



Jose D. Leon Guerrero Commercial Port of Guam  
Master Plan Update 2007

**Report to the Legislature  
Pursuant to 5 GCA Chapter 9 § 9301**

Prepared for  
**The Port Authority of Guam**

Revised August 3, 2009

Performed by  
**PB International, Inc.**  
In Association with BST Associates

**Jose D. Leon Guerrero Commercial Port of Guam  
Master Plan Update 2007**

**Report to the Legislature  
Pursuant to 5 GCA Chapter 9 § 9301**

Prepared for  
**The Port Authority of Guam**

**Revised August 3, 2009**

This study report was prepared under contract with the Port Authority of Guam, Government of Guam on behalf of the United States Territory of Guam

Performed by  
**PB International, Inc.**  
In Association with BST Associates

# Table of Contents

Executive Summary.....	7
Introduction .....	7
Implementation Plan .....	7
Financial Plan .....	9
Economic Impact Statement .....	10
Section 1 Introduction & Background .....	12
Section 2 Implementation Plan .....	13
2.1 Considerations for Development of the Implementation Plan .....	13
2.1.1 Critical Cargo Demand Considerations .....	13
2.1.2 Timeframes for Obtaining Environmental Clearances .....	15
2.1.3 Impact of Construction Activities on Port Operations.....	15
2.1.4 Financing and Funding .....	15
2.1.5 Phasing & Sequence of Facility Components.....	15
2.1.6 Organizational Framework for Execution.....	15
2.2 Implementation Plan Phasing.....	16
2.2.1 Phase I – Facilities Needed to Address Near-term Cargo Demands.....	19
2.2.2 Phase II – Facilities Needed to Address Long-term Cargo Demands.....	21
2.2.3 Capital Costs Estimates .....	22
2.2.4 Other Maintenance Capital Improvements .....	22
2.3 Implementation Plan Schedule.....	22
Section 3 Financial Plan .....	25
3.1 Borrowing by PAG – Up to \$54.5 million .....	25
3.1.1 PAG Borrowing Capacity.....	25
3.1.2 PAG Borrowing Terms.....	25
3.2 PMC Investment – Up to \$4.4 million .....	26
3.3 Federal Sources - \$156.9 million .....	27
3.3.1 ARRA Grant.....	27
3.3.2 Other Federal Grants & Appropriations .....	27
3.3.3 Capital Recovery Charge on Military Cargo .....	28
Section 4 Economic Impact Statement .....	29
4.1 Purpose & Need for the Master Plan Improvements.....	29
4.2 Financial Impact on PAG of Improved Operating Efficiency.....	29
4.2.1 Reduced Operating Costs.....	29
4.2.2 Increased Revenue .....	30
4.2.3 Positive Cash Flow .....	30
4.2.4 Positive Working Capital Balance.....	30

4.3	Potential Increase or Decrease in the Cost of Living on Guam.....	31
4.3.1	Need for Rate Increases .....	31
4.3.2	Impact on Cost of Living .....	31
4.4	Increase or Decrease in the Cost of Doing Business on Guam .....	33
4.4.1	Size of the Private Sector in Guam .....	34
4.4.2	Relative Size of Transport Costs.....	35
4.5	Direct & Indirect Impact on Guam Employment.....	36
4.5.1	Methodology.....	36
4.5.2	Construction Impacts .....	38
4.5.3	Annual Operations Impacts .....	38
4.6	Other Adverse or Beneficial Economic Impacts .....	41
Appendix 1	Scope of Work.....	42

## Figures

Figure 2-1	– Container & Break-bulk Cargo Forecasts .....	13
Figure 2-2	Master Plan for Jose D. Leon Guerrero Commercial Cargo Terminal – April 2008 Report .....	14
Figure 2-3	Organization for Disbursement of Federal Funding & Execution of Program .....	16
Figure 2-4	Terminal Phasing & Staging Diagram for Implementation .....	18
Figure 2-5	Master Plan CIP Capital and Maintenance & Replacement Capital Expenditures .....	22
Figure 2-6	Phase I Implementation Plan Schedule.....	24
Figure 4-1	– PAG Projected Revenue Increases for Containers and Break-bulk Cargo.....	32
Figure 4-2	– Consumer Price Index in Guam (percent).....	33
Figure 4-3	– U.S. Transportation Cost as a Percent of Purchaser Price.....	35
Figure 4-4	– Flow of Impacts .....	37
Figure 4-5	– Direct Employment from Port of Guam Operations (Number of Jobs) .....	39
Figure 4-6	Port Authority of Guam Employment.....	40

## Tables

Table 2-1	Facility Phasing Matrix as Depicted in Figure 2-4 .....	17
Table 2-2	Facility Phasing & Implementation Detail.....	20
Table 2-3	Cash Flow Requirements in 2010 Dollars .....	22
Table 3-4	Estimated CRC Rate Levels .....	28
Table 4-1	– Increases in Retail Costs per Unit .....	33
Table 4-2	– Guam Private Sector Economy (2007).....	34
Table 4-3	– Total U.S. Logistics Cost (billions of dollars in 2008).....	35
Table 4-4	– Relative Prices and Transport Costs in Guam .....	36
Table 4-5	– Construction Impacts of PAG Improvements (2010).....	38
Table 4-6	– Economic Impacts of PAG Operations .....	41



## Abbreviations

CAPEX	Capital Expenditure
CFS	Container Freight Station
CIP	Capital Improvement Program
CIS	Container Inspecting Station
DOD	Department of Defense
DPW	Department of Public Works
FY	Fiscal Year
GEDA	Guam Economic Development Authority
GPA	Guam Power Authority
GRT	Gross Revenue Tons
IRR	Internal Rate of Return
JDLG	Jose D. Leon Guerrero
JGPO	Joint Guam Program Office
IRR	Internal Rate of Return
LT	Long Ton
MARAD	Maritime Administration – Department of Transportation
MT	Metric Tons
MT	Empty Boxes
NEPA	National Environmental Policy Act
NPV	Net Present Value
OOG	Oversized (Out Of Gage) Boxes
OEA	Office of Economic Adjustment, Department of Defense

