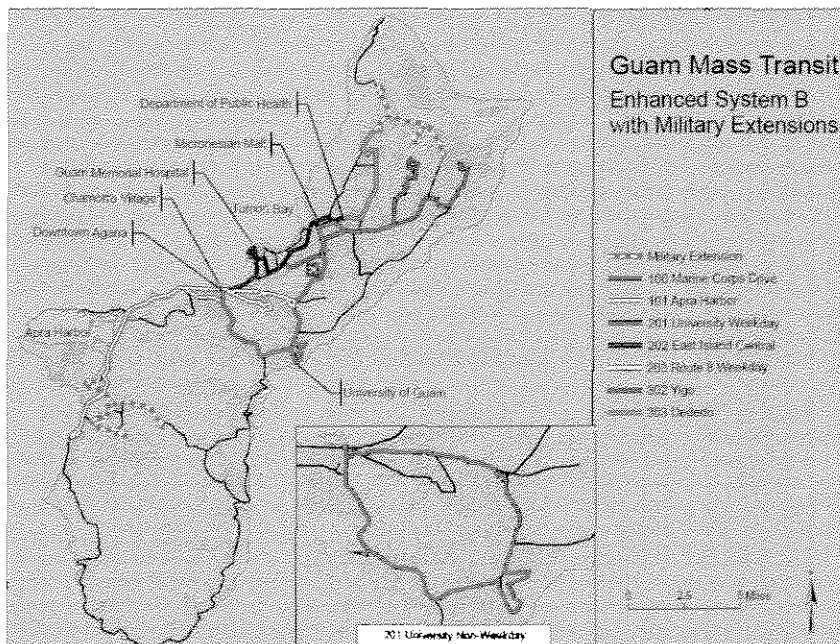


Figure 5-7: Enhanced Future System B with Military Extensions



These expanded route plans will provide transit access within one-half mile or less of an increasing percentage of the island's residents including both civilians and military. The fixed routes will be supplemented by paratransit service, described in the next section.

As the route plan is expanded, service frequencies also will be improved, until all of the fixed routes operate at 30-minute headways during peak periods (nominally 7-9AM and 5-7PM). At other times, hourly headways will apply. Routes overlap in certain areas, and it is the intention in those areas to schedule the routes so as to offer riders the combined effect of the headways. For example, where two routes operating at 30 minutes' headway share a street, the schedules will generally be planned to provide a bus every 15 minutes. In certain other locations, routes serving adjoining areas meet at a transfer point. To the extent possible, schedules will be coordinated to provide "timed transfer" operation, with buses on each route arriving at the transfer point at the same time, allowing bus-to-bus passenger interchange without waiting.

5.2 Demand-Response and Paratransit Services

The expanded coverage and more frequent service provided by fixed-route transit will reduce the need for demand-response service. Requirements will remain for limited demand-response service, mainly in the southern portion of the island where population is sparse and fixed routes will not be operated.

Paratransit service, which provides essential transportation for the population with disabilities, will be continued, and improved by the introduction of new vehicles, and by more rigorous screening of potential riders for eligibility.

Amounts of service assumed for these two types of supplemental transit service are indicated in the Pro Forma table at the end of this report.

6.0 CAPITAL AND OPERATING REQUIREMENTS

6.1 Vehicles

The GRTA will acquire a new air-conditioned 40-bus fleet, including an initial supply of spare parts and required special servicing and maintenance tools. Most of the new fleet will be 35-foot or 40-foot standard low-floor diesel-powered transit buses. A smaller number of additional vehicles suitable for paratransit service will be required.

The current Territorial Transportation Improvement Program (TTIP) has programmed \$20 million in funds to develop a new maintenance facility and acquire buses. The DOA-DPTS has already submitted an application to the FTA for the use of ARRA formula funds to acquire paratransit vehicles. The 2030 GTP anticipates the replacement of the vehicles needed to start the system. The planning process for the Route 1 high-capacity transit service is likely to begin in 2015. The preliminary plan for the core system entails deploying five fixed-routes that will provide general-purpose service. The routes connect major population and employment centers, such as Dededo in the north, (the most populous residential district) and Apra Harbor in the south (a major location of jobs). The system also would connect the Finegayan facilities and the Yigo District-Anderson Air Force Base. The scheduling of vehicle acquisitions and the numbers of each type are subject to refinement as implementation proceeds.

6.2 Facilities

Facilities requirements under the service development plan for the GRTA include new bus stops, improvements to passenger transfer facilities, and development of a new facility for transit system operation, maintenance, and administration.

The establishment or improvement of bus stops, transfer facilities, and any other public locations such as transit centers for purposes such providing information or selling passes or other fare media will be defined later. Suffice it to say that these activities represent opportunities for public private partnerships and revenue generators.

The GRTA is also empowered to regulate public parking on Guam. The development of park and ride facilities in the Dededo Area and especially along Route 3 may prove beneficial to promoting transit ridership, generating additional revenue through parking fees and contributing to the financial stability of the system.

6.2.1 Maintenance Facility

The new mass transit system will introduce a fleet of buses, growing to 100 or more vehicles during the 20-year forecast period. Operation, maintenance, and storage (overnight parking) of this fleet will be based in a new facility, to be built on a site selected and acquired for this specific purpose.

There is also potential for the site to be made available to and developed with capacity to serve as the operation, maintenance, and storage facility for other similar vehicles, such as tourist buses and school buses. If this added function is to be provided, the viability of related agreements and processes must be established at the outset and included in the planning, design, and construction of the facility.

The new facility will incorporate ample provisions for the following functions to be carried out at the site:

Storage (parking) for 100 mass transit buses and any additional vehicles targeted to use the facility.

Adequate circulation space for stored vehicles to enter and leave assigned spaces independently.

Conveniently-located drive-through facilities for fueling, washing, cleaning, and probing the stored vehicles.

Maintenance facilities sufficient for the routine maintenance and repair requirements of the planned fleet, subject to any provisions made for off-site maintenance and repair functions.

Adjacent parts and materials storage areas.

Parking area for maintenance vehicles and operations supervision vehicles.

An operating facility housing driver areas, an operations control center, and training rooms.

Administrative offices for agency and operator general administration staff.

Appropriate numbers of parking spaces for employees and visitors.

Allowance for site ingress/egress connecting with roads providing access.

Allowance for landscaping and other appropriate amenities.

A preliminary estimate of land area required for the identified functions and the anticipated bus fleet size is provided in Table 6-1 below. The estimate is to be considered approximate and is given for the purpose of determining a minimum reasonable land area needed to house the facility. The indicated areas assume that all functions are provided at surface or ground floor level. Some of the indicated functions could be accommodated on one or more upper floors, with possible resulting reduction in the total site area required. On the other hand, it is also possible that topographic constraints or the shape of a preferred site would result in less usable land area, thus requiring acquisition of a larger land area. Especially uncertain at this stage of concept development is the land area required for circulation, which could substantially exceed the allowance shown (see Appendix).

Table 6-1: Land Area (Square Feet) Required for Vehicle Operation, Maintenance and Storage, and System Administration Site

Facility Component	50 Buses	100 Buses
Administration/Operations	5,800	7,700
Maintenance	18,600	25,500
Fuel/Wash/Service	9,000	10,200
Other Building Areas	1,000	1,000
Total Building Areas	34,400	44,400
Agency Vehicle Parking	69,600	138,800
Employee/Visitor Parking	23,500	45,300
Other Site Areas	19,600	35,200
Total Outdoor Areas	112,700	219,300
Site Circulation	56,400	109,700
Landscaping/Setbacks	25,000	50,000
Water Retention	15,000	26,000
Total Circulation/Ancillary	96,400	185,700
Total Area (square feet)	243,500	449,400
Total Area (acres)	5.59	10.32

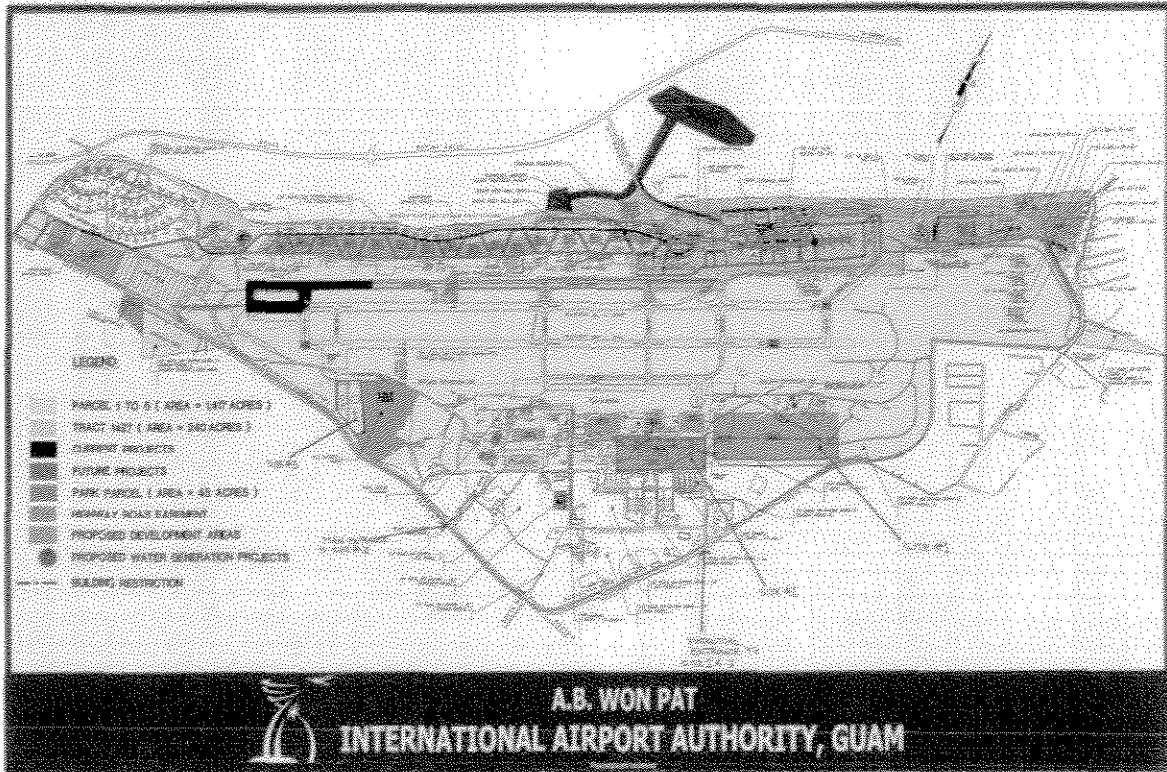
Source: Parsons Brinckerhoff preliminary estimate

A Preliminary estimate of the capital cost for design and construction of the facility is provided in the Appendix. It indicates a cost of \$17.5 million for a 50-bus facility, and \$22.6 million to accommodate 100 buses. Assumptions and features of the land area estimate and the capital cost estimate include the following:

- The cost estimate is based on "RS Means Cost Data" and experience on past projects.
- Duration for development of the facility is assumed to require nine months of design and 18 months of construction.
- The cost estimate assumes a relatively flat site with no demolition or remediation required.
- The cost estimate assumes that the facility will be built as a single level.
- The space program assumes 40' equivalent transit coaches.
- The equipment cost assumes an industry standard level of maintenance equipment, no heavy rebuild or fabrication.
- The space program assumes that a paint & body shop will be included in the maintenance area.

Criteria for site selection were identified. One of the most important considerations is that the site should be eligible for a NEPA Categorical Exclusion or Documented Categorical Exclusion, because this will considerably expedite the process of site acquisition and development. Other criteria are listed hereinafter.

Figure 6-1: Potential Site for Bus Operation, Maintenance, and Storage Facility



As shown in Figure 6-1 above, the airport contains three sites worthy of mention when compared to the selection criteria shown in Table 6-2. A fourth site, shown in blue at the extreme northeast corner of the airport area, was also considered. The main challenge to using any of these sites is formulating an offset between planned improvements on Route 10 A and the preference to have a site offered for mass transit that does not require a fair market ground lease.

Table 6-2: Evaluation of Identified Site for the Vehicle Operation, Maintenance, and Storage Facility

Criterion Number	Adequacy of:	Site Conclusions				Evaluation Comments
		1	2	3	4	
1	Centrality to bus operations	Very Good	Good	Fair	Good	Within one mile of identified centroid of bus operations
2	Access to labor market	Good	Good	Good	Good	Geographically well-placed, good road and future transit service access
3	Surrounding land uses	Good	Good	Good	Good	Industrial sales adjacent, un-buildable land along northwest perimeter, airport runway and a service station on other side of Route 10A
4	Access roads	Good	Good	Good	Good	All conveniently near or adjacent to the main roads in the area
5	Site topography and drainage	Good	Good	Good	Fair	No known problems; site #4 has most severe terrain
6	Environmental issues	Good	Good	Good	Good	No obvious environmental issues requiring mitigation
7	Site size and shape	Good	Good	Good	Good	Sites are of adequate size and shape
8	Potential for future expansion	Best	Fair	Best	Fair	Sites #1 and #3 are largest
9	Security	Good	Good	Good	Good	Acceptable
10	Emergency services	Good	Good	Good	Good	Probably could even draw on airport emergency services if needed
11	Utilities	Good	Good	Good	Good	No difficulties anticipated
12	Cost	Good	Good	Good	Good	Not known but site is property of GovGuam
13	Safety	Good	Good	Good	Good	No recognized impediments to a safe within-site working environment
14	Preparation time and cost	Good	Good	Good	Fair	Minimal due to current grading of site

Bidders for the concession to operate and maintain Guam's mass transit services may propose to obtain and develop an alternative site, in which case their offer should include documentation of the rationale for its selection, including identification of any difference in cost to the agency in connection with use of the alternative site.

The bidder's proposal to use an alternative site is to include a complete evaluation of the site, following the criteria and measures presented in this memorandum.

The bidder at its discretion may propose to include other users of the site, and site development accordingly. If additional users and related site development are proposed,

the bidder is to identify the cost and any other effects of such use and site development on the agency's responsibilities and on the maintenance and operation of the mass transit services.

6.3 Operating Costs

Allowances for operating and maintenance costs, including GRTA administration of operations, are tabulated in the Pro Forma table at the end of Chapter 8 of this report. Costing formulas have been based on analysis of service and cost data from 22 peer cities (based on population served and land area served), as reported in the 2007 National Transit Database.

6.4 Capital Costs

Allowances for capital costs, including GRTA management of planning, design, and construction of capital improvements, are tabulated in the Pro Forma table at the end of Chapter 8 of this report.

7.0 RECOMMENDED ORGANIZATIONAL STRUCTURE

7.1 Institutional and Management Recommendations

The purpose of this section is to define institutional and management best practices that may help the GRTA deploy service in a timely and citizen responsive manner. To accomplish this task, a total of seven organizational models were reviewed for applicability to Guam. Much of this information was used by the Guam Legislature in its deliberations concerning the formation of the GRTA.

The transit agencies reviewed for this analysis include: 1) the total privatized model exemplified by the Foothill Transit Zone in Covina, California; 2) the semi-privatized operation as followed by the Regional Transportation District of Denver, Colorado; 3) the privatized model with government oversight-the model of the Regional Transportation Commission (RTC) of Southern Nevada; 4) the permanent non-profit entity overseen by a government entity which is the model of the City and County of Oahu, Hawaii and the RTC of Washoe County (Reno, NV) 5) the competitively selected single operator as followed by Maui County, Hawaii; 6) the contracted management option followed by the Regional Transit Authority of New Orleans, Louisiana.

The characteristics of these organizations are worth noting. First, in every case, each organization is a stand-alone entity legally enabled to own, operate, and manage public transportation. All are enabled to own property, lease property, and enter into contracts. Each entity can set fares, collect fares, and is required to use fare revenue for the benefit of public transit services. No agency uses fares to offset costs of other programs. Each agency is also the exclusive operator of transit.

In all but one case, the government agency hires staff to oversee the performance of contractors. The Foothill Transit Zone is the sole exception. The governing board of the Foothill Transit Zone retains the services of a program manager who performs all management, finance, procurement, and human resources activities related to the oversight of transit.

The procurement and finance activities are important functions worth reviewing. Each of the transit agencies conducts its' procurements independent of other units of government. For example, the City and County of Honolulu Transit Division prepares the specifications for purchases such as technology, vehicles and capital facilities. The program manager for the Foothill Transit Zone prepares plans, specifications and estimates for the selection of operations companies. The program manager is prohibited from bidding on these services. The type of procurement method is also important. In many of the procurements undertaken, the transit agency is allowed to use methods other than low bid. Approaches such as best value or competitive negotiation can be used for selecting contractors to build facilities, manufacturer vehicles, or provide technology such as communications equipment.

In terms of finance, the revenues dedicated to transit operations are prohibited from being used for purposes other than public transit. All revenues are retained by the agency and are accounted for in their financial statements. This is especially important for public private partnerships where program income must be used for transit purposes in cases where federal funds have been used to pay for the improvements associated with the public private partnership. In contractual arrangements for service, the transit agencies are allowed to make partial payments in advance. On Maui, the County will

pay the first four months of operating cost to the contractor. In Las Vegas, the RTC will pay 60 percent of the anticipated monthly service level, and then reconcile the difference at the end of the month. FTA allows a recipient to make progress payments to an equipment manufacturer. In all these cases, the taxpayer and customer are saved the interest cost that the vendor would otherwise include in the price.

7.1.1 Legal Capacity-Guam Public Law 30-05

The Guam legislature created the Guam Regional Transit Authority through Public Law 30-05. The purpose of Law 30-05 (among others) is to help enhance the technical, legal and financial capacity of Guam to execute and administer new transit services – especially transit services funded through the FTA.