OIA	Office of Insular Affairs – Department of Interior
PAG	Port Authority of Guam
PMC	Performance Management Contract
PMT	Project Management Team
PMX	PANAMAX
PPMX	Post PANAMAX
RFP	Request for Proposals
SDDC	Military Surface Deployment and Distribution Command
ST	Short Ton
TEU	Twenty Equivalent Unit
TGS	Twenty Foot Ground Slot
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USWC	U.S. West Coast

# Executive Summary

---

## Introduction

The Port Authority of Guam (PAG or the Port) Jose D. Leon Guerrero Commercial Port Master Plan Update 2007 (Master Plan) final report was approved by the Board of Directors of the Port and was forwarded to the Governor's office in April 2008 for approval by the Governor and the Legislature of the Territory of Guam. On December 15, 2008 (PL 29-125) the Legislature awarded conditional approval of the Master Plan and asked the Port to submit the following for final legislative approval of the Master Plan:

- An Implementation Plan,
- a Financial Plan and
- an Economic Impact Statement pursuant to 5 GCA Chapter 9 § 9301

The Port facilities were designed and put into service in 1969, and have not undergone a major modernization since that time. The Port serves the needs of not only Guam but also the entire Micronesian Region for which it is a transshipment hub. Over 90% of the day-to-day goods and supplies consumed by the population in Guam and the region pass through the Port.

On February 17, 2009 an agreement was endorsed between the government of Japan and the government of the United States concerning the relocation of Marine Expeditionary Force personnel and their dependents from Okinawa to Guam. Demands for cargo movement during base construction, increased military population after construction and future organic growth in the region served by the Port are expected to put considerable demands on the Port which it cannot support in its current condition and configuration. Cargo volumes are projected to start increasing significantly by 2012. It is imperative that the Port immediately begin the facility modernization and improvements needed to meet these projected demands in an environmentally acceptable manner.

Approval by the Legislature is needed so that the Port can put in place the funding and financing mechanism for execution of the Port modernization program.

## Implementation Plan

Figure 2-4 Terminal Phasing & Staging Diagram for Implementation depicts the physical phasing and staging of facility modernization described in the Master Plan.

PHASE I		PHASE II
First Stage I-A (2010-2012)	Second Stage I-B (2011-2013)	2030/2031
Focus is on productivity and efficiency improvements with shorter lead time for permitting such as new equipment, systems and buildings, plus upland terminal modernization and new yard capacity.	Emphasis is on structural refurbishment of existing docks (F4, F5, F6) with longer lead for permit approvals, modernization of the existing terminal areas to the west, and acquisition of cranes.	Emphasis is on a new berth (F7) and additional terminal capacity to the east to meet long-term organic growth.

A detailed facility-by-facility implementation plan is set forth in Table 2-2, Facility Phasing & Implementation Detail, in Section 2. A Gantt-chart schedule for implementation of the Phase I modernization program complete with legislative, funding and financing milestones is presented in Figure 2-6, Phase I Implementation Plan Schedule, in Section 2.

The total improvement cost for the plan, in 2010 dollars, is estimated to be \$261,200,000. By phase and year, the cash flow (CF) requirements to implement the plan are:

CF BY PHASE (\$2010)	2010	2011	2012	2013	2031	TOTAL
Phase I	\$ 18,296,000	\$ 75,640,000	\$ 91,876,000	\$ 21,108,000	\$ -	\$ 206,920,000
Phase II	\$ -	\$ -	\$ -	\$ -	\$ 54,280,000	\$ 54,280,000
	\$ 18,296,000	\$ 75,640,000	\$ 91,876,000	\$ 21,108,000	\$ 54,280,000	



## Financial Plan

Phase 1, totaling \$206,920,000, will be financed and funded by a combination of PAG borrowing, private investment from a PMC, and Federal sources, specifically:

<b>BORROWING BY PAG</b>	<b>PMC INVESTMENT</b>	<b>FEDERAL SOURCES</b>
<b>Up to \$54,500,000</b>	<b>Up to \$4,400,000</b> (Maximum investment projected for future PMC proposals)	<b>\$156,920,000</b>
USDA loan/guarantee package; 20-year term, 4.725% blended interest rate; 1.6 coverage factor (1.25 by covenant + 0.35 for comfort).	Upfront investment in terminal equipment or operating system (actual investment will be based on PMC proposals & negotiations later in 2009). Borrowing by PAG can be reduced by amount invested by PMC after a PMC agreement is signed.	Federal grants & appropriations, including a \$50,000,000 ARRA grant in FY 2010, and other grants and appropriations of \$106,920,000 in FY 2012 and 2013. Any shortfall in necessary 2012/2013 Federal funding will be offset by a negotiated Capital Recovery Charge (CRC) assessed by PAG on military related cargo volumes.
Tariff increases are needed to support PAG's borrowing capacity & coverage requirements, estimated as follows: 3.4% (2010); 2.8%/yr. (2011-2020); 2.4%/yr. (2021-2030)	PMC also responsible for future terminal equipment replacement costs estimated at \$20 million (2010\$) over 20 years.	No CRC will apply if the above Federal obligation of \$156,920,000 is fulfilled. CRCs of up to \$270/container and \$8.50/ton on break-bulk military related cargo will recover the full FY 2012/2013 Federal obligation of \$106,920,000 (2010\$).