The GRTA is authorized to plan, establish, develop, coordinate, promote, own, and operate facilities and services that support transportation and public parking within Guam. The GRTA is legally enabled to plan, design, operate, and maintain mass transit services throughout Guam. The definition of mass transit is consistent with the federal definition – which is that the service must be regularly available and open to the public. The reason for using the term “Regional” in the title is to reflect the fact that Guam consists of both urbanized and rural areas. The transit services to be provided over time by the GRTA would be tailored to meet the specific needs of the various areas of Guam. The transit needs of the south island are different from the needs of the more urbanized areas of Tamuning, Hagtna, and Dededo.

As mentioned above, the GTRA has the authority to collect and administer fees for furnishing, operation and maintenance of public parking on Guam. Public parking includes any on-street or off-street parking owned by the Government of Guam for purposes of temporary storage of passenger vehicles, including automobiles, trucks, motorcycles, and vans. This duty presents an opportunity for an additional revenue generator through the development of park and ride facilities. However, before the generation of revenue can occur, the GRTA will need to plan design and install a parking arrangement (parking lot, structure, or on-street parking meters).

The GRTA will need to develop a functional organization structure to effectively deal with the management of fixed route and paratransit services.

7.1.2 Organizational Structure

The organization structure outlined in Public Law 30-05 requires the establishment of a board of directors. The board of directors includes seven directors, of these directors, two would be selected from the membership of the Mayor’s Council of Guam and three would be appointed by the Governor of Guam, with the advice and consent of the Legislature. These five directors would then recommend to the Governor four additional candidates, consisting of two mass transit riders and two who are advocates for the rights of disabled passengers. From these recommendations, two directors would be appointed by the Governor of Guam, with the advice and consent of the Legislature. In addition, one of the directors would be a representative of the Senior Citizen of Guam.

The board of directors would be empowered to appoint an Executive Manager, who would function as the chief executive officer. The qualifications of the Executive Manager would include a minimum of ten years of documented experience in public or private transit management, and a college degree in planning, finance or engineering.

The functions of the organization are outlined in the organization chart below. The ultimate authority for the GTRA is the 3 Board of Directors who will be served by an Administrative Assistant appointed by the Board. The Executive Manager will be appointed by the Board and he or she will be responsible for:

Planning and Development

Operations

Administration

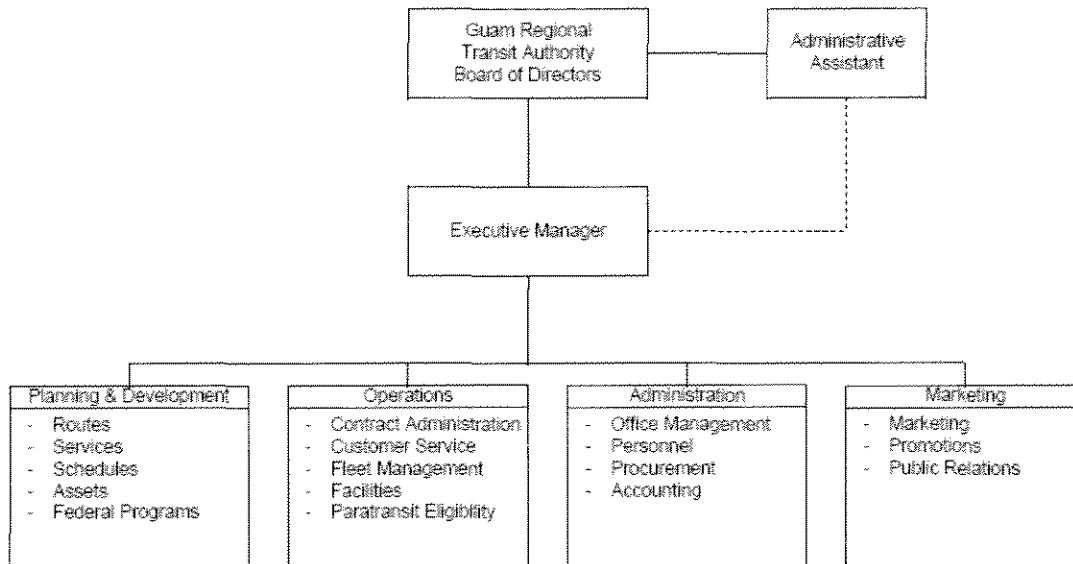
Marketing

These functions will be focused on both fixed route and paratransit services. An especially critical component will be paratransit eligibility. It will be incumbent on the GRTA to effectively determine the eligibility of persons desiring paratransit services under the ADA.

7.1.3 Technical Capacity

The staff of the DOA-DPTS will transfer to the GRTA once a quorum is obtained and the GRTA comes into existence. The GRTA will need to expand its staff to effectively conduct continuing control activities under the FTA program. This will require that the GRTA staff have the legal, technical, and financial capabilities and expertise to administer FTA grants and other requirements. The organization chart below depicts the functions that the GRTA will need to contain for purposes of meeting the FTA's requirements for continuing control. In the interim years, GRTA may have to partner with other Government of Guam agencies through a formal memorandum of agreement to satisfy certain FTA requirements; however, it is important that GRTA pursue the permanent hiring of additional staff as part of its overall long range plans. It is likely that many of the functions pertaining to accounting, human resources, engineering/design and construction, legal services and procurement support will be provided through memoranda of agreement with the Department of Administration, Department of Public Works, Attorney General, and Guam General Services Administration. As the GRTA financial capacity grows, the GRTA may choose to either add full time equivalents or continue to contract with other units. Indeed, the latter practice is often the preferred method for small public transit operations where the agency is simply a unit of a county or city government using other departments.

**GUAM REGIONAL TRANSIT AUTHORITY
PROPOSED FUNCTIONAL ORGANIZATIONAL CHART**



7.1.4 Joint Development

The purpose of this section is to identify opportunities for public private partnerships and partnerships with the U.S. Department of Defense. In the development of procurement documents, proponents should be asked to provide their views and methods for incorporating these opportunities into a financial plan that would help stretch local and federal resources.

- 1) Maintenance Facility and Specialized Services
 - a. Guam may be able to develop a public private partnership for the use of a new transit maintenance facility. The facility would be designed to allow for the maintenance and storage of new public transit vehicles but also for the maintenance of charter buses-especially for charter buses used for purposes related to the military buildup. With the likelihood that a tremendous amount of specialized transit services may be needed to accommodate the temporary workers during the build up and that in a post build up environment the potential for transit ridership may increase significantly-particularly by the military forces on Guam, developing this facility under a public private partnership to allow for more than just public transit vehicles may help generate additional cash flow for use in public transit services.
 - b. School bus operations- the FTA School bus prohibition does not apply to Guam. This means that rolling stock purchased by Guam with FTA funds can be used in the delivery of school bus services. Significant operation cost savings may accrue from interlining public transit services and school bus services.

- 2) Terminals and Transfer Facilities- the Micronesia Mall, K-Mart and the Chamorro Village represent areas currently used as transfer facilities-especially by the tourist shuttles. Improvements to these facilities could be made using FTA funds under the joint development regulation. Example improvements may include enclosed shelters, lighting, signage/information kiosks, and storage areas for buses.
- 3) U.S. Navy – The U.S. Navy, the U.S. Air Force and the U.S. Marine Corps represent substantial market sectors for public transit use. The route structure designed for Guam is intended to connect the major military facilities and the Guam community. A coordinating agreement to promote joint use of vehicles and schedules to meet peak work trip requirements and peak requirements during visits by the U.S. nuclear powered aircraft carriers (CVN) may result in economies of scale, service and better customer service.
- 4) Off-island Workers Options- The off island workers coming to Guam for purposes of construction of facilities will create significant mobility challenges. The current approach is to have the U.S. Department of Defense contractors operate shuttle services between worker housing communities and the various construction sites. The worker housing is likely to be some type of permanent housing facility that may be turned over to the Government of Guam for low income housing after the military construction period. Several significant transit opportunities exist and include:
 - a. Have the US Department of Defense contractors purchase the transportation from a private operator on a contract by contract basis. In this case, the construction contractor brings transit equipment or more likely brings a subcontractor that provides the shuttle service for each contract.
 - b. Have the U.S. Department of Defense contractors cooperatively work with the GRTA to establish schedules, lines, and temporary maintenance facilities. This shuttle system would be coordinated with the transit services on Guam and include coordination of schedules, fares, and capital equipment to ensure that duplication is minimized.
 - c. Transit Oriented Development- the land use density, mix and intensity of temporary worker housing sites should be focused on maximizing the role of transit services within the design. This is especially critical if the workforce housing facilities are to be eventually converted to low income housing units.

7.1.5 Fare Administration

As noted earlier, the GRTA will have sole responsibility to set fares. More specifically, those responsibilities will include:

Implementing fare policy.

Monitoring transit system performance including ridership, revenues, and costs, and modifying the fare policy periodically, as needed.

Monitoring and modifying or approving the transit operator's choices of fare media and fare collection methods.

Monitoring and modifying or approving the transit operator's methods of selling the fare media.

Auditing transit operations sufficiently to verify operation of the fare system and fare revenue amounts collected.

7.1.6 Advertising and Concessions

There will be a need for the GRTA to establish a policy on advertising and concessions. Such policies typically address this subject with regard to fixed facilities, such as bus stops, transit centers, transfer facilities or any other facilities that have exposure to the public. They also address policy on advertising outside or inside transit vehicles. Normally, advertising and concessions can be a significant source of revenue for the transit system but aesthetics or other concerns may weigh against their use. The Tumon Bay area with its large number of tourists may prove profitable for advertising concessions. The GRTA will have to be especially attentive to free speech issues.

7.1.7 Procurement Strategy

The implementation of transit on Guam is going to require a comprehensive procurement strategy. The strategy recommended based on the research conducted for the business plan is that the GRTA conduct a multi-step turnkey procurement. The scope of services would involve both the paratransit operations and fixed route operations. The term of the contract would cover five years. The first year of the service would be the existing service with the augmented operations described in Table 5-1. The second year of the contract would ramp up the service to the Baseline Future level and then as funds become available and capital facilities developed along with the acquisition of vehicles ultimately service would reach the Enhanced Future level.

The compensation structure would involve a fixed hourly rate for both paratransit and fixed route services. This is very similar to the current arrangement with the exception of several key components. First, the GRTA will own the capital facilities and rolling stock. These capital items will be purchased with federal funds and owned by the GRTA and used by the contractor. This is similar to the arrangement used by the transit agencies researched for this business plan.

7.1.8 Franchise Administration

The GRTA should give consideration to pursuing a legislative change that would allow it administration franchise arrangements with private operators of public mass transit. Each operator would seek approval from the GRTA to operate fixed routes that are open to the public. The private operators would be incentivized through the franchise process to coordinate schedules with GRTA services and share revenues with the GRTA on profitable lines-so long as the private operator met or exceeded performance criteria.

8.0 FINANCIAL PLAN AND IMPLEMENTATION PLAN

8.1 Funding Sources and Financial Capacity

The ability to maintain and enhance transportation facilities and services on Guam depends on adequate financial resources. This section describes the various revenue sources available for transportation projects. A pro forma table at the conclusion of this chapter presents planning assumptions for the GRTA transit improvement program.

Financial assumptions were developed in consultation with the Government of Guam and FHWA. Revenue forecasts were developed based on historical and existing funding levels and anticipated inflationary factors.

System revenues consist of operating sources including fare revenues and income from advertising and concessions, funds provided by the Government of Guam, dedicated source(s) established for the GRTA (GRTA Fund), income from public-private partnerships or other cooperative agreements (e.g., provision of services to construction contractors or the military), and federal funds obtained from the Federal Highway Administration and the Federal Transit Administration.

8.1.1 Fare Box Revenue

An appendix to this report provides details on fare studies made for the mass transit program on Guam, suggesting a possible structure expected to produce average fare box revenue per passenger boarding of 70 cents. In this Business Plan, a more conservative value of 60 cents has been assumed.

8.1.2 GRTA Fund

The GRTA Fund would consist of all monies received by the GRTA and be used exclusively for the statute of the GRTA. This would include both local and federal funds including the annual appropriation from the Guam legislature for operations. The fund traditionally generates about \$4.0 million.

8.1.3 Federal Highway Administration Funds

The primary source of funding for projects is federal money received by Guam through the THP. The FHWA provides funds for Guam through the current federal transportation authorization, SAFETEA-LU. Section 1103(a) provides the following funds: FY2005–2006: \$16 million per year, FY2007–2009: \$20 million per year (less the obligation ceiling).

The THP was created by Section 112 of the Federal-Aid Highway Act of 1970 (Public Law 91-605) by adding Section 215 to Title 23, United States Code (USC). Federal financial assistance was granted to the Virgin Islands, Guam, and American Samoa for the construction and improvement of a system of arterial highways and necessary inter-island connectors through the General Fund of the Treasury. Under 23 USC 215(b)(1), the intent of the THP is to assist each territory in the construction and improvement of a system of arterial and collector highways and necessary inter-island connectors. This system is referred to as the Territorial Highway System (THS).

8.1.4 Federal Transit Administration Funds

The following section details anticipated revenue sources from the FTA.

FTA 5309—Transit Capital Investments

This program provides funding for the establishment of new rail or bus way projects (new starts), the improvement and maintenance of existing rail and other fixed guide way systems that are more than seven years old, and the upgrade of bus systems. Currently, Guam is seeking to obtain a Section 5309 earmark for the construction of mass transit.

FTA 5310

This capital grants funding program was established by the FTA (Section 5310) for meeting the transportation needs of elderly persons and persons with disabilities in areas where public mass transportation services are otherwise unavailable, insufficient, or inappropriate. It allows for the procurement of accessible vans and busses, communication equipment, mobility management activities, and computer hardware and software for eligible applicants.

FTA 5311

Section 5311 is a non-urbanized area formula funding program authorized by 49 USC 5311. This federal grant program provides funding for public transit in non-urbanized areas with a population under 50,000 as designated by the Bureau of the Census. FTA apportions funds to each state and territory annually.

FTA 5316

The Job Access and Reverse Commute program goals are to improve access to transportation services to employment and employment-related activities for low-income individuals and welfare recipients and to transport residents of urbanized areas and non-urbanized areas to suburban employment opportunities.

FTA 5317

The New Freedom formula grant program aims to provide additional tools to overcome existing barriers facing Americans with disabilities seeking integration into the work force and full participation in society. The New Freedom formula grant program seeks to reduce barriers to transportation services and expand the transportation mobility options available to people with disabilities beyond the requirements of the ADA of 1990.

8.2 GRTA Program Pro Forma

The overall program of mass transit improvements and financial requirements set out in this Business Plan are summarized in a Pro Forma table at the end of this chapter. The table presents historic Guam mass transit system information beginning with fiscal year 2007, and carries the improvement program forward through fiscal year 2014. Included in the table are summary data on transit service provided, vehicles available and operated, operating costs, capital costs, funding sources and amounts, and financial results. The proceeds of funding sources have been set at levels sufficient to maintain a positive cash flow through the eight years tabulated. That Pro Forma is based broadly on the alternate levels of transit improvement described earlier, in Chapter 5. Table 8-1, below, demonstrates six “building block” combinations of those alternate levels, and the consequent augmented transit funding required in each case.

Table 8-1: Transit Improvement Scenarios and Funding Requirements

Year		2010	2011	2012	2013	2014	2015	Total Added Funds Needed
BASE CASE - AGGRESSIVE TRANSIT EXPANSION	Service Level	Augmented Existing	6 mo Augm Exist: 6 mo Baseline Future	Enhanced B	Enhanced B plus Military Extension	Enhanced B plus Military Extension	Enhanced B plus Military Extension	
	Rev. Svc. Hours, Fixed Route	59,000	67,000	100,000	127,000	127,000	127,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	25,000	25,000	25,000	
	Passenger Boardings, Fixed Route	413,000	670,000	1,300,000	1,905,000	2,032,000	2,159,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	180,000	125,000	127,500	130,000	
	Cash Flow	25,117,100	3,902,850	735,630	-	-	-	
	Required from Other Sources	-	-	-	2,663,474	3,237,921	3,077,090	\$ 8,978,485
CASE B - MODERATED TRANSIT EXPANSION	Service Level	Augmented Existing	6 mo Augm Exist: 6 mo Baseline Future	Enhanced B	Enhanced B	Enhanced B	Enhanced B	
	Rev. Svc. Hours, Fixed Route	59,000	67,000	100,000	100,000	100,000	100,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	45,000	45,000	45,000	
	Passenger Boardings, Fixed Route	413,000	670,000	1,300,000	1,400,000	1,400,000	1,400,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	180,000	202,500	202,500	202,500	
	Cash Flow	25,117,100	3,902,850	735,630	-	-	-	
	Required from Other Sources	-	-	-	2,178,224	2,890,371	2,747,240	\$ 7,756,835
CASE C - MODERATED AND DELAYED TRANSIT EXPANSION	Service Level	Augmented Existing	Augmented Existing	Baseline Future	Enhanced B	Enhanced B	Enhanced B	
	Rev. Svc. Hours, Fixed Route	59,000	59,000	75,000	100,000	100,000	100,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	45,000	45,000	45,000	
	Passenger Boardings, Fixed Route	413,000	472,000	900,000	1,300,000	1,350,000	1,400,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	157,500	180,000	180,000	180,000	
	Cash Flow	25,117,100	4,290,050	2,450,580	-	-	-	
	Required from Other Sources	-	-	-	536,774	2,873,871	2,760,740	\$ 6,171,385
CASE D - MINOR TRANSIT EXPANSION	Service Level	Augmented Existing	Augmented Existing	6 mo Augm Exist: 6 mo Baseline Future	Baseline Future	Enhanced B	Enhanced B	
	Rev. Svc. Hours, Fixed Route	59,000	59,000	67,000	75,000	100,000	100,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	45,000	45,000	45,000	
	Passenger Boardings, Fixed Route	413,000	472,000	670,000	900,000	1,250,000	1,300,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	145,500	166,500	175,500	180,000	
	Cash Flow	25,117,100	4,290,050	2,813,180	1,158,976	-	-	
	Required from Other Sources	-	-	-	-	1,777,595	2,820,740	\$ 4,598,335
CASE E - MINIMAL TRANSIT EXPANSION	Service Level	Augmented Existing	Augmented Existing	Augmented Existing	6 mo Augm Exist: 6 mo Baseline Future	Baseline Future	Enhanced B	
	Rev. Svc. Hours, Fixed Route	59,000	59,000	59,000	67,000	75,000	75,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	45,000	45,000	45,000	
	Passenger Boardings, Fixed Route	413,000	472,000	531,000	737,000	900,000	975,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	144,000	153,000	166,500	160,000	
	Cash Flow	25,117,100	4,290,050	3,233,080	1,978,976	408,255	-	
	Required from Other Sources	-	-	-	-	-	1,026,235	\$ 1,026,235
CASE F - BREAK-EVEN TRANSIT EXPANSION	Service Level	Augmented Existing	Augmented Existing	Augmented Existing	Augmented Existing	6 mo Augm Exist: 6 mo Baseline Future	Baseline Future	
	Rev. Svc. Hours, Fixed Route	59,000	59,000	59,000	59,000	67,000	75,000	
	Rev. Svc. Hrs, Demand Resp. & Paratr	45,000	45,000	45,000	45,000	42,000	42,000	
	Passenger Boardings, Fixed Route	413,000	472,000	531,000	590,000	737,000	900,000	
	Passenger Boardings, DR/Paratransit	112,500	135,000	144,000	153,000	151,200	159,600	
	Cash Flow	25,117,100	4,290,050	3,233,080	2,396,776	1,369,975	23,145	
	Required from Other Sources	-	-	-	-	-	-	\$ -