The \$156,920,000 to be supported by Federal funds is commensurate with the impact and requirements needed to support the Federal Defense Posture Realignment Initiative base relocation program in Guam. The remainder of some \$54,500,000 needed for the improvements is commensurate with the resources attributable to Guam.

PAG's contribution will not exceed \$54,500,000, which the citizens of Guam will support through tariff increases over time. This includes a previously approved USDA \$4.5 million loan for equipment replacement and a \$50 million USDA loan/guarantee package for the master plan. Upon approval of the Master Plan, PAG will seek to borrow the \$50 million amount through the USDA. This obligation will be reduced in the future by the initial investment from a PMC upon execution of a PMC agreement. The pre-application for the \$50 million USDA loan package has been submitted and approved by USDA and PAG has been asked to submit the final application documents. The Port will be submitting a grant proposal for up to \$50 million in DOT

discretionary ARRA funding for Phase I work. A final decision on award of the ARRA grant will be made by DOT in December 2009 and initial indications regarding approval are favorable. Financing and funding for Phase II will be addressed at the time those improvements are needed in the future.

## **Economic Impact Statement**

The economic impacts of the redevelopment of the Port of Guam are positive, resulting in minimal increases in costs for residents and businesses as well as increasing employment opportunities and income both during and after construction.

The Master Plan improvement program will result in numerous positive financial impacts on the Port Authority of Guam and leave PAG in a sound financial condition over the life of the project. Based on the assumptions contained in this plan, including average annual tariff increases of 2.6%, PAG's financial performance will reflect positive results in terms of:

- Lower operating costs
- Higher revenues
- Positive cash flows
- Positive working capital balance

Redevelopment of the Port will have a minimal negative impact on the cost of living in Guam.

- The projected tariff increases of 2.6% per year between 2009 and 2030 will be substantially less than the consumer price index (CPI) in Guam, which has averaged more than 6% per year during the past six years.
- The projected tariff increase will have a minimal impact on retail prices. Our analysis shows that the projected rate increases over a 20-year period would amount to a total increase of less than \$0.01 for a twelve ounce can of soda or a can of Spam over 20 years.

Redevelopment of the Port will also have a minimal negative impact on the cost of doing business in Guam.

- The cost of transportation is a relatively high percentage of the retail price of goods in Guam. For a container full of cargo of medium value (around \$100,000), the total door-to-door transport cost from suppliers in the U.S. to retailers in Guam represents approximately 8% to 14% of the retail value in Guam.
- However, PAG's port charges currently represent a minimal portion of total transport costs – only 0.1% to 1.0% of the product's retail value. The projected Port tariff escalations will increase the price of retail goods by less than 1% over a full 20 year period. This level of retail price increase will have a minimal effect on the cost of doing business in Guam.

Redevelopment of the Port will provide an economic stimulus both during and after construction.

## **Jobs & Income Impact on Guam from Construction of the Master Plan**

Construction of Phase I of the redevelopment project is estimated to cost \$206.9 million (2010\$). The impact on income and jobs throughout Guam resulting from the four-year construction of the Master Plan improvements is estimated to be:

- Approximately 419 full time jobs per year during a four year construction timeframe, mostly in the private sector.
- Approximately \$11 million per year in associated income in the Guam economy during construction,

### **Jobs & Income Impact on Guam from Ongoing Operation of the Expanded Port**

The operation of the expanded port (after construction) will generate the following impacts throughout the Guam economy, including PAG, other public sector and private sector entities:

- The number of port-driven public and private sector jobs in the Guam economy will increase from approximately 1,053 jobs at present (including jobs at PAG, Customs, private maritime companies, trucking companies, warehousing, etc.) to an average annual level of 1,377 jobs, which is an increase of 324 jobs (30.8%) over current levels. Virtually all of this job growth is attributable to the Master Plan expansion.
- Of the total port-driven jobs, the number of future jobs at PAG ranges from the current level of 350 to as many as 425, an increase of up to 75 jobs depending on the year.
- The direct jobs created by the port are “family wage” jobs with an average income of \$33,000, which is 52% higher than the average job in Guam.
- The total income generated in the Guam economy as a result of the expanded port operation is expected to increase to an average annual level of \$51.7 million, which is a 32.8% increase over current levels.

## Section 1 Introduction & Background

---

The Port Authority of Guam (PAG or the Port) Jose D. Leon Guerrero Commercial Port Master Plan Update 2007 (Master Plan) final report was approved by the Board of Directors of the Port and was forwarded to the Governor's office in April 2008 for approval by the Governor and the Legislature of the Territory of Guam. The Governor, the Honorable Felix P. Camacho approved the document on October 10, 2008 and forwarded it to the Legislature for approval. On December 15, 2008 (PL 29-125) the Legislature awarded conditional approval of the Master Plan and asked the Port to submit the following for final legislative approval of the Master Plan.

- An Implementation Plan,
- a Financial Plan and
- an Economic Impact Statement pursuant to 5 GCA Chapter 9 § 9301

5 GCA Chapter 9 § 9301 requires that any changes related to rules, regulations or fee increases are accompanied by an economic impact statement for review and approval by the Governor and the Legislature. The economic impact statement shall address:

1. The purpose and the need for the rule or regulation;
2. The financial impact of the proposed rule or regulation;
3. Any potential increase or decrease in the cost of living on Guam;
4. Any direct or indirect impact upon employment on Guam;
5. Any increase or decrease in the cost of doing business as an enterprise or industry on Guam;
6. Any adverse or beneficial economic impact which is attributable to the proposed rule or regulation.

This report presents the information requested by the Legislature. The Consultants Scope of Work that was used as the basis for development of this document is presented in Appendix 1.

## Section 2 Implementation Plan

The Implementation Plan provides the approach, framework and sequencing for overall execution of the recommendations in the Master Plan. Please refer to the report titled “Jose D. Leon Guerrero Commercial Port of Guam, Master Plan Update 2007, dated April 2008” (Master Plan Report).