Transit Business Plan

	Year	2007	2008	2009	2010	2011	2012	2013	2014
OPERATING REQUIREMENTS									
Annual Revenue Vehicle Hours	Fixed Route Service	21,169	21,169	21,169	43,335	65,500	120,000	130,000	140,000
	Demand Response Service	28,102	28,102	28,102	16,401	4,700	10,500	14,400	18,300
	Paratransit Service	24,648	24,648	24,648	28,824	33,000	47,100	48,200	49,300
	Construction Worker Shuttles							185,480	185,480
Annual Revenue Vehicle Miles	Fixed Route Service	NA	NA	NA	390,011	832,800	1,080,000	1,145,000	1,215,000
	Demand Response Service	NA	NA	NA	213,213	61,100	136,500	187,200	237,900
	Paratransit Service	NA	NA	NA	374,712	429,000	612,300	626,600	640,900
	Construction Worker Shuttles							2,261,000	2,261,000
Average Vehicle Hours per Peak Vehicle (excludes shuttle service hours)	Fixed Route Service	3,528	3,528	3,528	4,333	4,679	3,750	3,714	3,784
	Demand Response Service	4,684	4,684	4,684	4,100	4,700	3,500	3,600	3,660
	Paratransit Service	4,930	4,930	4,930	4,804	4,714	3,925	3,708	3,792
	Construction Worker Shuttles								
Maximum Vehicles in Service	Fixed Route Service	6	6	6	10	14	32	35	37
	Demand Response - Paratransit	11	11	11	10	8	15	17	18
Total Fleet Required, including Spares**	Fixed Route Service	8	8	8	12	17	38	41	44
	Demand Response - Paratransit	14	14	14	12	10	18	20	21
Old Fleet Vehicles Available	Capacity 32-36 passengers	19	19	19	6	-	-	-	-
	Capacity 7-25 passengers	13	13	13	6	-	-	-	-
New Vehicles Delivered	Fixed Route Service	-	-	-	6	11	21	3	3
	Demand Response - Paratransit	-	-	-	6	9	3	2	1
Old Vehicles Retired from Service	Capacity 32-36 passengers	-	-	-	13	6	-	-	-
	Capacity 7-25 passengers	-	-	-	7	6	-	-	-
Average Operating and Maintenance Cost per Revenue Vehicle Hour	Fixed Route Service	\$ 41.38	\$ 43.87	\$ 45.18	\$ 55.40	\$ 59.39	\$ 55.50	\$ 55.30	\$ 55.14
	Demand Response - Paratransit	\$ 41.71	\$ 44.21	\$ 45.54	\$ 41.59	\$ 42.58	\$ 42.34	\$ 42.12	\$ 41.95
Annual Operating and Maintenance Cost, Service Provider	Fixed Route Service	\$ 876,048	\$ 919,850	\$ 947,446	\$ 2,400,530	\$ 3,890,282	\$ 6,660,240	\$ 7,189,000	\$ 7,720,240
	Demand Response Service	\$ 1,111,945	\$ 1,167,542	\$ 1,202,569	\$ 682,113	\$ 200,116	\$ 444,540	\$ 606,512	\$ 767,604
	Paratransit Service	\$ 1,088,261	\$ 1,142,674	\$ 1,176,954	\$ 1,194,650	\$ 1,370,600	\$ 1,968,308	\$ 2,016,136	\$ 2,063,964
	Construction Worker Shuttles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,792,542	\$ 10,792,542
	Pre-Employment Testing	\$ 40,144	\$ 41,750	\$ 43,002	\$ 51,519	\$ 60,036	\$ 103,318	\$ 112,045	\$ 120,771
	Total, All Service	\$ 3,116,398	\$ 3,271,816	\$ 3,369,971	\$ 4,328,813	\$ 5,521,034	\$ 9,176,406	\$ 20,716,235	\$ 21,465,121
GRTA Administrative Cost	All Service	\$ -	\$ -	\$ 235,898	\$ 303,017	\$ 386,472	\$ 642,348	\$ 828,649	\$ 858,605
Total Annual Operating and Maintenance Cost		\$ 3,116,398	\$ 3,271,816	\$ 3,605,869	\$ 4,631,830	\$ 5,907,507	\$ 9,818,755	\$ 21,544,884	\$ 22,323,726
Annual Passengers Carried (Boardings)	Fixed Route Service	112,107	112,107	112,107	218,054	324,000	1,448,000	2,051,000	2,654,000
	Demand Response Service	111,367	111,367	111,367	65,034	18,700	41,900	57,450	73,000
	Paratransit Service	38,109	38,109	38,109	45,405	52,700	75,400	77,100	78,800
	Construction Worker Shuttles							6,591,000	6,591,000
	Total Passenger Boardings	261,583	261,583	261,583	328,492	395,400	1,565,300	8,776,550	9,396,800
Assumed Average Fare per Passenger Boarding	Fixed Route Service	\$ 0.510	\$ 0.510	\$ 0.510	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600
	Demand Response Service	\$ 0.510	\$ 0.510	\$ 0.510	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600
	Paratransit Service	\$ 0.510	\$ 0.510	\$ 0.510	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600	\$ 0.600
	Construction Worker Shuttles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500	\$ 1,500
Annual Fare Revenues	Fixed Route Service	\$ 57,142	\$ 57,142	\$ 57,142	\$ 130,832	\$ 194,400	\$ 868,800	\$ 1,230,600	\$ 1,592,400
	Demand Response Service	\$ 56,765	\$ 56,765	\$ 56,765	\$ 39,020	\$ 11,220	\$ 25,140	\$ 34,470	\$ 43,800
	Paratransit Service	\$ 19,424	\$ 19,424	\$ 19,424	\$ 27,243	\$ 31,620	\$ 45,240	\$ 46,260	\$ 47,280
	Construction Worker Shuttles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,886,500	\$ 9,886,500
	Total, All Service	\$ 133,331	\$ 133,331	\$ 133,331	\$ 197,095	\$ 237,240	\$ 939,180	\$ 11,197,830	\$ 11,569,980
Net Operating and Maintenance Cost	Total, All Service	\$ 2,983,067	\$ 3,138,485	\$ 3,472,538	\$ 4,434,735	\$ 5,670,267	\$ 8,879,575	\$ 10,347,054	\$ 10,753,746

Transit Business Plan

	Year	2007	2008	2009	2010	2011	2012	2013	2014
CAPITAL REQUIREMENTS									
Amounts Paid for Transit Vehicles	Standard Low-Floor 40'	\$ -	\$ -	\$ -	\$ 2,550,000	\$ 4,675,000	\$ 8,925,000	\$ 1,275,000	\$ 1,275,000
	Demand Response - Paratransit	\$ -	\$ -	\$ -	\$ 300,000	\$ 450,000	\$ 150,000	\$ 100,000	\$ 50,000
	Total for Transit Vehicles	\$ -	\$ -	\$ -	\$ 2,850,000	\$ 5,125,000	\$ 9,075,000	\$ 1,375,000	\$ 1,325,000
Site for Operating and Maintenance Facility	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Construction of Operating and Maint. Facility; provision of other facilities and equipment	\$ -	\$ -	\$ -	\$ 6,697,700	\$ 10,656,800	\$ 5,268,800	\$ -	\$ -	\$ -
Total Annual Capital Requirements	\$ -	\$ -	\$ -	\$ 9,547,700	\$ 15,781,800	\$ 14,343,800	\$ 1,375,000	\$ 1,325,000	\$ -
REVENUE SOURCES OTHER THAN FARES									
Guam Highway Fund	\$ 2,149,629	\$ 2,214,118	\$ 2,280,541	\$ 2,348,958	\$ 2,419,426	\$ 2,492,009	\$ 2,566,769	\$ 2,643,773	\$ -
Other Guam or Public/Private Sources	\$ -	\$ 70,000	\$ 500,000	\$ 4,500,000	\$ 5,200,000	\$ 13,500,000	\$ 7,000,000	\$ 7,500,000	\$ -
Federal Funds	Non-Urban Area Formula Program	\$ 539,792	\$ 555,986	\$ 572,665	\$ 589,845	\$ 607,541	\$ 625,767	\$ 644,540	\$ 663,876
	Elderly and Persons with Disabilities Program	\$ 167,228	\$ 172,245	\$ 177,412	\$ 182,735	\$ 188,217	\$ 193,863	\$ 199,679	\$ 205,669
	Rural Transit Assistance Program	\$ 16,874	\$ 17,380	\$ 17,902	\$ 18,439	\$ 18,992	\$ 19,562	\$ 20,148	\$ 20,753
	Job Access and Reverse Commute Program	\$ 86,742	\$ 89,344	\$ 92,025	\$ 94,785	\$ 97,629	\$ 100,558	\$ 103,574	\$ 106,682
	New Freedom Program	\$ 22,802	\$ 23,486	\$ 24,191	\$ 24,916	\$ 25,664	\$ 26,434	\$ 27,227	\$ 28,044
	Grant for vehicle purchases	\$ -	\$ -	\$ -	\$ 1,425,000	\$ 2,562,500	\$ 4,537,500	\$ 687,500	\$ 662,500
	ARRA	\$ -	\$ -	\$ 1,000,000	\$ 5,000,000	\$ 10,000,000	\$ 1,000,000	\$ 500,000	\$ -
	Total	\$ 833,438	\$ 858,441	\$ 1,884,194	\$ 7,335,720	\$ 13,500,542	\$ 6,503,683	\$ 2,182,669	\$ 1,687,524
Funds carried over from prior year	\$ -	\$ -	\$ 4,074	\$ 1,196,271	\$ 1,398,514	\$ 1,066,416	\$ 338,733	\$ 366,117	
Total Non-Farebox Funds for Transit	\$ 2,983,067	\$ 3,142,559	\$ 4,668,809	\$ 15,380,949	\$ 22,518,483	\$ 23,562,108	\$ 12,088,171	\$ 12,197,413	
CASH FLOW SUMMARY									
Costs, Net of Farebox	\$ 2,983,067	\$ 3,138,485	\$ 3,472,538	\$ 13,982,435	\$ 21,452,067	\$ 23,223,375	\$ 11,722,054	\$ 12,078,746	
Revenues Other than Fares	\$ 2,983,067	\$ 3,142,559	\$ 4,668,809	\$ 15,380,949	\$ 22,518,483	\$ 23,562,108	\$ 12,088,171	\$ 12,197,413	
Net Revenue	\$ -	\$ 4,074	\$ 1,196,271	\$ 1,398,514	\$ 1,066,416	\$ 338,733	\$ 366,117	\$ 118,667	
Allowance for Reserves and Contingencies	\$ -	\$ 4,074	\$ 1,196,271	\$ 1,398,514	\$ 1,066,416	\$ 338,733	\$ 366,117	\$ 118,667	
Surplus/Deficit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

APPENDIX

PART 1: MARKETING AND SERVICE ANALYSIS

Large Employers on Guam

Since 1984, overall employment growth on Guam has fluctuated a great deal due to international events, U.S. events, and natural disasters. From 1984 to 1990 employment growth was very strong, primarily due to the economic boom in Asia that spurred an increase in tourism and related growth. However, the Asian stock market crash in the early 1990's and several base realignment and closure decisions by the DOD caused overall employment growth to stagnate for most of the decade.

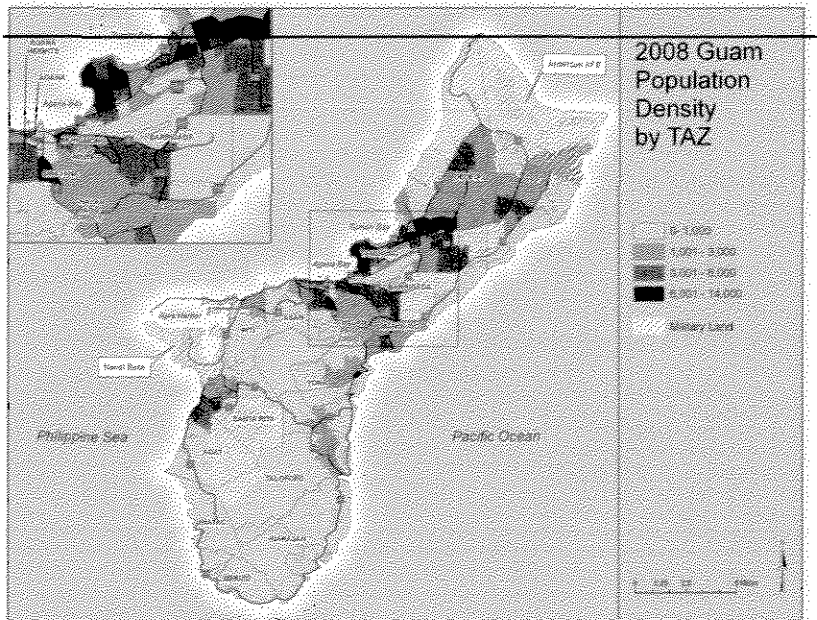
Since 2000, growth on Guam has been negatively impacted by two major typhoons, the SARS health epidemic, the terrorist attacks of September 11, 2001, and the Iraq War. These events precipitated a decline in employment due to decreased tourism and an overall decline in economic activity on the island.

Tourism and military activity remain the central elements of Guam's economy. The island depends on tourists from Asian countries, mainly Japan, to drive employment and produce business revenues. Federal spending for military purposes is the other major economic generator. Given these factors, employment in the private sector is primarily based on services related to hotels and other tourism-based activities, as well as retail trade enterprises. The construction and transportation/public utilities industries are also major employment sources. Other private sector industries include agriculture, manufacturing, wholesale trade, and finance/real estate. Table A1-1 lists some of the large employers.

Table A1-1: Large Employers on Guam (2008)

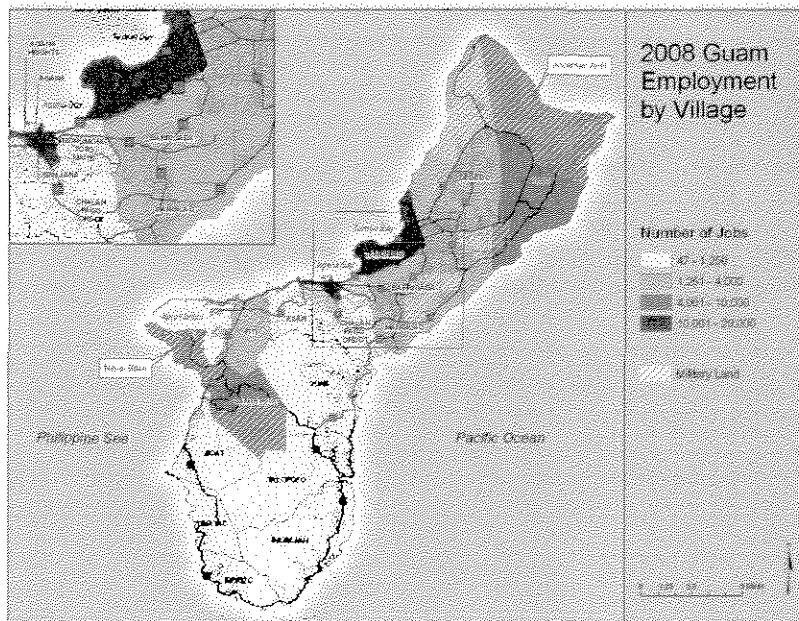
LARGE EMPLOYERS
Hotel Row on Tumon Bay
GHRA (Guam Hotel & Restaurant Association)
U.S. Navy Base Guam
Andersen Air Force Base
Guam Government Facilities (DOL, BPS, DPW)
Construction Companies
The University of Guam
Guam Community College
Apra Harbor
Guam International Airport

Figure 3-3: Guam Population Density (Persons per Square Mile in 2008)



displays the number of jobs in each village with the main roads overlaid for reference. The darkest colored villages have the highest number of jobs.

Figure A1-1: Locations of Jobs (2008)



Tourism

As mentioned previously, tourism is one of Guam’s central economic activities. The number of visitors to the island increased during the late 1980’s and early 1990’s, reaching a high of more than 1.3 million visitors in 1997. In the late 1990’s and early 2000’s, the number of tourists began to decline at a rate of approximately 1 to 2 percent per year. In 2003, visitors were at a 10-year low of less than 910,000 due to a variety of reasons including natural disasters, military events, the SARS epidemic, and the Asian financial crisis. This had a tremendous impact on Guam’s economy.

Since 2003, that trend has begun to reverse. The number of visitor arrivals has increased and continues to show positive trends. In 2007, more than 1.2 million tourists vacationed in Guam, much closer to the record numbers experienced in 1997.

Guam’s tourism industry is heavily dependent on Japanese tourists. Nearly 80 percent of all visitors to Guam in 2007 were from Japan, as shown in Table A1-2. The next largest group of visitors came from South Korea, but only amounted to 10 percent of total visitors. South Korean visitors were more prevalent in the early 1990’s until service air travel to Guam ceased for several years. Direct flights have since resumed and the number of tourists from South Korea has started to increase. Visitors from all other countries make up less than 12 percent of all visitors.

Table A1-2: Visitor Arrivals by Country (2007)

Country	Number of Visitors in 2007	% of Total Visitors
Japan	932,175	78%
South Korea	122,747	10%
U.S. Mainland	39,020	3%
Other	24,321	2%
Taiwan	21,819	2%
Commonwealth of the Northern Mariana Islands	17,661	1%
Hawaii	9,881	<1%
Philippines	8,744	<1%
Federated States of Micronesia	8,134	<1%
Hong Kong	6,224	<1%
Total	1,190,726	100%

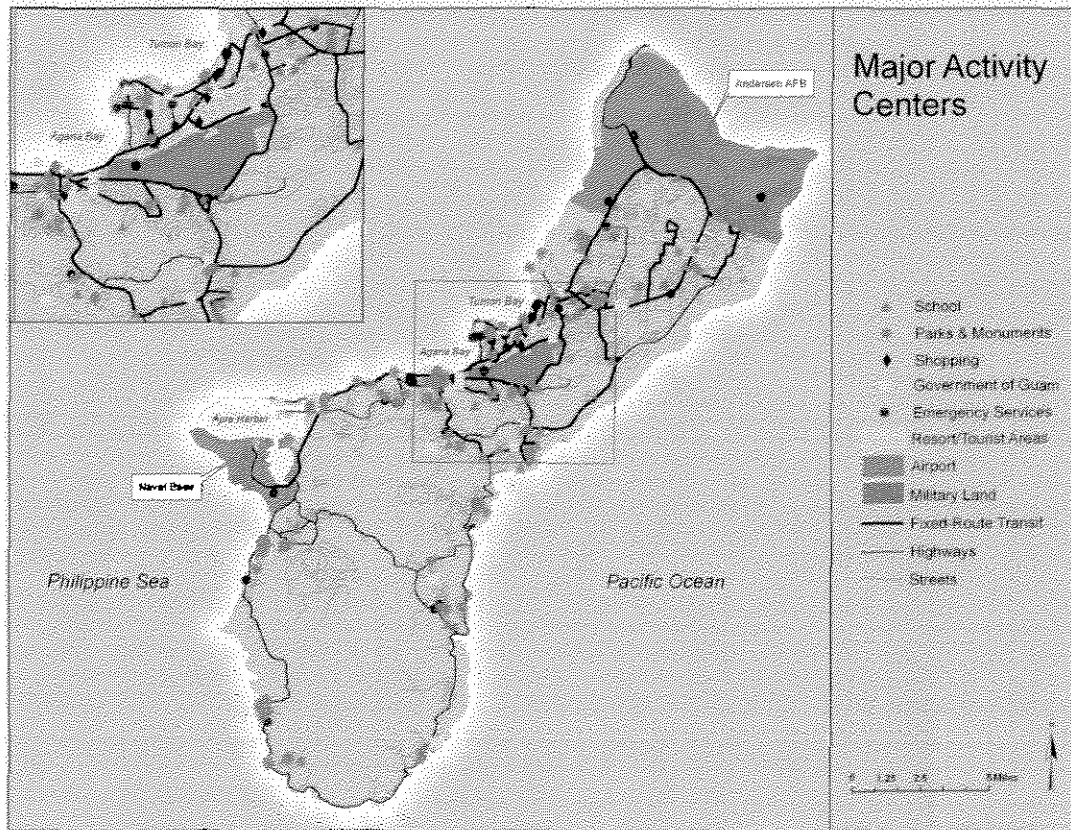
Efforts are underway that will continue the focus on the development of Guam’s visitor industry, including expanding tourism from higher yield markets and expanding Guam’s current visa-waiver program to encourage tourists from a wider range of countries. It is hoped that current efforts will further support Guam’s upward trend in total visitor numbers.

Major Activity Centers

Major activity centers are focal points for shopping, dining, employment, and other services and activities. These areas are points for future growth and development. Maximum transit service to activity centers is highly desirable and encourages further activity. Guam’s major destinations and activity centers include shopping centers,

government and civic locations, resort and tourist areas, airports, cultural and historic sites, healthcare facilities, and popular scuba diving areas. These major activity centers can be seen in Figure A1-2.

Figure A1-2: Major Activity Centers



Shopping

Agana Shopping Center is well-known for its duty-free shopping, and attracts many tourists for luxury-items.

Guam Premier outlets in Tamuning Village offers duty-free shopping for high-end items.

Micronesian Mall in Dededo offers hand-made crafts from all over Guam and surrounding Micronesian islands. It also sells beachwear, outdoor gear, has an outdoor theme park, theater, and major retail stores (e.g., Macy's).

K-Mart in Tumon is a major attraction for tourists to visit Tumon.

Home Depot opened within the past two years, and is located near the main airport.

Acanta Mall is a specialty indoor/outdoor strip mall located in Tumon.

Tumon Sands Plaza offers brand name and casual shopping as well as restaurants

DFS Galleria is the Duty Free Shoppers Galleria (DFS) that offers luxury, entertainment, and casual shopping in Tumon.

JP Superstore is connected to the Guam Plaza Hotel in Tumon, and offers restaurants, shopping and a water park.

Government / Civic

U.S. Navy Base Guam is located in the village of Sumay.

Andersen Air Force Base is located on the northern end of the Guam in the village of Yigo.

Guam Government Facilities (DOL, BPS, DPW) are located throughout the island.

University of Guam is an accredited four-year university located in central Mangilao.

Resort and Tourist Areas

Tumon Bay is a resort destination with beaches, hotels, shopping, restaurants, etc.

Seven golf courses are located throughout Guam.

Luxury hotels are located throughout Guam.

Fine restaurants are located throughout Guam.

Underwater World at Pleasure Island in Tumon is a tourist attraction for people to view the coral reefs and sea life.

Cocos Island is a 100-acre island resort close to Merizo.

Talofof Bay Beach Park is a popular brown sand beach surfing area.

Airport

Antonio B. Won Pat International Airport is the major airport on Guam.

Culture & History

Chamorro Village has a Wednesday night farmer's market that is very popular and includes live dancing, music, food, crafts, and many vendors selling a variety of goods.

Adventure River Cruise offers tours along the Talafofo and Ugum Rivers.

Local village celebrations (*fiestas*) occur throughout the year. Every village has a patron Saint feast day that they celebrate with a great fiesta and invite the entire island to celebrate.

Two Lovers' Point is a scenic park that overlooks Tumon Bay and the Philippine Sea.

Plaza de Espana are ancient Spanish building ruins of the old governor's Palace in the capital Hagatna.

Guam Museum in Hagatna offers the island's history.

The War in the Pacific Historical Park in Asan is a museum of the island's history.

Healthcare

Guam Memorial Hospital Authority (GMHA) in Tamuning is this community's only civilian hospital with 208 beds; 159 acute care beds, 16 bassinets, and 33 long-term beds.

US Naval Hospital Guam in Agana Heights is the primary medical provider for military members and their families on Guam handling around 107,000 patients a year.

Clinics are located near and surrounding Tumon.

Emergency Response Centers are located throughout the island.

Scuba Diving Areas

Tumon Bay Marine Preserve and Piti Bomb Holes attract locals and tourists to scuba dive, view ship ruins, and underwater sea life.

Merizo is a reef for scuba divers to view and enjoy.

Transit services should provide connectivity between land uses and activity centers, enhancing the growth opportunities and economic development of the activity centers as well as surrounding land uses.

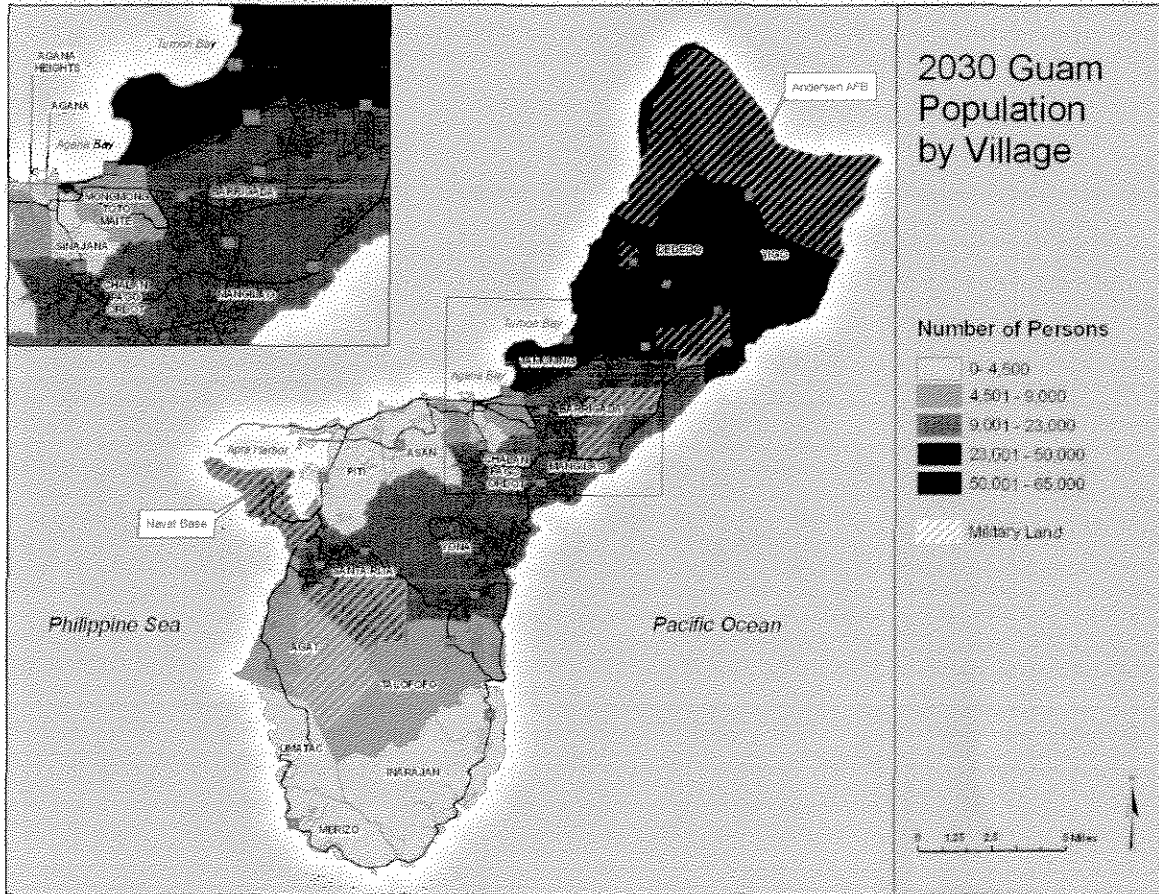
Population Analysis

This section describes the anticipated future population and employment conditions on Guam through the year 2030. This analysis includes projections for growth based on historic trends in Guam as well as assessments incorporating anticipated military build-up and construction.

The military build-up on Guam will include the construction of new housing for the additional military population. In one planning alternative, all of the housing would be located on-base at NCTS Finegayan and South Finegayan. The military build-up will require 3,520 family housing units with 2,640 (75 percent) units at NCTS Finegayan and 880 (25 percent) units at South Finegayan. The remainder of the housing will be

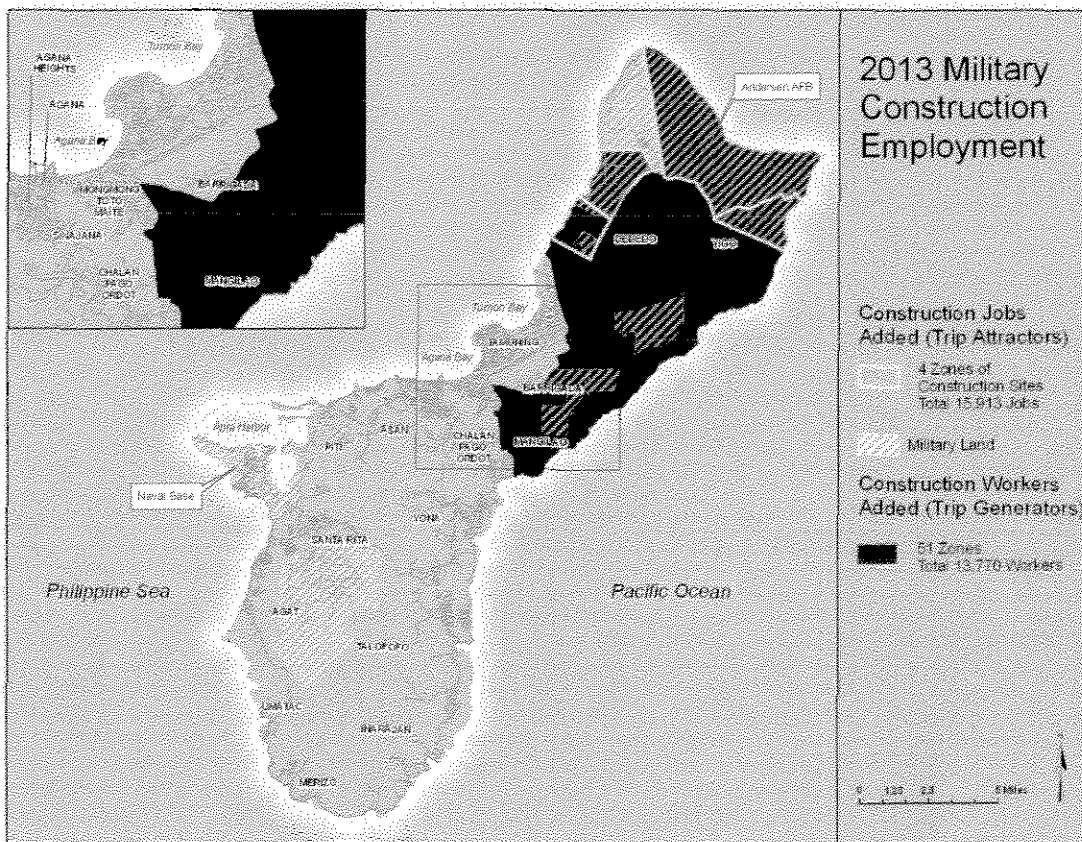
bachelor enlisted quarters (BEQ) at NCTS Finegayan. BEQ housing will accommodate the remaining 5,100 personnel. Another possible planning alternative includes a distribution of family housing among Anderson South, Barrigada-Navy, and Barrigada-Air Force. Population by village in 2030 is shown in Figure A1-3.

Figure A1-3: Projected Population by Village (2030)



The military build-up will result in many indirect jobs among supporting industries. Between 50 to 78 percent of these positions are likely to be filled by employees from off Guam. The projected location of construction jobs for 2013 is shown in Figure A1-4.

Figure A1-4: Location of Construction Jobs (2013)

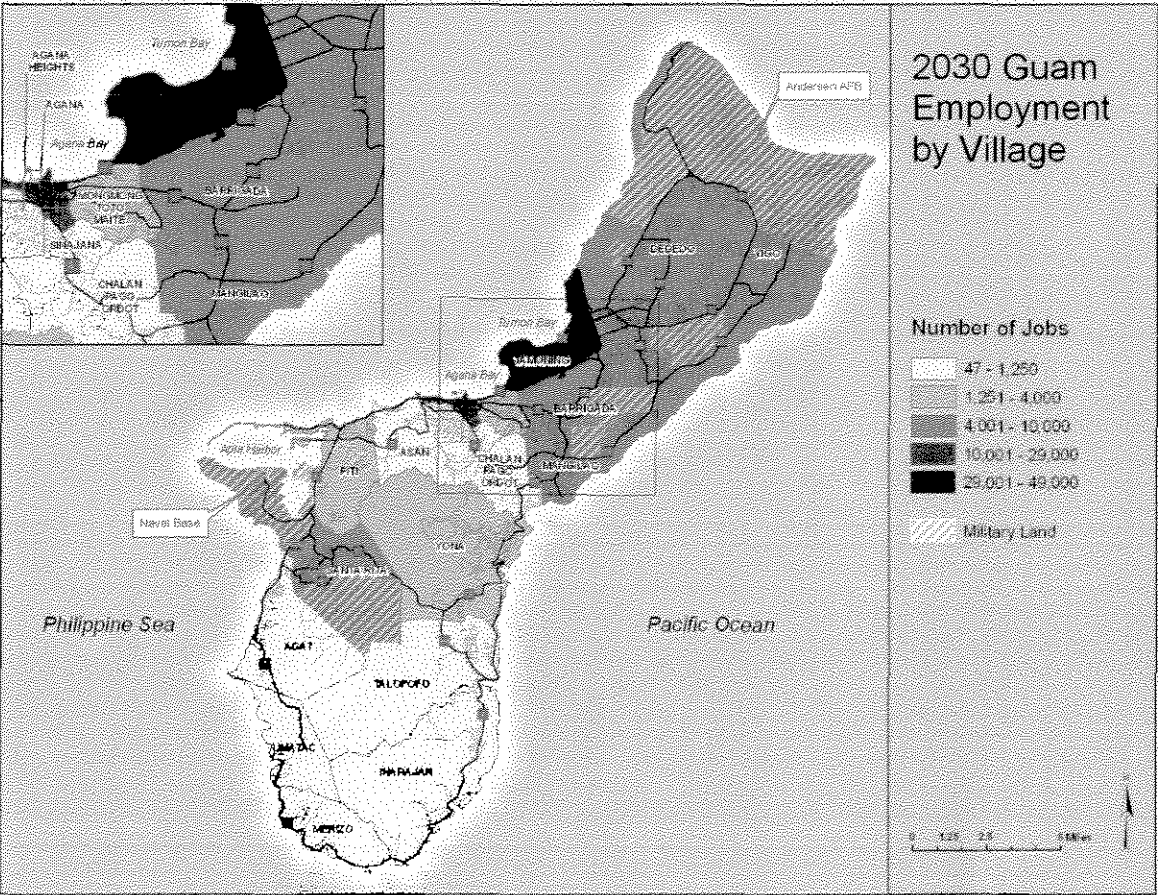


The military build-up will create a boost in construction spending, which will translate into numerous direct new civilian construction jobs as shown in **Error! Reference source not found.** The DOD is projecting that between FY2007 and FY2015, construction spending for military projects will total approximately \$12.5 billion, with more than \$10 billion related to the Marine relocation and the other \$2.0 billion for Andersen Air Force Base. The plan is to begin construction in 2010 with a goal for completing construction by 2014. Thus, the number of direct new civilian construction jobs, most likely filled by employees from off Guam, will peak in 2013 and 2014. The lasting employment effect of the military build-up will be over 14,000 new indirect jobs on Guam to support the increased military and construction worker population.