The Master Plan laid out the overall port development plan that would most importantly serve the commercial waterborne cargo needs of the Territory of Guam and the Micronesian Region over the next twenty years and beyond. Figure 2-2 from the Master Plan Report is presented as a point of reference for the discussions in this report. The Master Plan Report, however, did not address or provide specific details or guidelines on how the recommendations were to be implemented and facilities sequenced for completion over time.

### 2.1 Considerations for Development of the Implementation Plan

The Implementation Plan described in this report submits a plan for executing the Master Plan recommendations and the sequencing of facility completion over time. It was developed in June 2009 using information from the Master Plan Report and updated where more recent information was available for execution of the Master Plan. Some of the key considerations in developing the Implementation Plan are discussed below.

#### 2.1.1 Critical Cargo Demand Considerations

The Master Plan developed and presented a forecast of commercial cargo needs for Guam and the region for 30 years starting from 2008. This consisted of projections due to growth in the population and economy of Guam and the Micronesian Region and the projections provided by the U.S. Military to support its base relocation and expansion programs in Guam. While refinement and updating of the cargo projections for the military is a matter of continuing discussion with the DOD, the Implementation Plan, Financial Plan and Economic Impact Statement presented in this report are based on the cargo forecast presented in the 2008 Master Plan. Figure 2-1 replicates the container and break-bulk cargo forecasts from the Master Plan Report.

**Figure 2-1 – Container & Break-bulk Cargo Forecasts**

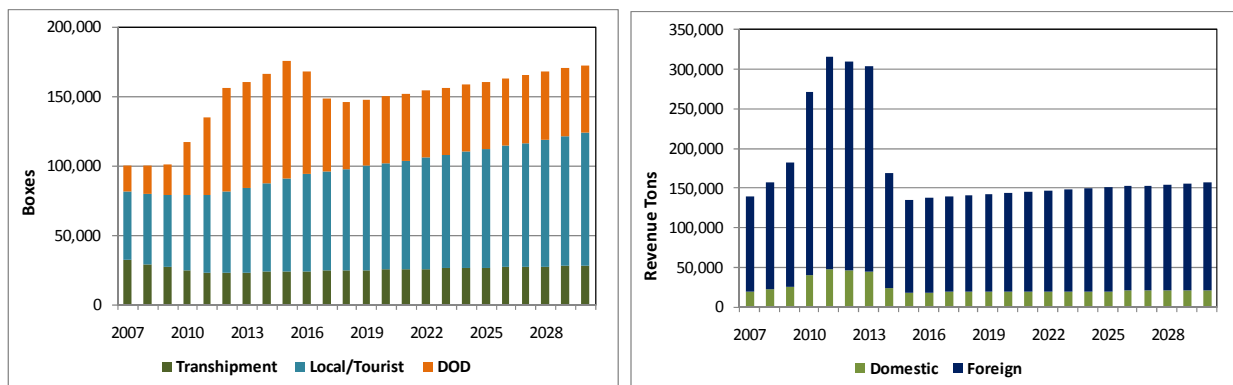
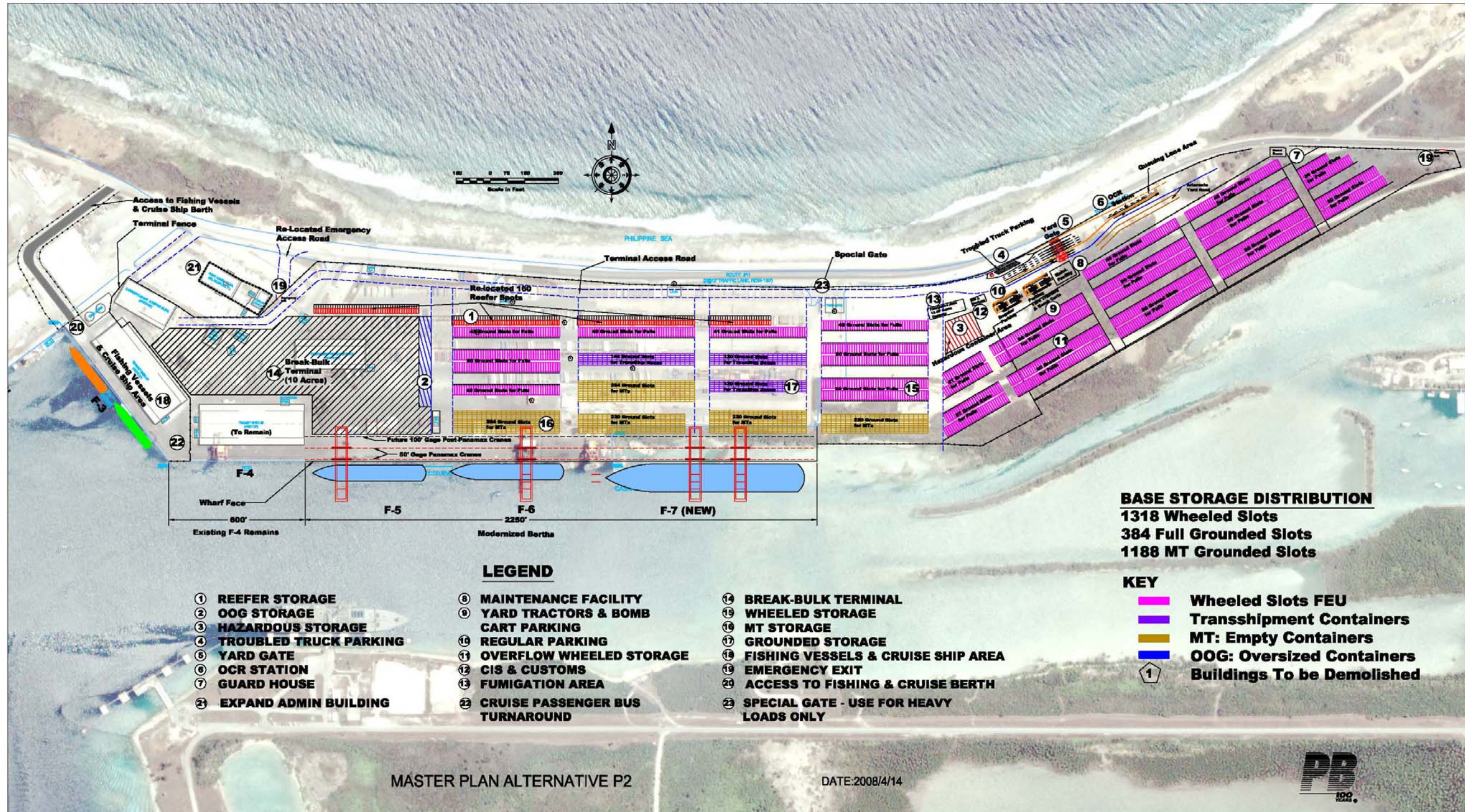