The majority of military-related construction jobs during 2010–2014 will be located at NCTS Finegayan in Dededo, with additional construction taking place at Andersen Air Force Base and Apra Harbor. It is anticipated that concurrent private sector commercial/retail/residential development in support of the build-up will create additional jobs and that these jobs will be located near the proposed military build-up sites (NCTS Finegayan, Andersen, and Navy Base Guam).

In 2030 civilian jobs will continue to be concentrated in the central part of the island, and military jobs will be located on the associated military bases. Employment by village in 2030 is shown in Figure A1-5.

Figure A1-5: Projected Employment by Village in 2030



Population and Income

It is important to take into account the median household income of the population when planning for transit. The median household income for Guam in 1999 was \$39,317. Between 1989 and 1999, Guam's median household income decreased by two percent. Over this ten-year period, families living in poverty rose from 13 percent to 20 percent. Figure A1-6 depicts the median household income in 1999 by block group on Guam. Figure A1-7 portrays low-income and very low-income block groups on Guam based on 2000 Census data.

Figure A1-6: Median Household Income in 1999 by Block Group

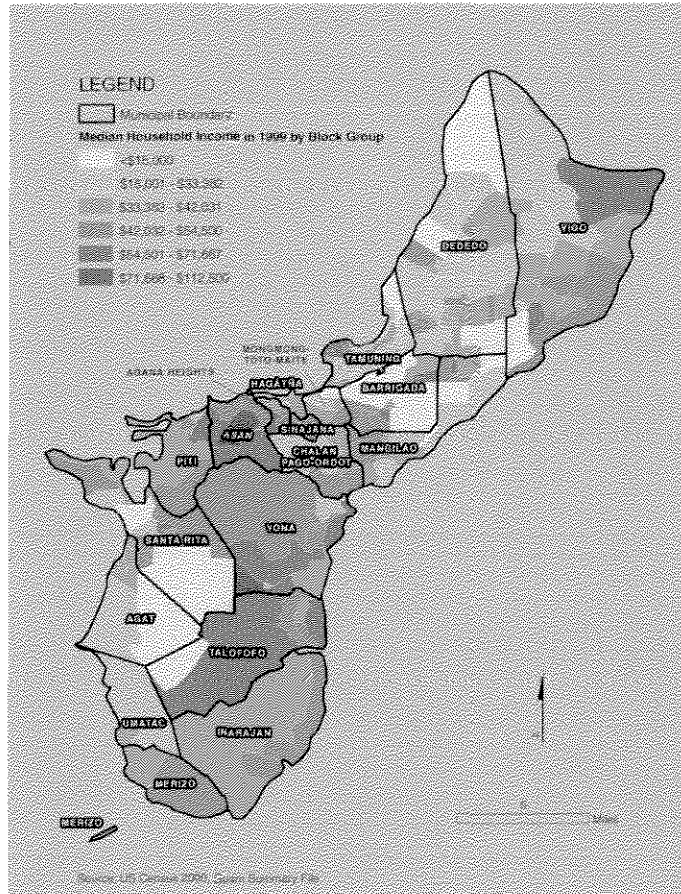
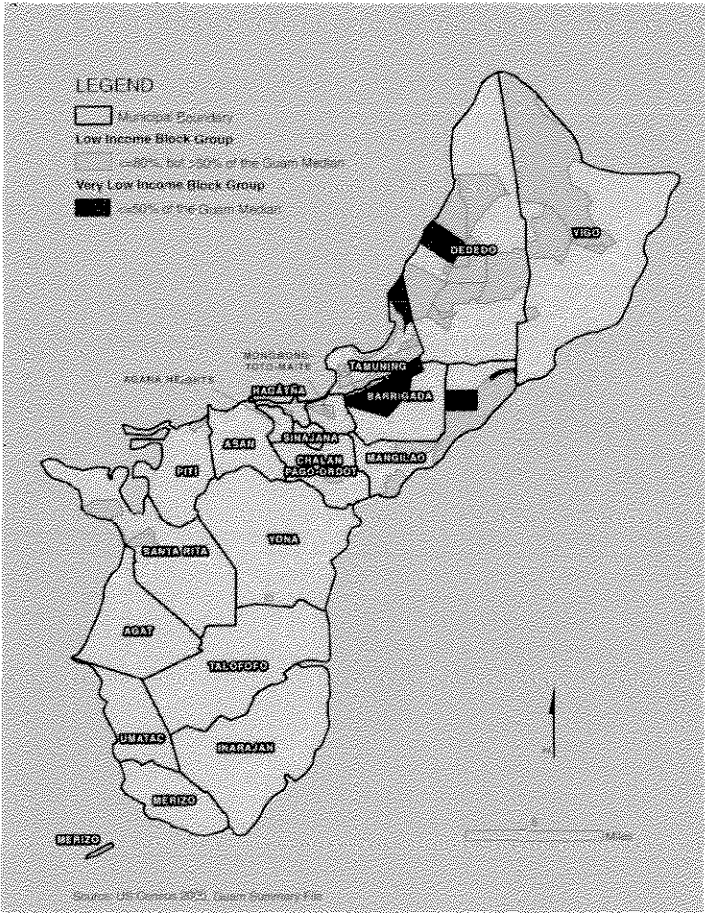


Figure A1-7: Low-Income by Block Group (2000)



Low and very low-income households are less likely to own or have access to automobiles. This population is also less able to afford fuel and maintenance costs of an automobile, and are usually less likely to be multi-car households. Low-income households are more likely to use other modes of transportation such as take transit, bicycle, or walk. According to the 2000 Census, seven percent of Guam households had no car available. These are important facts to consider when planning for transit. Figure A1-8 shows the percent of occupied housing units with one vehicle while Figure A1-9 shows the percent of occupied housing units with no vehicle.

Figure A1-8: Percent of Occupied Housing Units with One Vehicle

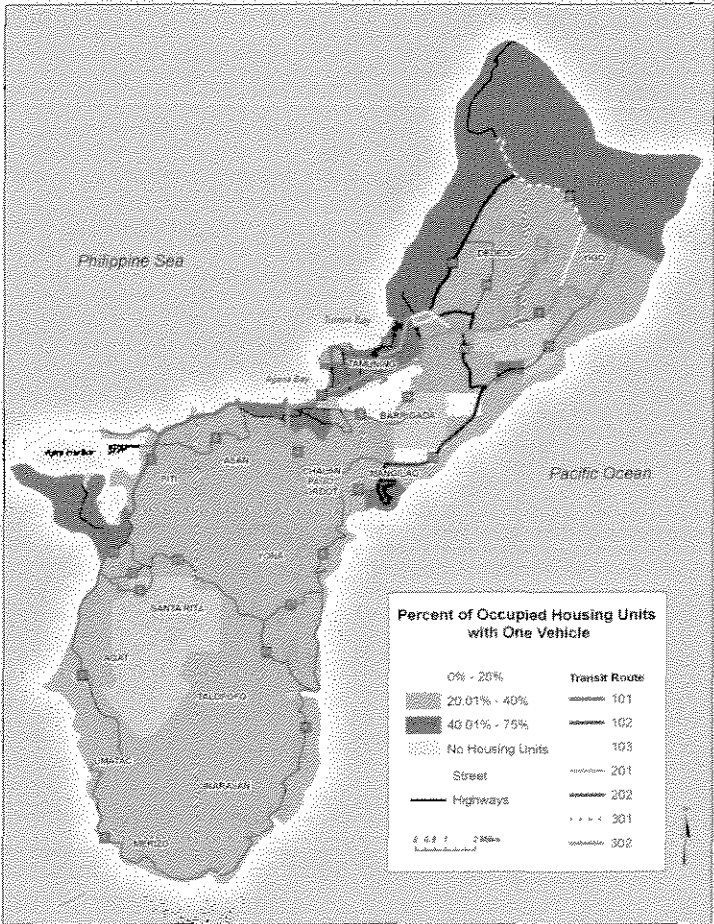
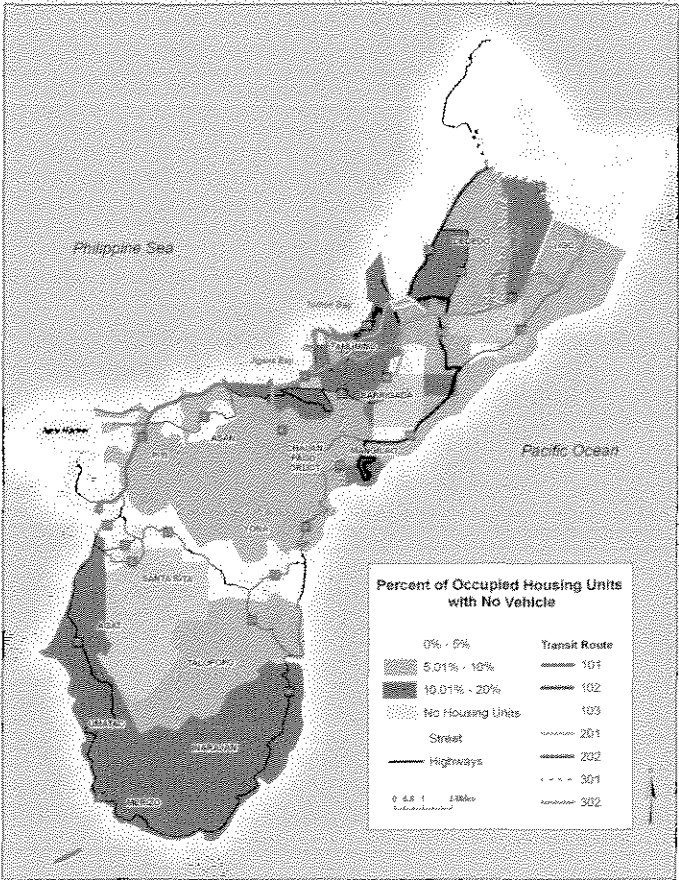


Figure A1-9: Percent of Occupied Housing Units with No Vehicle



APPENDIX PART 2: PROJECTED TRANSIT RIDERSHIP

Ridership Potential

As part of the assessment of existing conditions for the 2030 GTP, a peer review analysis was conducted of transit systems serving communities approximately the same size as Guam. The source of information for the peer review was the 2005 National Transit Database (NTD) and the 2002 US Census. The selected sample contains data for 22 systems, reporting geographic areas ranging from 65 square miles to almost 800 square miles, and in population served from 100 thousand to 200 thousand. Table A2-2 provides the NTD data of interest for these systems, which are widely distributed within the United States.

Analysis of transit ridership per capita was conducted on the selected cities from Table A2-2. Results of the analysis are presented in Table A2-1. The analysis suggests that the unemployment rate contributes positively to transit ridership per capita, but in a less than one-to-one fashion ($b_1 = 0.86$). The data suggests that high school graduation rates contribute positively to transit ridership per capita and tend to do so in a greater than five-to-one fashion ($b_2 = 5.29$). As expected, transit ridership tends to fall as service area grows relative to service supply. If transit service is sparse, or, service levels are low over a wide area, then transit ridership is expected to decrease relative to the square of area, and to do so in a slightly greater than one-to-one fashion ($b_3 = -1.14$).

Table A2-1: Regression Results for Transit Ridership per Capita

$B_0 \times (UNEMPLOY)^{b_1} \times (HIGHSCHOOL)^{b_2} \times \left[\frac{\sqrt{AREA}}{RSH} \right]^{b_3}$	
$R^2 = 0.84$ $F = .0000002$	Estimated Coefficient (p-value)
$b_0 \ B_0 = \exp(b_0)$	-4.8 (0.05)
b_1	0.86 (0.07)
b_2	5.29 (0.001)
b_3	-1.14 (0.0000008)

Potential non-military annual transit ridership was projected from the analysis of selected peer transit systems and projected population growth for 2013. Table A2-3 lists potential ridership levels from assumed service levels. The service area was restricted, as illustrated in Figure A2-1, in an effort to reflect actual populated areas. Population estimates in these areas were taken from Guam Transportation Analysis Zones.

Table A2-2: Selected Transit System Data, 2005 National Transit Database

City	Population Served*	Area (sq-mi)*	Annual Service Hours*	2005 Annual Passenger Boardings*	2000 Unemployment Rate**	2000 High School Graduation Rate **
Bellingham, WA	177,130	776	148,465	3,382,349	10.3%	88.5%
Vestal, NY	165,000	712	155,789	2,828,981	6.2%	92.6%
Port Huron, MI	164,235	700	125,279	451,794	7.7%	76.8%
Bay City, MI	110,000	447	94,737	525,916	6.8%	80.8%
Bridgeton, NJ	146,438	489	53,352	147,842	13.5%	57.6%
Kent, OH	152,061	492	111,157	1,096,803	5.7%	91.7%
Valparaiso, IN	130,000	400	27,876	111,019	4.4%	90.6%
Pittsfield, MA	127,500	384	43,383	508,776	6.0%	84.4%
Chattanooga, TN	155,554	289	158,886	2,036,009	7.7%	77.6%
Fitchburg, MA	193,415	338	208,577	617,134	8.4%	75.4%
Rochester, MN	104,230	147	72,060	1,300,793	4.2%	91.0%
Peoria, AZ	140,000	175	7,501	34,428	3.9%	88.3%
Duluth, MN	122,970	143	142,256	2,709,249	7.5%	87.7%
Redding, CA	114,462	100	73,748	762,404	7.7%	85.2%
Waterloo, IA	109,418	89	60,255	340,181	6.0%	83.8%
Danbury, CT	154,855	124	83,824	773,037	4.0%	77.0%
Lakeland, FL	110,000	77	119,243	1,538,232	7.5%	79.2%
Denton, TX	102,000	65	57,544	1,265,309	7.3%	83.2%
Tallahassee, FL	162,310	102	168,308	4,612,725	11.1%	89.9%
Grand Prairie, TX	134,450	80	10,998	34,026	5.4%	74.9%
North Little Rock, AR	164,912	98	188,610	2,127,711	4.6%	80.8%
Jackson, MS	196,000	114	83,236	761,766	8.9%	79.1%

Source: *Federal Transit Administration, National Transit Database for 2005; **2000 US Census

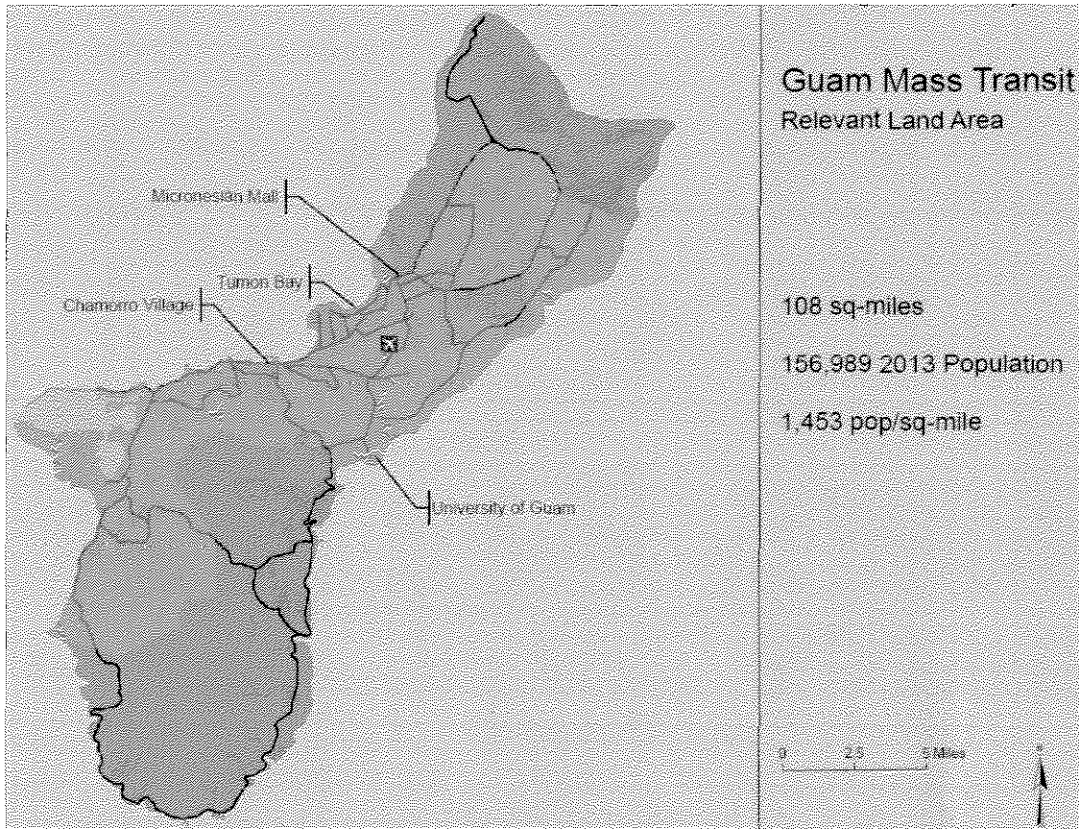
Notes: Sample selected by Parsons Brinckerhoff on the basis of population served and area served.

Table A2-3: Non-Military Annual Transit Ridership Potentials Based on Estimated Transit Ridership per Capita and Guam Population Projections for 2013

Service Supply (Revenue Service Hours)	Potential Non-Military Annual Transit Ridership (PSH)
25,000	147,000 – 502,000 (3 PSH) – (20 PSH)
50,000	583,000 – 893,000 (12 PSH) – (18 PSH)
100,000	1.4 Million – 1.8 Million (14 PSH) – (18 PSH)
150,000	2.3 Million – 2.7 Million

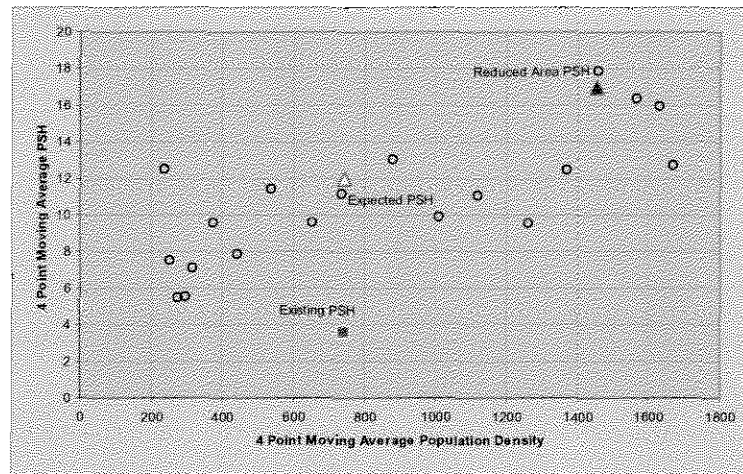
	(15 PSH) – (18 PSH)
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Figure A2-1: Restricted Service Area for the Purpose of Non-Military Transit Ridership Projections



The next step of this analysis was an assessment of Guam Mass Transit's productivity. This was done by sorting the NTD sample on the basis of population density (persons per square mile), and comparing the density range with transit boardings per revenue service hour. As shown in Figure A2-2, it is evident that productivity of the Guam transit system, measured in this way, is approximately one-third the level achieved by other systems of similar population density in the sample.

Figure A2-2: Population Density and Passengers per Service Hour (PSH)



These results are closely comparable to the transit boardings per capita analysis, demonstrating that ridership might be as much as four times the current level, provided appropriate service improvements can be made.

Market Sectors

The target markets that the new Guam transit system will serve include the military, the general population, and those who are disabled or elderly. Specific actions for the new transit system include restructuring the route service to connect health care and social service facilities. Resort workers are another target market. The route structure will connect Dededo and the Tamuning villages to better access tourist facilities and retail complexes. The new route structure also provides basic connectivity to school facilities to help students, teachers, and staff reach these major activity centers.

Other transit initiatives include upgrading the management of paratransit services. With the expansion of the fixed-route system and acquisition of new accessible vehicles, the paratransit system will be able to focus on better serving the disabled community. The DOA/Division of Mass Transit is working with the FTA to acquire four new paratransit vehicles.

Transportation demand management and better connectivity between transportation and land use planning will be required. With the military build-up, construction contractors will be required to provide shuttle services for off-island workers to work sites. These services should be coordinated with and integrated into the transit system. Additionally, zoning techniques that force the users of sites where the off-island laborers will reside can enhance the enforcement of travel demand management. If the military contractors fail to provide the shuttle services, the user of the sites would be required to provide the service as a matter of site occupancy.

Transit ridership on Guam in recent years has been at a relatively low level, compared with typical levels achieved in comparable areas served within the continental United States. Low transit ridership on Guam has been the result primarily of limited service, as defined by the quality and age of the bus fleet, the extent of the route structure, and the frequency of service provided.

In the report on assessment of the existing services, two main measures of ridership were used to compare Guam's transit ridership with that of 22 US transit systems. The two measures were rides (passenger boardings) per revenue service hour, and rides per capita. The comparisons also considered average population density within transit system service areas. From these comparisons, it appears that transit service on Guam should be able to achieve ridership in the range of 11 boardings per revenue service hour, or 8 boardings per capita within the overall service area.

That ridership level will be influenced not only by the future quality and quantity of service, but also by the changing demographics of the population. The large increase in the number of military personnel and their dependents will tend to raise transit passenger trip rates, because of the unique characteristics of that population. Of potentially even greater effect, albeit temporarily, will be the presence of construction workers responsible for building military facilities on the island during the major expansion period.

Still another important factor in projecting future ridership is the level of fares charged. This subject is discussed elsewhere.

The table following (Table A2-4) provides an approximation of potential ridership as it will be influenced by the market segments and the transit routes and headways provided.

Table A2-4: Potential Ridership, by Market Source and Service Type

PASSENGER BOARDING ESTIMATES		Baseline Condition (2009-2010)			2011			2014			2019			2030		
		Population Estimate	Annual Ridership	Daily Ridership	Population Estimate	Annual Ridership	Daily Ridership	Population Estimate	Annual Ridership	Daily Ridership	Population Estimate	Annual Ridership	Daily Ridership	Population Estimate	Annual Ridership	Daily Ridership
U.S. Marine Corps	Active	3	11	0	1,173	8,798	29	9,725	89,956	295	8,555	94,105	309	8,555	94,105	309
	Dependents	2	8	0	1,233	9,866	32	9,002	90,020	295	9,002	108,024	354	9,002	108,024	354
	Transient	-	-	-	400	9,200	30	2,000	60,000	197	2,000	70,000	230	2,000	70,000	230
Andersen Air Force Base	Active	2,145	7,508	25	2,225	16,688	56	2,265	20,951	69	2,265	24,915	82	2,265	24,915	82
	Dependents	2,950	11,800	39	3,068	24,544	80	3,160	31,600	104	3,160	37,920	124	3,160	37,920	124
	Transient	-	-	-	900	20,700	68	1,256	36,424	119	1,780	62,300	204	1,780	62,300	204
U.S. Naval Base Guam	Active	4,350	15,225	50	4,350	32,625	107	4,350	40,238	132	4,630	50,930	167	4,630	50,930	167
	Dependents	5,230	20,920	69	5,230	41,840	137	5,230	52,300	171	5,280	63,360	208	5,280	63,360	208
	Transient	-	-	-	-	-	-	-	-	-	7,222	252,770	829	7,222	252,770	829
U.S. Army Personnel	Active	30	105	0	80	600	2	80	740	2	660	7,260	24	660	7,260	24
	Dependents	50	200	1	50	400	1	50	500	2	1,000	12,000	39	1,000	12,000	39
	Transient	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Coast Guard	Active	140	490	2	140	1,050	3	190	1,758	6	190	2,090	7	190	2,090	7
	Dependents	180	720	2	180	1,440	5	210	2,100	7	210	2,520	8	210	2,520	8
	Transient	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Military Transit Boardings	Active	6,668	23,338	77	7,968	59,760	196	16,610	153,643	504	16,300	179,300	588	16,300	179,300	588
	Dependents	8,412	33,648	110	9,761	78,090	256	17,652	176,520	579	18,652	223,824	734	18,652	223,824	734
	Transient	-	-	-	1,300	29,900	98	3,256	96,424	316	11,002	385,070	1,263	11,002	385,070	1,263
	All Military	15,080	56,986	187	19,029	167,750	550	37,518	426,587	1,399	45,954	788,194	2,584	45,954	788,194	2,584
Temp. Constr. Labor+Depndnts		-	-	-	9,705	271,740	891	21,324	767,664	2,517	-	-	-	-	-	-
Civilians in Fixed-Route Svc. Area		148,366	267,058	876	155,143	1,008,429	3,306	162,230	1,460,066	4,787	174,767	1,572,906	5,157	198,295	1,784,653	5,851
Totals, Fixed-Route Transit		163,446	324,044	1,062	183,877	1,447,919	4,747	221,072	2,654,317	8,703	220,721	2,361,100	7,741	244,249	2,572,847	8,436
Shuttles for Temp. Constr. Labor								6,591,000	25,350							
Demand Response, Guam southern area		13,361	48,705	61	13,971	41,914	137	14,609	73,047	239	15,739	78,693	258	17,857	89,287	293
Island-wide Paratransit		175,790	52,737	173	183,820	75,366	247	192,216	78,808	258	207,072	84,899	278	234,948	96,329	316

APPENDIX PART 3: FARE POLICY AND REVENUE ESTIMATES

Fare Policy

The Guam Regional Transportation Authority (GRTA), as outlined in [GOV GUAM ENABLING STATUTES], retains the sole authority to regulate the fare structure of the Guam Mass Transit System. The goal of the GRTA fare policy is to establish fares that are:

- (1) Affordable and equitable to the public
- (2) Sustainable in terms of contributing to the satisfaction of revenue requirements

These objectives act as constraints on one another and are interrelated with service design, operation, and productivity (passengers carried). Increased productivity will improve cost recovery and support either service improvement or reduced need to modify fares. The base fare, reduced fares and multiple ride pass prices will be designed to achieve cost recovery targets based on achievable ridership levels.

The GRTA will place an initial fare structure (referred to here as Fare Policy B, or FP-B) in operation and periodically compare that structure against financial performance targets following the comprehensive review schedule outlined in [Table A3-1](#). The agency will review fare box revenue, ridership trends, and cost recovery, adjusting the fare policy as needed. If a fare adjustment is required, the GRTA will conduct additional analysis of costs and revenues, including consideration of service levels.

Table A3-1: Fare Policy Comprehensive Review Schedule

Time from the initiation of service	Elements to be considered for revision
6 months	Base Fare, Day Pass and 30 Day Pass
12 months	30 Day Pass
18 months	Base Fare and Day Pass
36 months (then on an 18 month cycle)	Base Fare, Day Pass and 30 Day Pass with potential multiple ride pass expansion

The agency has designed the system with service periods outlined in [Table A3-2](#). The total operating day consists of 16 hours, from 4AM to 8PM and the peak periods are set for 7AM-9AM and 5PM-7PM. At this time, the agency considers all other operating hours off-peak.

Table A3-2: Service Period

Period	Clock Hours	Times
Early Morning (Non-Peak)	3	4AM-7AM
AM (Peak)	2	7AM-9AM
Mid-Day (Non-Peak)	8	9AM-5PM
PM (Peak)	2	5PM-7PM
Late Evening (Non-Peak)	1	7PM-8PM

The non-peak-period full fare represents the price paid for a single ride during non-peak hours by a passenger who is not eligible for a reduced fare. The peak fare represents the price paid for a single ride during peak periods by a passenger who is not eligible for a reduced fare. Passengers who wish to use the system throughout an operating day can purchase a Full-Fare Day Pass or Reduced-Fare Day Pass, according to eligibility. The use of Day Passes will take the place of transfers so as to promote the use of day passes and reduce operating time and expense related to transfer validation and production¹. Additionally, passengers can purchase a Full Fare or Reduced Fare 30-Day Pass for unlimited use during a 30-day period.

The agency bases the reduced fare policy on FTA regulations². FTA requirements state that the GRTA must ensure that those who qualify³ for a reduced fare shall receive, during non-peak periods, one ride for no more than half the peak period fare. While FTA fare policy requirements do not address multi-ride pass pricing, all fare package alternatives include discounted multi-ride passes.

The pricing of multi-ride passes can have significant effects on average fare and care should be taken to insure these prices do the least harm to revenue while still promoting transit use. In general, the use of multi-ride passes has operational benefits because passenger boarding time using these fare media is less on average than for passengers using cash. Additionally, extensive use of multi-ride passes can reduce expenses related to the processing of cash revenue.

In comparison with the current fare structure for Guam transit, the assumed fare structure, listed in Table A3-3, amounts to an incremental increase in fare for all fare categories.

¹ Currently, the fixed route system on the island of Guam does not allow transfers and requires passengers to purchase an additional single ride fare if two routes are used.

² 49 USC Chapter 53, Federal Transit Laws, as amended by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

³ Persons with disabilities or an individual presenting a Medicare card (49 CRF Part 609 "Transportation for Elderly and Handicapped Persons")

Table A3-3: Initial Fare Package

Type		Description
Full Fare Non-Peak Period	\$1.50	4AM-7AM, 9AM-5PM, 7PM-Last Scheduled Trip
Full Fare Peak Period	\$1.75	7AM-9AM, 5PM-7PM
Reduced Fare Non-Peak Periods	\$0.75	Only during non-peak hours: 4AM-7AM, 9AM-5PM, 7PM-Last Scheduled Trip)
Reduced Fare Peak Period	\$1.75	FTA Regulations do not require a reduced fare for qualifying passengers during the peak period
Full Fare Day Pass	\$3.00	Unlimited use for the operating day
Reduced Fare Day Pass	\$1.50	Unlimited use for the operating day
Full Fare 30 Day Pass	\$50	Unlimited use for 30 days ⁴ ___
Reduced Fare 30 Day Pass	\$25	Unlimited use for 30 days
Estimated Average Fare	\$0.85	

Revenue was projected based on anticipated ridership levels, a sample fare media distribution, and assumptions about passenger demand responses to changes in fare policy. Anticipated ridership levels for an improved fixed route transit system are based on field observations and analysis of selected transit systems that serve population levels similar to those on Guam.

Fare Revenue Estimates, Sensitivity analysis, and Risks

On the basis of preliminary ridership analysis in context with fare policy alternatives, ridership for the planned service with FP-B is estimated to be 600,000 annual boardings. At the estimated average fare of \$0.85, annual fare revenue would be \$510,000. This is an initial estimate based on limited data and predicated on substantial improvement of the public transportation services. The success of the system in attracting riders is contingent not only on the level of service offered and the fares charged, but also on marketing efforts, performance of the operator in providing service to high standards, and policies of the military, which is expected to be the source of significant numbers of riders.

Actual fare revenues will be dependent not only upon the number of riders carried, but also on their eligibility for and choices made among the offered fare types. Using the 60,000 boardings as a basis for calculation, an average fare of \$1.00, which might be achieved, would produce annual fare revenue of \$600,000, an 18 percent increase compared with the base estimate. An average fare of \$0.70 would reduce fare revenue to \$420,000 annually, an 18 percent decrease compared with the base estimate.

Under conditions of FP-B, there is reasonable assurance that fares will not be at a revenue-maximizing level; an increase in fares would result in some loss of riders but an increase in fare revenue, while a decrease in fares would result in a gain in ridership but a lower level of fare revenue. Beyond some significantly higher level than the selected fares, any further increase would result in such a large decrease in ridership that total fare revenue would be reduced. By selecting a Fare Policy comfortably below that level, it is possible to introduce fare adjustments from time to time if it is judged advisable either to attract more riders, by lowering the fares, or to earn more fare revenue by raising the fares. This is the primary mechanism available to GRTA to balance public transportation mobility needs with the agency's fare revenue goals.

Fare Box Revenue

An additional sample of peer cities was queried from the 2006 NTD databases. For the purpose of estimating fare box revenue and operating costs, the 2006 NTD second sample cities were first selected based on service density – revenue service hours per square mile of service area – and population served. Table A3-4 and Figure A3-1 illustrate selected characteristics from the second NTD sample of peer cities. In this sample, the sample average Average Fare was \$0.94, the 95% confidence interval for the population average Average Fare is \$0.70 - \$1.09. The estimated Average Fare for the GRTA fare policy, \$0.85, and falls within the range for the population average.

Table A3-4: Average Fare from Second NTD Sample

City	State	Service Area	RSH	Population	PAX	Average Fare
Meridian	ID	66	20,768	272,625	123,710	\$1.10
Pittsfield	MA	384	43,468	127,500	495,788	\$1.17
Haverhill	MA	225	103,785	306,339	1,750,623	\$0.58
Fitchburg	MA	338	74,107	193,415	645,682	\$0.98
Woodbridge	VA	361	132,017	326,238	2,451,990	\$2.38
Port Tobacco	MD	458	47,012	120,564	402,739	\$0.55
Fort Walton Beach	FL	200	30,508	170,498	108,404	\$0.30
Cary	NC	50	9,946	107,973	23,354	\$1.18
Rochester	MN	147	59,975	104,230	1,427,340	\$1.13
South Bend	IN	52	27,017	130,866	165,409	\$0.73
Lafayette	LA	50	5,246	135,072	142,455	\$0.24
Lewisville	TX	157	58,977	234,552	1,478,713	\$1.23
Olathe	KS	66	39,301	223,205	295,540	\$1.40
Montebello	CA	39	6,366	285,212	90,768	\$0.75
Corona	CA	41	18,214	160,000	146,983	\$0.90
Redding	CA	100	45,200	116,454	684,008	\$0.67
Lancaster	CA	1,200	148,095	349,050	3,066,341	\$1.14
Hesperia	CA	424	71,214	200,346	923,888	\$0.72
Thousand Oaks	CA	55	13,342	120,975	166,931	\$0.67
Yuma	AZ	78	27,416	139,005	197,608	\$1.23
Chico	CA	160	67,293	150,000	1,021,048	\$0.73
						Interval for Average: \$0.70 - \$1.09

Figure A3-1: Average Fare Histogram from Second NTD Sample

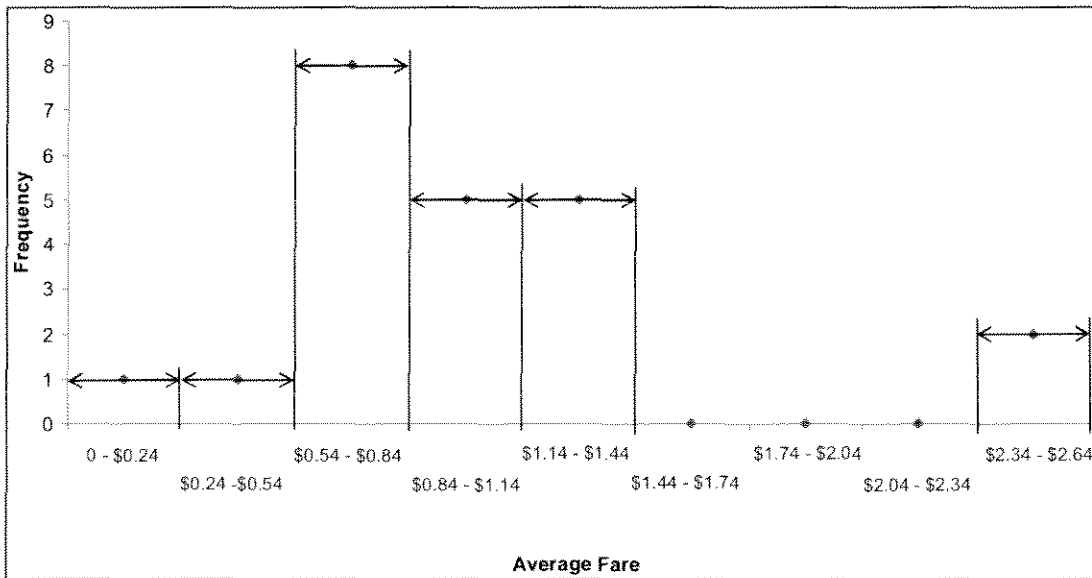


Table A3-5 illustrates fare box revenue estimates predicated upon ridership, average fare, and population estimates that take into account elements from the potential military build-up. In general, revenue levels result (via ridership) from socio-economic aggregate trip generators, such as the rate of employment, and the relative supplies (and therefore price) of differing modes of travel, such as revenue service hours or the cost per gallon of fuel.