Figure 2-2 Master Plan for Jose D. Leon Guerrero Commercial Cargo Terminal – April 2008 Report





Container and break-bulk cargo are expected to increase sharply beginning in 2011 as a result of the DOD's Marine Base buildup construction. Container volumes are expected to peak in 2015 and break-bulk cargo is projected to peak in 2012.

### **2.1.2 Timeframes for Obtaining Environmental Clearances**

The program must comply not only with Guam environmental regulations but also the Federal National Environmental Policy Act (NEPA). The steps and processes necessary to comply with these regulations such as data collection and field studies, execution of Environmental Impact Assessments or Statements and obtaining clearances have considerable impact on the time needed for implementation.

The timeframes needed to obtain clearance can vary considerably depending on the type and form of facility component. For example, the time frames needed to comply with environmental regulations for construction of new facilities in the marine environment can be extensive if there is a significant impact on the existing undisturbed marine environment or habitat. On the other hand the time frames needed to obtain clearances for upgrading existing operating facility components are often less extensive.

### **2.1.3 Impact of Construction Activities on Port Operations**

Over 90% of the day-to-day goods and supplies consumed in Guam and the region pass across the docks at the Port's commercial cargo terminal. Thus cargo operations cannot be interrupted by facility construction activities. Service to the various shipping lines calling at the terminal must be provided in a timely fashion during the modernization program.

### **2.1.4 Financing and Funding**

The schedule and time needed to put in place the financing and funding cash flows that can support facility modernization and construction are also a consideration for any implementation program. The implementation plan also considered the need to phase in facility capacity over time as needed to support cargo demand and yet have access to the needed mix of financing and funding. The time needed to make the case for the justifiable basis for Federal funding was also considered.

### **2.1.5 Phasing & Sequence of Facility Components**

All of the above and other considerations must be weighed within the context that peak cargo demands for the years 2012 to 2016 (See Figure 2-1) from the Master Plan forecast remain unchanged and therefore the plan must make up more than one year of time that had elapsed since completion of the Master Plan.

The sequencing and mix of specific key facility components were selected to provide the best opportunity to bring them online in time so that the operational efficiencies to support the above referenced cargo-flows are in place. In general the Implementation Plan presented in this document was formulated to provide PAG with the efficiency and capacity improvements required at the earliest date possible to meet the cargo demands within the limited space constraints of the port.

### **2.1.6 Organizational Framework for Execution**

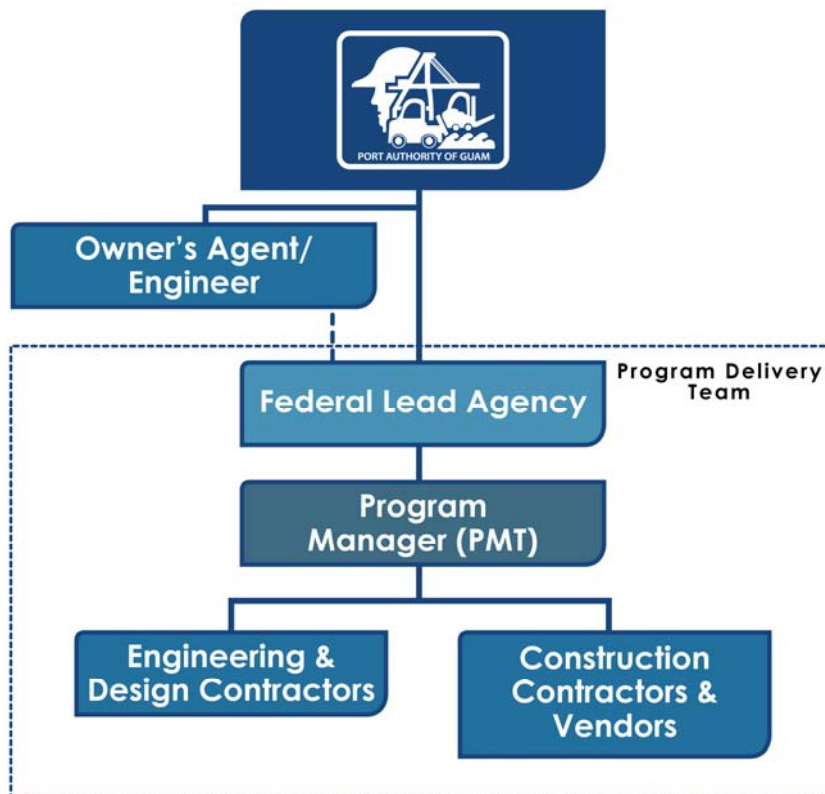
The Implementation Plan was also based on the organizational framework that PAG has put in place for execution of the program. PAG has executed a Memorandum of Understanding with

the Maritime Administration (MARAD) as the Federal Lead Agency for disbursement of Federal Funding for use in the modernization.