Table A3-5: Fixed-Route Fare box Revenue Estimates

Year	Revenue Service Hours			
	25,000	50,000	100,000	150,000
2013	\$130,000			
2015		\$510,000		
2020			\$1,300,000	
2030				\$2,000,000

APPENDIX PART 4: DRAFT TRANSIT OPERATING PLANS

Table A4-1: Augmented-Existing System Operations Estimate

Cycle Time (min)										
Route	Cycle Length (miles)	Speed	Weekday				Non-Weekday			
			Off Peak	AM	MD	PM	Off P	AM	MD	PM
Interline A	13	15	135.0	135.0	135.0	135.0	135.0	135.0	135.0	135.0
Interline B	19	15	135.0	135.0	135.0	135.0	135.0	135.0	135.0	135.0
Blue 2	21	18	75.6	84.0	84.0	84.0	75.6	75.6	75.6	58.3
Express*	13	15	60.0	60.0	60.0	60.0				
Yigo-Mail	13	15	56.2	62.4	62.4	62.4				
Time of Day Speed Factors										
	Weekday	NonWeekday								
Off Peak	0.9	0.9								
AM	1	0.9								
MD	1	0.9								
PM	1	0.9								
Hours of Operation										
Off Peak	4	4am-7am, 7pm-8pm								
AM	2	7 am - 9 am								
MD	8	9am - 5pm								
PM	2	5pm-7pm								
Headways (min)										
	Weekday	Non-Weekday								
Off Peak	60	60								Marine Corps Drive has an effective headway of 30 min
AM	60	60								
MD	60	60								
PM	60	60								
Vehicles Required For Service										
Route	Weekday				Non-Weekday				VRS	Fleet
	Off Peak	AM	MD	PM	Off Peak	AM	MD	PM		
Interline A	3	3	3	3	3	3	3	3	11	14
Interline B	3	3	3	3	3	3	3	3		
Blue 2	2	2	2	2	2	2	2	1		
Express	1	1	1	1	0	0	0	0		
Yigo-Mail	1	2	2	2	0	0	0	0		
Deployment	10	11	11	11	8	8	8	7		
Revenue Service Hours by Day-Type and Period										
Route	Weekday					Non-Weekday				
	Off Peak	AM	MD	PM	Total	Off P	AM	MD	PM	Total
Interline A	12	6	24	6	48	12	6	24	6	48
Interline B	12	6	24	6	48	12	6	24	6	48
Blue 2	8	4	16	4	32	8	4	16	2	30
Express	4	2	8	2	16	0	0	0	0	0
Yigo-Mail	4	4	16	4	28	0	0	0	0	0
Route	Yearly RSH		Monthly	Weekday RSH		Non-weekday RSH				
Interline A	17,520		1,440	48	48					
Interline B	17,520		1,440	48	48					
Blue 2	11,472		940	32	30					
Express	4,176		320	16	0					
Yigo-Mail	7,308		560	28	0					
Grand Total	57,996		4,700	172	126					

Table A4-2: Base System Operations Estimate

Cycle Time (min)											
Route	Cycle Length (miles)	Speed	Weekday				Non-Weekday				
			Off Peak	AM	MD	PM	Off P	AM	MD	PM	
100	20	13	99.7	110.8	110.8	110.8	99.7	99.7	99.7	99.7	
101	24	15	103.7	115.2	115.2	115.2	103.7	103.7	103.7	103.7	
201 Weekday	30	14	138.9	154.3	154.3	154.3					
201Non-Weekend	13	13					64.8	64.8	64.8	64.8	
203 Weekday	9	13	42.9	47.6	47.6	47.6					
302 A	16	13	79.8	88.6	88.6	88.6	79.8	79.8	79.8	79.8	
302 B	18	13	89.7	99.7	99.7	99.7	89.7	89.7	89.7	89.7	
303	13	14	60.2	66.9	66.9	66.9	60.2	60.2	60.2	60.2	
Time of Day Speed Factors											
	Weekday	NonWeekday									
Off Peak	0.9	0.9									
AM	1	0.9									
MD	1	0.9									
PM	1	0.9									
Hours of Operation											
Off Peak	4	4am-7am, 7pm-8pm									
AM	2	7 am - 9 am									
MD	8	9am - 5pm									
PM	2	5pm-7pm									
Headways (min)											
Headways (min)						Headways (min) Route 302					
	Weekday	Non-Weekday		Weekday	Non-Weekday		Weekday	Non-Weekday			
Off Peak	60	60	Off Peak	120	120						
AM	60	60	AM	120	120						
MD	60	60	MD	120	120						
PM	60	60	PM	120	120						
Vehicles Required For Service (VRS)											
Route	Weekday				Non-Weekday				VRS	Fleet	
	Off Peak	AM	MD	PM	Off Peak	AM	MD	PM			
100 (30 h wkd)	2	4	4	4	2	2	2	2	13	16	
101 (120 h n-wkd)	2	2	2	2	1	1	1	1			
201 Wkd	3	3	3	3	0	0	0	0			
201N-Wkd	0	0	0	0	2	2	2	2			
203 Wkd	1	1	1	1	0	0	0	0			
302 A	1	1	1	1	1	1	1	1			
302 B	1	1	1	1	1	1	1	1			
303	1	1	1	1	1	1	1	1			
Deployment	11	13	13	13	8	8	8	8			
Revenue Service Hours by Day-Type and Period											
Route	Weekday					Non-Weekday					
	Off Peak	AM	MD	PM	Total	Off P	AM	MD	PM	Total	
100	8	8	32	8	56	8	4	16	4	32	
101	8	4	16	4	32	4	2	8	2	16	
201 Weekday	12	6	24	6	48	0	0	0	0	0	
201Non-Weekend	0	0	0	0	0	8	4	16	4	32	
203 Weekday	4	2	8	2	16	0	0	0	0	0	
302 A	4	2	8	2	16	4	2	8	2	16	
302 B	4	2	8	2	16	4	2	8	2	16	
303	4	2	8	2	16	4	2	8	2	16	
Total Revenue Service Hours											
Route	Yearly RSH	Monthly	Weekday RSH	Non-weekday RSH							
100	17,944	1,440	56	32							
101	10,016	800	32	16							
201 Weekday	12,528	960	48	0							
201Non-Weekend	3,328	320	0	32							
203 Weekday	4,176	320	16	0							
302 A	5,840	480	16	16							
302 B	5,840	480	16	16							
303	5,840	480	16	16							
Grand Total	65,512	5,280	200	128							

Table A4-3: Enhanced A System Operations Estimate

Cycle Time (min)											
Route	Cycle Length (miles)	Speed	Weekday				Non-Weekday				
			Off Peak	AM	MD	PM	Off P	AM	MD	PM	
100	20	13	99.7	110.8	110.8	110.8	99.7	99.7	99.7	99.7	
101	24	15	103.7	115.2	115.2	115.2	103.7	103.7	103.7	103.7	
201	30	14	138.9	154.3	154.3	154.3	138.9	138.9	138.9	138.9	
202	23	13	114.6	127.4	127.4	127.4	114.6	114.6	114.6	114.6	
203	9	13	44.9	49.8	49.8	49.8	44.9	44.9	44.9	44.9	
303	13	13	64.8	72.0	72.0	72.0	64.8	64.8	64.8	64.8	
302 A	20	13	99.7	110.8	110.8	110.8	99.7	99.7	99.7	99.7	
302 B	25	13	124.6	138.5	138.5	138.5	124.6	124.6	124.6	124.6	
Time of Day Speed Factors											
	Weekday	Non-Weekday									
Off Peak	0.9	0.9									
AM	1	0.9									
MD	1	0.9									
PM	1	0.9									
Hours											
	Weekday	Non-Weekday									
Off Peak	6	4am-7am, 7pm-10pm									
AM	2	7 am - 9 am									
MD	8	9am - 5pm									
PM	2	5pm-7pm									
Headways (min)											
Headways (min)						Headways (min) Route 302					
	Weekday	Non-Weekday	Off Peak	Weekday	Non-Weekday						
Off Peak	60	60	Off Peak	120	120						
AM	60	60	AM	120	120						
MD	60	60	MD	120	120						
PM	60	60	PM	120	120						
Vehicles Required For Service (VRS)											
Route	Weekday				Non-Weekday				VRS	Fleet w/ Spares	
	Off Peak	AM	MD	PM	Off Peak	AM	MD	PM			
100 (30 h wkd)	2	4	4	4	2	2	2	2	18	22	
101	2	2	2	2	2	2	2				
201	3	3	3	3	3	3	3				
202	2	3	3	3	2	2	2				
203	1	1	1	1	1	1	1				
303	2	2	2	2	2	2	2				
302 A	1	1	1	1	1	1	1				
302 B	2	2	2	2	2	2	2				
Deployment	15	18	18	18	15	15	15				
Revenue Service Hours by Day-Type and Period											
Route	Weekday					Non-Weekday					
	Off Peak	AM	MD	PM	Total	Off P	AM	MD	PM	Total	
100 (30 h wkd)	12	8	32	8	60	12	4	16	4	36	
101	12	4	16	4	36	12	4	16	4	36	
201	18	6	24	6	54	18	6	24	6	54	
202	12	6	24	6	48	12	4	16	4	36	
203	6	2	8	2	18	6	2	8	2	18	
303	12	4	16	4	36	12	4	16	4	36	
302 A	6	2	8	2	18	6	2	8	2	18	
302 B	12	4	16	4	36	12	4	16	4	36	
Total	90	36	144	36	306	90	30	120	30	270	
Total Revenue Service Hours											
Route	Yearly RSH	Monthly	Weekday RSH	Non-weekday RSH							
100	19,404	1,560	60	36							
101	13,140	1,080	36	36							
201	19,710	1,620	54	54							
202	16,272	1,320	48	36							
203	6,570	540	18	18							
303	13,140	1,080	36	36							
302 A	6,570	540	18	18							
302 B	13,140	1,080	36	36							
Grand Total	107,946	8,820	306	270							

Table A4-4: Enhanced B System Operations Estimate

Cycle Time (min)										
Route	Cycle Length (miles)	Speed	Weekday				Non-Weekday			
			Off Peak	AM	MD	PM	Off P	AM	MD	PM
100	20	13	99.7	110.8	110.8	110.8	99.7	99.7	99.7	99.7
101	24	15	103.7	115.2	115.2	115.2	103.7	103.7	103.7	103.7
201 Weekday	30	14	138.9	154.3	154.3	154.3				
201Non-Weekend	13	13					64.8	64.8	64.8	64.8
203 Weekday	9	13	42.9	47.6	47.6	47.6				
302 A	20	13	99.7	110.8	110.8	110.8	99.7	99.7	99.7	99.7
302 B	25	13	124.6	138.5	138.5	138.5	124.6	124.6	124.6	124.6
303	13	14	60.2	66.9	66.9	66.9	60.2	60.2	60.2	60.2
Time of Day Speed Factors										
	Weekday	NonWeekday								
Off Peak	0.9	0.9								
AM	1	0.9								
MD	1	0.9								
PM	1	0.9								
Hours of Operation										
Off Peak	4	4am-7am, 7pm-8pm								
AM	2	7 am - 9 am								
MD	8	9am - 5pm								
PM	2	5pm-7pm								
Headways (min)										
					Headways (min) Route 302					
	Weekday		Non-Weekday		Weekday		Non-Weekday			
Off Peak		60		60	Off Peak	120		120		
AM		30		60	AM	60		120		
MD		30		60	MD	120		120		
PM		30		60	PM	60		120		
Fleet										
Route	Weekday				Non-Weekday				Vehicles Required for Service	Fleet w/ Spares
	Off Peak	AM	MD	PM	Off Peak	AM	MD	PM		
100 (30 h wk)	2	8	4	8	2	2	2	2	26	32
101 (120 h n-wkd)	2	2	2	2	1	1	1	1		
201 Wkd	3	6	6	6	0	0	0	0		
201N-Wkd	0	0	0	0	2	2	2	2		
203 Wkd	1	2	2	2	0	0	0	0		
302 A	1	2	1	2	1	1	1	1		
302 B	2	3	2	3	2	2	2	2		
303	2	3	3	3	2	2	2	2		
Deployment	13	26	20	26	10	10	10	10		
Revenue Service Hours by Day-Type and Period										
Route	Weekday					Non-Weekday				
	Off Peak	AM	MD	PM	Total	Off P	AM	MD	PM	Total
100	8	16	32	16	72	8	4	16	4	32
101	8	4	16	4	32	4	2	8	2	16
201 Weekday	12	12	48	12	84	0	0	0	0	0
201Non-Weekend	0	0	0	0	0	8	4	16	4	32
203 Weekday	4	4	16	4	28	0	0	0	0	0
302 A	4	4	8	4	20	4	2	8	2	16
302 B	8	6	16	6	36	8	4	16	4	32
303	8	6	24	6	44	8	4	16	4	32
Total Revenue Service Hours										
Route	Yearly RSH		Monthly		Weekday RSH		Non-weekday RSH			
100	22,120		1,760		72		32			
101	10,016		800		32		16			
201 Weekday	21,924		1,680		84		0			
201Non-Weekend	3,328		320		0		32			
203 Weekday	7,308		560		28		0			
302 A	6,884		560		20		16			
302 B	12,724		1,040		36		32			
303	14,812		1,200		44		32			
Grand Total	99,116		7,920		316		160			

Table A4-5: Military Extensions Operations Estimate

Cycle Time (min)											
Route	Cycle Length (miles)	Speed (mph)	Weekday				Non-Weekday				
			Off Peak	AM	MD	PM	Off P	AM	MD	PM	
900	18	13	89.7	99.7	99.7	99.7	89.7	89.7	89.7	89.7	
901 A	12	13	59.8	66.5	66.5	66.5	59.8	59.8	59.8	59.8	
901 B	12	13	59.8	66.5	66.5	66.5	59.8	59.8	59.8	59.8	
Time of Day Speed Factors											
	Weekday	NonWeekday									
Off Peak	0.9	0.9									
AM	1	0.9									
MD	1	0.9									
PM	1	0.9									
Hours of Operation											
Off Peak	4	4am-7am, 7pm-8pm									
AM	2	7 am - 9 am									
MD	8	9am - 5pm									
PM	2	5pm-7pm									
Headways (min)											
	Weekday	Non-Weekday									
Off Peak	60	60									
AM	60	60									
MD	60	60									
PM	60	60									
Vehicles Required For Service											
Route	Weekday				Non-Weekday				Vehicles Required for Service	Fleet w/ Spares	
	Off Peak	AM	MD	PM	Off Peak	AM	MD	PM			
900	2	2	2	2	2	2	2	2	6	8	
901 A	1	2	2	2	1	1	1	1			
901 B	1	2	2	2	1	1	1	1			
Deployment	4	6	6	6	4	4	4	4			
Revenue Service Hours by Day-Type and Period											
Route	Weekday					Non-Weekday					
	Off Peak	AM	MD	PM	Total	Off Peak	AM	MD	PM	Total	
900	8	4	16	4	32	8	4	16	4	32	
901 A	4	4	16	4	28	4	2	8	2	16	
901 B	4	4	16	4	28	4	2	8	2	16	
Total Revenue Service Hours											
Route	Yearly RSH	Monthly	Weekday RSH	Non-weekday RSH							
900	11,680	960	32	32							
901 A	8,972	720	28	16							
901 B	8,972	720	28	16							
Grand Total	29,624	2,400	88	64							

APPENDIX PART 5: TRANSIT FACILITY PLANNING

DRAFT PRELIMINARY SPACE PROGRAM

Guam Islandwide Program Management Services
August 10, 2009

+ - [E] = Enclosed, [O] = Open/Workstation, [A] = Alcove, [C] = Canopy covered, [X] = Outdoors (exterior)

Total Vehicles	50	100	125
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Space Name	Space Standard		Space Notes				Ref.	Remarks	50 Buses			100 Buses			125 Buses		
	size	sf	qty	#	min	unit			Per	Qty	Space	Per	Qty	Space	Per	Qty	Space

SUMMARY

SUMMARY BUILDING AREAS

Area	Qty	Size	Sf	50 Buses	100 Buses	125 Buses	
ADMINISTRATION / OPERATIONS	58		5,754	112	7,713	140	8,774
MAINTENANCE	6		18,622	13	25,522	16	29,752
FUEL / WASH / SERVICE	3		8,952	5	10,153	8	10,227
OTHER BUILDING AREA	1		960	1	960	1	960
Total SUMMARY BUILDING AREAS	70		34,288	131	44,348	165	49,713