U.S. Public Law 110-417, Section 3512 designates the Maritime Administration (MARAD) as the lead federal agency for the Port of Guam Improvement Enterprise Program. It authorizes MARAD to receive and disburse public appropriations and grants to “provide for the planning, design, and construction of projects for the Port of Guam to improve facilities, relieve port congestion, and provide greater access to port facilities.” It also permits MARAD to administer supplementary PAG-supplied funds or other sources of financing that may be necessary to carry out the program.

The Port using its Owner’s Agent/Engineer PBI (OAE), will establish the capacity, type and form of facilities to be included in the modernization program consistent with PAG financing and funding, its objectives in serving the local community, the Micronesian region and the timelines for implementation. The OAE will take responsibility in establishing functional, operational, performance and engineering standards and benchmarks for PAG and use by MARAD and its Program Management Team (PMT). MARAD and its PMT will be responsible performing detail engineering, procurement, construction and delivery of the facilities. It is anticipated that this would apply to most of the program components delivered over the next four years.

**Figure 2-3 Organization for Disbursement of Federal Funding & Execution of Program**



## 2.2 Implementation Plan Phasing

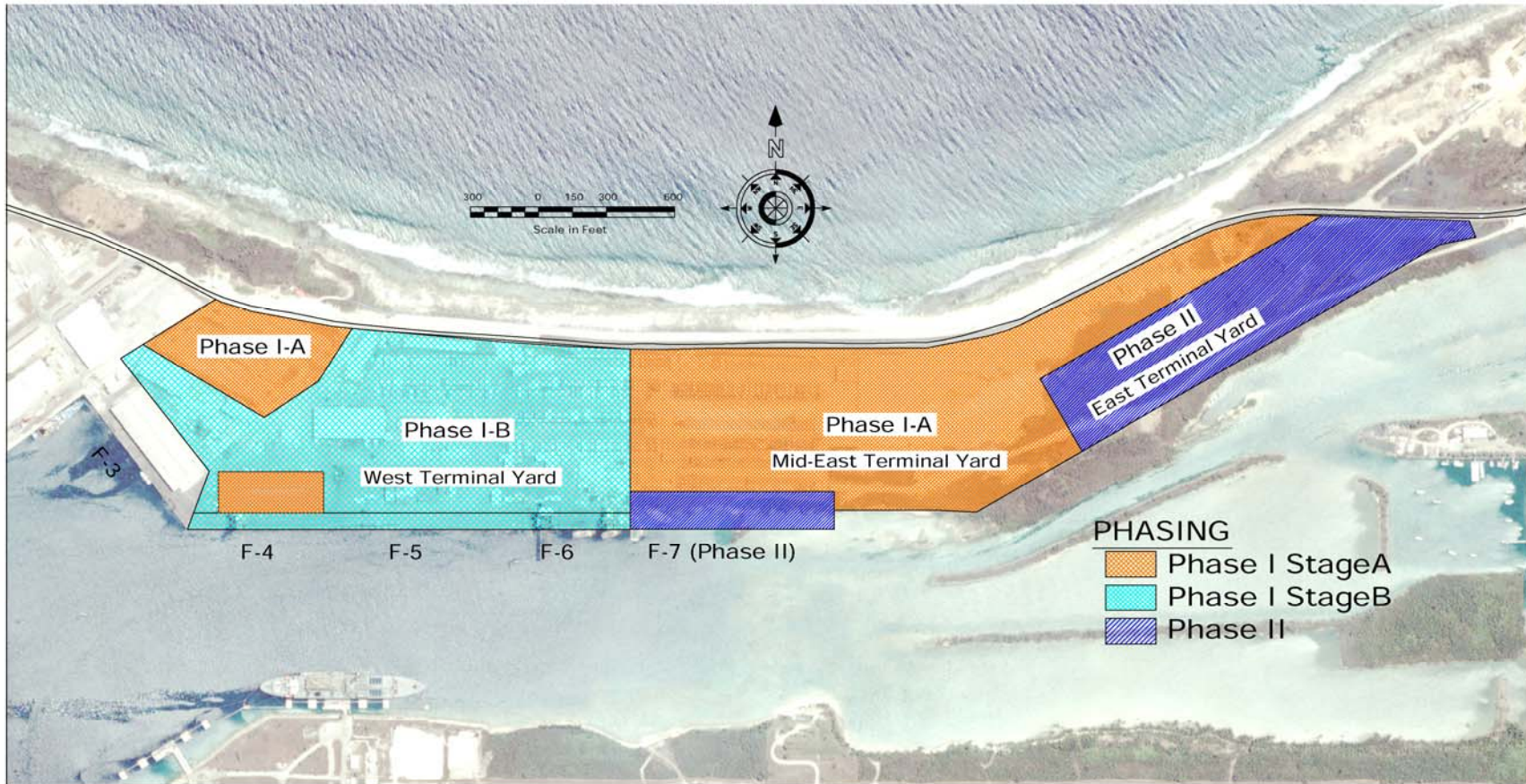
A phasing diagram for implementation of the program is presented in Figure 2-4. Based on a combination of the factors discussed in Section 2.1 the program will be implemented in two phases. The facilities needed to address the peak cargo demands during the peak cargo years

2012 to 2016 will all be completed in Phase I. As organic growth occurs over the long term the forecast shows that cargo volumes will exceed these near term demands requiring additional terminal capacity. Phase II facilities in areas designated on Figure 2-4 will be brought on line to address these future demands.