SUMMARY OUTDOOR AREAS

Area	Qty	Size	Sf	50 Buses	100 Buses	125 Buses	
AGENCY VEHICLE PARKING	50		69,800	115	138,800	145	174,340
EMPLOYEE / VISITOR PARKING			23,538		45,325		56,613
OTHER SITE AREAS			19,843		38,205		42,688
Total SUMMARY OUTDOOR AREAS	50		112,781	115	219,330	145	273,639

Total SUMMARY BUILDING AREAS					34,287		44,348		49,712
Total SUMMARY OUTDOOR AREAS					112,780		219,330		273,639
Site Circulation	100%				To be verified during design		147,067		263,675
Landscaping / Setbacks	20%				To be verified during design		29,413		52,735
Water Retention	10%				To be verified during design		14,707		28,368
TOTAL SITE AREA		square feet			Assumes everything on ground level		338,255		606,453
		acres					7.77		13.92

DRAFT PRELIMINARY SPACE PROGRAM

Guam Islandwide Program Management Services
August 10, 2009

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Total Vehicles	50	100	125
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Space Name	+	Space Standard		Space Notes				Ref.	Remarks	50 Buses			100 Buses			125 Buses		
		size	sf	qty	#	man	unit			Per	Qty	Space	Per	Qty	Space	Per	Qty	Space

BUILDING AREAS

ADMINISTRATION / OPERATIONS

ADMINISTRATION / OPERATIONS										50 Buses			100 Buses			125 Buses			
Space Name	+	Space Standard	size	sf	qty	#	man	unit	Ref.	Remarks	Per	Qty	Space	Per	Qty	Space	Per	Qty	Space
Administration Areas																			
Lobby / Waiting Area	O			120	1			each		4 people, bulletin board		1	120		1	120		1	120
Reception Counter	O			100	1			each		Adjacent to Clerk	1	1	100	1	1	100	1	1	100
Clerk	O	8 x 8		64	1	75		veh			1	1	64	2	2	128	2	2	128
General Manager	E	12 x 18		216	1			each		Small Conference Table	1	1	216	1	1	216	1	1	216
Operations Manager	E	10 x 12		120	1			each			1	1	120	1	1	120	1	1	120
Road Supervisor	O	8 x 8		64	1	50		veh			1	1	64	2	2	128	3	3	182
File Room	E			160	1			each			1	1	160	1	1	160	1	1	160
Training Storage	E			100	1			each		Adjacent to Conference / Training Room	1	1	100	1	1	100	1	1	100
Conference / Training Room	E	18 x 30		480	1			each		20-32 people	1	1	480	1	1	480	1	1	480
Copy / Work Room	E			160	1			each		Fax, Copier, cutting board, office supplies	1	1	160	1	1	160	1	1	160
Archive Storage	E					5	150	sf/veh		Could be on Mezzanine	1	1	250	1	1	500	1	1	625
Men's Restroom	E			80	1			each		For Administration Staff	1	1	80	1	1	80	1	1	80
Women's Restroom	E			80	1			each		For Administration Staff	1	1	80	1	1	80	1	1	80
Dispatch Areas																			
Dispatcher	O	8 x 8		64	1	20		veh			3	3	192	5	5	320	7	7	448
Dispatch Counter	O			100	1			each			1	1	100	1	1	100	1	1	100
Schedule / Transfer Storage	E			100	1			each		Adjacent to Dispatch Counter	1	1	100	1	1	100	1	1	100
Driver Areas																			
Driver's Room	E					8	200	sf/veh		Tables / chairs, TV	50	1	400	100	1	800	125	1	1,000
Vending / Kichenette	A			120	1			each		Vending, refrigerator, microwave, sink	1	1	120	1	1	120	1	1	120
Locker Above	A					4		sf/veh		Adjacent to Driver's Room & Restrooms	1	1	200	1	1	400	1	1	500
Wellness Room	m					3	400	sf/veh		Weights, treadmills	1	1	400	1	1	400	1	1	400
Men's Restroom / Showers	m					4	200	sf/veh		Adjacent to Locker Above	1	1	200	1	1	400	1	1	500
Women's Restroom / Showers	m					4	200	sf/veh		Adjacent to Locker Above	1	1	200	1	1	400	1	1	500
Custodial Room	m			100	1			each		Adjacent to Restrooms	1	1	100	1	1	100	1	1	100
MEP Areas																			
Telecommunications Room	m			120	1			each			1	1	120	1	1	120	1	1	120
Mechanical Room	m					1	200	sf/veh			1	1	200	1	1	200	1	1	200
Electrical Room	m					0.5	100	sf/veh			1	1	100	1	1	100	1	1	100
Subtotal													4,420			5,032			6,749
Circulation													1,328			1,780			2,025
Total ADMINISTRATION / OPERATIONS													5,748			6,812			8,774

DRAFT PRELIMINARY SPACE PROGRAM

Guam Islandwide Program Management Services
August 10, 2009

+ - [E] = Enclosed, [O] = Open/Workstation, [A] = Alcove, [C] = Canopy covered, [X] = Outdoors (exterior)

Total Vehicles	50	150	125
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Space Name	+	Space Standard		Space Notes				Ref.	Remarks	58 Buses			100 Buses			125 Buses		
		size	sf	qty	#	own	unit			Per	Qty	Space	Per	Qty	Space	Per	Qty	Space
MAINTENANCE																		
Office Areas																		
Maintenance Manager	E	10 x 12	120	1			each			1	1	120	1	1	120	1	1	120
Maintenance Planner	O	8 x 8	64	1			each			1	1	64	1	1	64	1	1	64
Clerk	O	8 x 8	64	1			each			1	1	64	1	1	64	1	1	64
File Storage	O				0.5	100	sf/veh					100			100			100
Copy / Work Area	O			100	1		each					100			100			100
Reference Library	E			200	1		each					200			200			200
Shop Spaces																		
Preventive Maintenance Bay	O	20 x 55	1,100	1/25			veh	Lift		2	2,200	4	4,400	5	5,500			
Running Repair Bay	O	20 x 55	1,100	1/50			veh	Lift		1	1,100	2	2,200	3	3,300			
Tire / Brake Bay	O	20 x 55	1,100	1/200			veh	Lift		1	1,100	1	1,100	1	1,100			
Tire Shop	O			200	1		each	Adjacent to Tire / Brake Bay		1	200	1	200	1	200			
Tire Storage	O				5		sf/veh	Adjacent to Tire / Brake Bay			250		500	1	625			
Brake Shop	O			200	1		each	Adjacent to Tire / Brake Bay			200		200	1	200			
Body Shop	A			600	1		each	Adjacent to Body Shop Bay		1	600	1	600	1	600			
Body Shop Bay	O	30 x 50	1,500	1/150			veh			1	1,500	1	1,500	1	1,500			
Paint Booth Bay	O	30 x 60	1,800	1/150			veh	In Line with Body Shop Bay		1	1,800	1	1,800	1	1,800			
Paint Mix / Storage	E			250	1		each	Adjacent to Paint Booth		1	250	1	250	1	250			
Common Work Area	A				0	200	sf/veh	Bridge Crane			300		600	1	750			
Component Rebuild Shop	A			1,000	1		each	Bridge Crane		1	1,000	1	1,000	1	1,000			
Electronics Shop	E			200	1		each			1	200	1	200	1	200			
Battery Storage	E			200	1		each			1	200	1	200	1	200			
Tool Crib	E				4	100	sf/veh			1	200	1	400	1	500			
Equipment Storage	O				5	400	sf/veh	Near Repair Bays		1	400	1	500	1	625			
Parts Stores	E				20		sf/veh			1	1,000	1	2,000	1	2,500			
Parts Counter	O			100	1		each			1	100	1	100	1	100			
Shipping / Receiving	O			500	1		each	Within Parts Stores		1	500	1	500	1	500			
Bench Stock	O			150	1		each	Near Repair Bays		1	150	1	150	1	150			
Lube / Compressor Room	E			400	1		each			1	400	1	400	1	400			
Support Spaces																		
Maintenance Lunchroom	E				4		sf/veh			5	1	200	10	400	13	1	500	
Vending / Kitchenette	A			120	1		each				120	1	120	1	120			
Men's Restroom / Shower / Lockers	E				0	300	sf/veh				300	1	600	1	750			
Women's Restroom / Shower / Lockers	E				3	200	sf/veh				200	1	300	1	375			
Custodial Room	E			100	1		each	Adjacent to Restrooms		1	100	1	100	1	100			
MEP Spaces																		
Mechanical Room	E				1	200	sf/veh			1	200	1	200	1	200			
Electrical Room	E				0.5	100	sf/veh			1	100	1	100	1	100			
Subtotal											15,518		21,268		24,793			
Circulation			20%								3,104		4,254		4,859			
Total MAINTENANCE										8	18,622	13	25,522	16	29,752			

Transit Business Plan

DRAFT PRELIMINARY SPACE PROGRAM
Guam Islandwide Program Management Services
August 18, 2009

+ - [E] = Enclosed, [O] = Open/Workstation, [A] = Above, [C] = Canopy covered, [X] = Outdoors (exterior)
Total Vehicles: 50 100 125

Space Name	+	Space Standard size		Space Notes			Remarks	30 Buses			100 Buses			125 Buses		
		sf	sq ft	qty	#	unit		Per	Qty	Space	Per	Qty	Space	Per	Qty	Space
FUEL / WASH / SERVICE																
Office	E		100	1		each	Shared Office									
Diesel Fueling Position	O	20 x 55	1,100	1/75	2	veh	houses Fueling, Vault Pull, Daily Clean, Lube									
Vault Pull Room	E		150	1		each										
Lube / Compressor Room	E		300	1		each										
Bus Wash	O	20 x 80	1,600	1/150		veh	Emulsion Washer									
Water Reclaim	A		400	1		each										
Chemical Wash Bay	E	20 x 55	1,100	1/150		veh	LT									
Chemical Wash Equipment	E		100	1		each										
Bus Detail Bay	O	20 x 50	1,000	1/75		veh										
Vacuum Equipment	E		200	1		each										
Storage Room	E			1	100	sf/veh										
MEP Spaces																
Mechanical Room	E			1	100	sf/veh										
Electrical Room	E			0.5	50	sf/veh										
Subtotal																
Circulation			20%													
Total FUEL / WASH / SERVICE																

OTHER BUILDING AREA																
Emergency Generator	E		200	1		each										
Yard Maintenance Storage	E		200	1		each										
Facilities / Bus Stop Maintenance Shop	E		400	1		each										
Subtotal																
Circulation			20%													
Total OTHER BUILDING AREA																

DRAFT PRELIMINARY SPACE PROGRAM
 Guam Islandwide Program Management Services
 August 10, 2009

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 Total Vehicles: 50 100 125

Space Name	Space Standard size	Qty	Space Notes	Ref.	50 Buses		100 Buses		125 Buses	
					Per	Qty	Per	Qty	Per	Qty

OUTDOOR AREAS

AGENCY VEHICLE PARKING

Ready Line	X	14 x 45	630	1/1	veh			100	100	63,000	125	125	78,750
Down Line	X	12 x 45	540	1/10	veh			5	5	2,700	10	10	5,400
Support Vehicles	X	10 x 30	200	1/20	veh			3	3	600	5	5	1,000
Subtotal								34,800		69,400			87,170
Circulation			100%					34,800		69,400			87,170
Total AGENCY VEHICLE PARKING								38	38	88,600	115	115	174,340

EMPLOYEE / VISITOR PARKING

Employee Parking													
Administration		10 x 20	200										
Drivers		10 x 20	200	1/1	veh			6	6	1,000	12	12	2,400
Maintenance		10 x 20	200	1/10	veh			60	60	10,000	100	100	20,000
Fuel / Wash / Service		10 x 20	200	1/25	veh			2	2	400	4	4	800
Visitor Parking		10 x 20	200	1/75	veh			1	1	200	2	2	400
Motorcycle Parking		5 x 10	50	1/50	veh			1	1	50	2	2	100
Bicycle Parking			200	1/175	veh			1	1	200	1	1	200
Subtotal								13,450		25,600			32,350
Circulation			75%					10,088		19,425			24,263
Total EMPLOYEE / VISITOR PARKING								23,538		45,325			56,613

OTHER SITE AREAS

Patio	X												
Restrooms / Recycling	X	24 x 30	720	1	each			1	1	375	1	1	750
Yard Storage	X			200	sf/veh			1	1	720	1	1	720
Tank Farm	X		2,600	1	each			1	1	10,000	1	1	20,000
Subtotal								13,095		23,470			28,659
Circulation			50%					6,548		11,735			14,329
Total OTHER SITE AREAS								19,643		35,205			42,988

Preliminary Statement of Probable Cost *

August 10, 2009

			50 BUSES	100 BUSES	125 BUSES				
ITEM	UNIT	UNIT \$	QTY	TOTAL \$	QTY	TOTAL \$	QTY	TOTAL \$	REMARKS
Guam Islandwide Program Management Services									
Sitework **	AC	\$100,000	7.77	\$776,527	13.92	\$1,362,225	17.09	\$1,708,902	
Building									
Administration / Operations	SF	\$150	5,754	\$863,070	7,712	\$1,156,740	8,774	\$1,316,055	
Maintenance	SF	\$180	18,822	\$3,351,888	25,522	\$4,583,888	29,752	\$5,355,288	
Fuel / Wash / Service	SF	\$125	8,952	\$1,119,000	10,152	\$1,269,000	10,327	\$1,278,375	
Other Building Area	SF	\$150	960	\$144,000	960	\$144,000	960	\$144,000	
Equipment / Furnishings									
Administration / Operations	SF	\$15	5,754	\$86,307	7,712	\$115,674	8,774	\$131,608	For Office Furniture, Driver's Room, etc.
Maintenance	EA		1	\$1,027,000	1	\$1,070,000	1	\$1,113,000	For Shop Equipment
Fuel / Wash / Service	EA		1	\$740,000	1	\$771,000	1	\$771,000	For Shop Equipment
Other Building Area	EA		1	\$87,000	1	\$87,000	1	\$87,000	For Shop Equipment
Subtotal				\$8,194,792		\$10,598,527		\$11,905,228	
Location Factor		21%		\$1,720,907		\$2,225,901		\$2,500,098	To account for local cost factors (this factor is actually Honolulu, Hawaii - Guam cost factor could not be located)
Escalation Factor		6%		\$504,942		\$769,526		\$884,320	To midpoint of construction (2 years)
Subtotal				\$10,510,641		\$13,564,954		\$15,289,644	
General Conditions		7%		\$735,745		\$951,647		\$1,088,978	
Overhead & Profit		10%		\$1,124,636		\$1,454,661		\$1,833,852	
Design Contingency		15%		\$1,576,597		\$2,039,244		\$2,290,447	
Subtotal				\$13,947,622		\$18,040,508		\$20,262,819	
Construction Contingency		10%		\$1,394,762		\$1,804,051		\$2,028,282	
ESTIMATED CONSTRUCTION				\$15,343,000		\$19,845,000		\$22,290,000	
Construction Management / Inspec		5%		\$767,150		\$992,250		\$1,114,500	
A / E Fees		9%		\$1,380,870		\$1,786,050		\$2,008,100	
ESTIMATED PROJECT				\$17,492,000		\$22,624,000		\$25,411,000	

* Costs Based on typical single-level Transit Operations and Maintenance Facility built on flat site with no special conditions.

** Does not include Site Acquisition, Demolition, or Remediation if required.

Projected Cost by Period

August 10, 2009

Guam Islandwide Program Management Services

		50 BUSES												
		YEAR 1				YEAR 2				YEAR 3				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	TOTALS
Design		\$276,174	\$345,218	\$483,305	\$46,020	\$46,020	\$46,020	\$46,020	\$46,020	\$46,020				\$1,380,870
Construction Management				\$95,894	\$95,894	\$95,894	\$95,894	\$95,894	\$95,894	\$191,788				\$767,150
Construction					\$3,835,750	\$1,917,875	\$1,917,875	\$1,917,875	\$1,917,875	\$3,835,750				\$15,343,000
TOTALS BY QUARTER		\$276,174	\$345,218	\$579,199	\$3,977,573	\$2,059,798	\$2,059,798	\$2,059,798	\$2,059,798	\$4,073,567	\$0	\$0	\$0	\$17,492,000

		100 BUSES												
		YEAR 1				YEAR 2				YEAR 3				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	TOTALS
Design		\$357,210	\$448,513	\$625,118	\$59,535	\$59,535	\$59,535	\$59,535	\$59,535	\$59,535				\$1,786,050
Construction Management				\$124,031	\$124,031	\$124,031	\$124,031	\$124,031	\$124,031	\$248,063				\$992,250
Construction					\$4,981,250	\$2,480,625	\$2,480,625	\$2,480,625	\$2,480,625	\$4,961,250				\$19,845,000
TOTALS BY QUARTER		\$357,210	\$448,513	\$749,149	\$5,144,816	\$2,664,191	\$2,664,191	\$2,664,191	\$2,664,191	\$5,268,848	\$0	\$0	\$0	\$22,624,000

		125 BUSES												
		YEAR 1				YEAR 2				YEAR 3				
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	TOTALS
Design		\$401,220	\$501,525	\$702,135	\$68,870	\$68,870	\$68,870	\$68,870	\$68,870	\$68,870				\$2,006,100
Construction Management				\$139,313	\$139,313	\$139,313	\$139,313	\$139,313	\$139,313	\$278,625				\$1,114,500
Construction					\$5,572,500	\$2,786,250	\$2,786,250	\$2,786,250	\$2,786,250	\$5,572,500				\$22,290,000
TOTALS BY QUARTER		\$401,220	\$501,525	\$841,448	\$5,778,683	\$2,992,433	\$2,992,433	\$2,992,433	\$2,992,433	\$5,917,965	\$0	\$0	\$0	\$25,411,000