**Table 2-1 Facility Phasing Matrix as Depicted in Figure 2-4**

<b>Phasing</b>	<b>Implementation Timeframe</b>	<b>Facilities</b>
I	2010 - 2013	All facilities necessary to address the peak cargo demands during the peak cargo years 2012 to 2016
II	After 2031	Facilities needed to address continued long term organic growth for Guam and the surrounding region

Figure 2-4 Terminal Phasing & Staging Diagram for Implementation





### 2.2.1 Phase I – Facilities Needed to Address Near-term Cargo Demands

All work necessary to address the peak cargo demands between years 2012 and 2016 will be completed in Phase I. Construction work will start for this phase in 2010 and be completed in 2013. A detailed facility by facility plan for development of each major component with a year-by-year plan for implementation during Phases I and II is shown in Table 2-2.

It is anticipated that the arrangement will require significant emphasis on a grounded storage system during peak cargo demand periods. Detailed operations analyses for developing an operational plan will be performed in order to facilitate continuing operations to support the peak cargo demands during the Phase I period.

The activities and facility construction or procurement that would be performed in Phase I will include the following:

- Mobilization
- Demolition
  - Berths F-4 through F-6
  - Container Freight Station
  - Equipment Maintenance & Transit Shed #2
  - Site Demolition
- Berth Modernization
  - F-4, F-5 & F-6 Structural Rehabilitation & Modernization
- Buildings
  - Extension to Port Administration Building
  - Transit Shed #1 Refurbishment
  - Equip. Maintenance Shed Minor Refurbishment
  - New Gate & Terminal Offices
- Site-work & Paving
  - Terminal Yard Paving
- Power, Lighting & Electrical
  - Switchgear, Transformers & Generators
  - Terminal Lighting & Distribution West
- Site Utilities
  - Water, Sewers, Storm & Fire Systems
  - Fuel Line Relocation
- Security
  - Security Infrastructure
  - Security Equipment
- Cargo Handling Equipment & Systems
  - Container Cranes
  - Top-Picks
  - Side-Picks, Yard Tractors/Chassis, Break-bulk Equip.
  - Terminal Operating System
  - Gate Systems

Phase I will be completed in two stages Phase I-A and Phase I-B to address the implementation issues discussed in Section 2.1. For example upland site work and paving will be undertaken in two stages to minimize operational interruption; while construction takes place on one half of the terminal, operations can be consolidated and maintained on the other half.

**Table 2-2 Facility Phasing & Implementation Detail**

Master Plan Facility Phasing ITEM DESCRIPTION	Implementation Timeframe				
	2010	2011	2012	2013	2013/32
<b>Mobilization and Demobilization</b>	Phase I	Phase I	Phase I	Phase I	Phase II
East Terminal Yard & Buildings Berths F-4, F-5, F-6 & Remaining Facilities Berth F-7	100%	100%			100%
<b>Demolition</b>					
Berths F-4 through F-6 Container Freight Station Equipment Maintenance & Transit Shed #2 Site Demo - West Yard Site Demo - East Yard & Misc. Structures	100%	100%	100% 100% 100%		
<b>Berth F-4 to F-7 Modernization</b>					
F-4, F-5 & F-6 Modernization New Berth F-7 Extension			70%	30%	100%
<b>Buildings</b>					
Extend Port Admin Building Warehouse to Replace Transit Shed #2 Transit Shed #1 - Minor Remodel Equip. Maint. Shed Gate & Office	40% 30% 40%	60% 100% 70% 60%	70%	30%	
<b>Sitework &amp; Paving</b>					
East Terminal Yard Site Work & Paving Mid-East Terminal Yard Paving West Terminal Yard Paving		100%		100%	100%
<b>Power, Lighting &amp; Electrical</b>					
Switchgear, Transformers & Generators - Mid-East/West Switchgear, Transf. & Generators - East Terminal Yard Distribution West Terminal Yard Distribution Mid-East Terminal Yard Distribution East Terminal Yard Lighting West Terminal Yard Lighting Mid-East Terminal Yard Lighting East Terminal Yard	30%	100% 20% 70%	80%		100% 100% 100%
<b>Site Utilities</b>					
Water, Sewers, Storm & Fire Systems - West Yard Water, Sewers, Storm & Fire Systems - East Yard Water, Sewers, Storm & Fire Systems - Mid-East Yard Fuel Line Relocation - West Fuel Line Relocation - East	30%	70% 100%	90% 90%	10% 10%	100%
<b>Security</b>					
Security Infrastructure - West Yard Security Infrastructure - Mid-East Yard Security Equipment	30%	70%	90% 50%	10% 50%	
<b>Cargo Handling Equipment &amp; Systems</b>					
Container Cranes Top-Picks - Set #1 Top-Picks - Set #2 Side-Picks, Yard Tractors/Chassis, Break-bulk Equip. Terminal Operating System Gate Systems	80% 20%	20% 80% 100% 100%	100%		

**West Yard** – Facilities shown in Cyan in Figure 2-4 (Areas West of the East Edge of F-6)

**Mid-East Yard** – Facilities shown in Tan in Figure 2-4 East of F-6

**East Yard** – Facilities shown in Blue in Figure 2-4



### **Phase I-A Facilities Brought Online in 2010 & 2011**

Work during this period will primarily emphasize the upland facilities, equipment, utilities and systems necessary to quickly ramp up operating efficiencies at the terminal. This will better assure that the terminal capacities in critical bottlenecks are brought on line early in Phase I. Environmental clearances would have to be obtained to proceed with the upland work first. The staging is also designed to provide more time to complete the NEPA environmental process for in-water structural and dredging work at the existing Berths F-4, F-5 & F-6, which would be performed in Phase I-B.

The Port needs a three berth modern facility in order to handle the cargo shown on Figure 2-1. At the time the Master Plan was completed in early 2008 it was anticipated that Berths F-5, F-6 and a new F-7 could serve this purpose. F-4 was to be rehabilitated in a later timeframe. However more than one year has elapsed since the Master Plan was formulated and the work on the NEPA process for obtaining environmental clearances for the modernization is just starting. However the time frame for ramping up of cargo due to the base relocation program has not changed significantly. It is estimated that the process of obtaining the environmental clearances now for the new berth F-7 will delay achieving "Port Readiness" in time to address cargo demands. Therefore this Phase I Implementation Plan modernizes the three F-4, F-5 and F-6 berths first. These are existing operational berths and the environmental process is expected to be less lengthy than if F-7 was constructed first in order to achieve "Port Readiness".

### **Phase I-B Facilities Brought Online in Late 2011 through 2013**

Once the NEPA process for F-4, F-5 and F-6 is completed to permit in-water construction work, activities will focus on existing berth rehabilitation, the adjacent existing yard areas and other remaining items. More specific construction sequencing and staging would be performed as structural rehabilitation work progresses along the berth face (F-4, F-5 & F-6). This will be required in order to continue uninterrupted ship and crane service. Special access lanes and methods of cargo handling will be implemented during this stage since cargo terminal work space would be at a premium.

Since there is some risk of recurrence of seismic events in Guam it is important that the structural refurbishment is performed on F-4, F-5 and F-6 as soon as the environmental clearances are obtained for this in-water marine work.

## **2.2.2 Phase II – Facilities Needed to Address Long-term Cargo Demands**

Phase II facilities in areas designated on Figure 2-4 will be brought on line to address the future cargo demands due to organic growth in Guam and the region over the years. The activities to be addressed over the long term in Phase II will include the following.

- Mobilization
- New F-7 Berth Extension
- Site-work & Paving for East Terminal Yard
- Power, Lighting & Electrical for Berth F-7 & East Terminal Yard
- Site Utilities for New Facilities

It is anticipated that future assessment of likely cargo demand is assessed on a periodic basis and the timing for bringing these facilities online is based on these assessments. Current cargo projections indicate that this is likely to be after 2030.

### 2.2.3 Capital Costs Estimates

The following Table 2-3 presents the annual cash requirements by phase in 2010 dollars.

**Table 2-3 Cash Flow Requirements in 2010 Dollars**

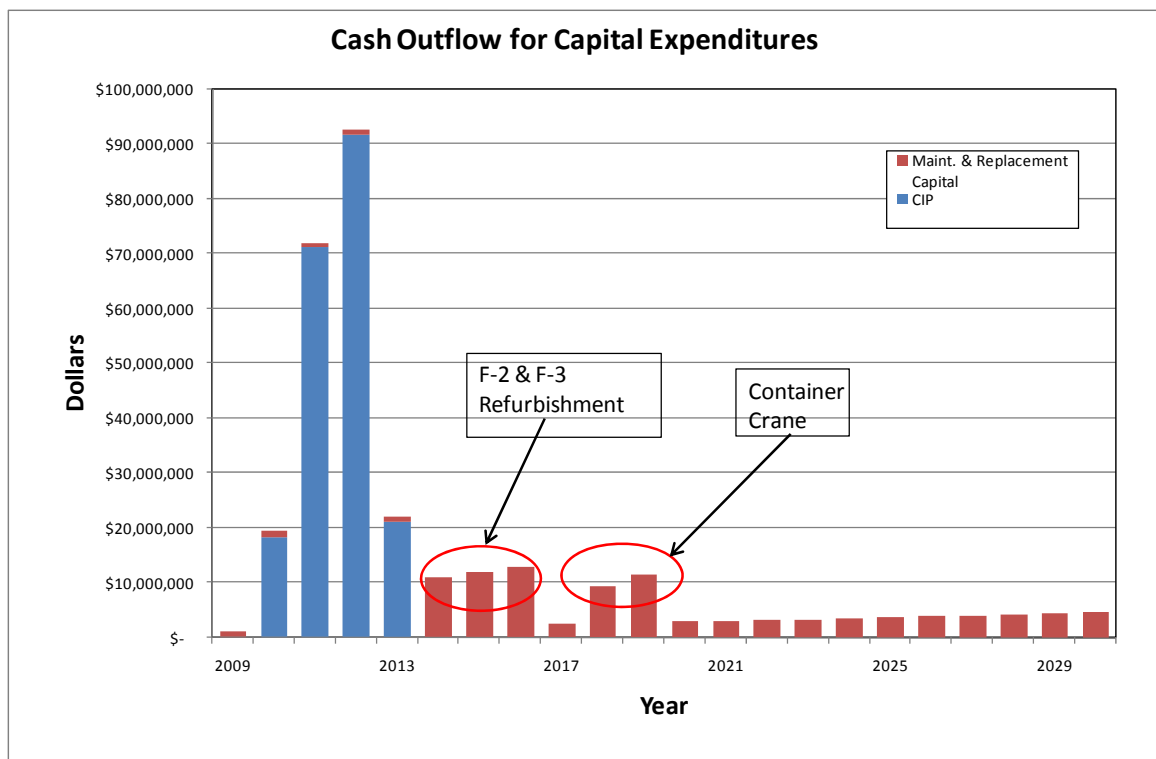
CF BY PHASE (\$2010)	2010	2011	2012	2013	2031	TOTAL
Phase I	\$ 18,296,000	\$ 75,640,000	\$ 91,876,000	\$ 21,108,000	\$ -	\$ 206,920,000
Phase II	\$ -	\$ -	\$ -	\$ -	\$ 54,280,000	\$ 54,280,000
	\$ 18,296,000	\$ 75,640,000	\$ 91,876,000	\$ 21,108,000	\$ 54,280,000	

### 2.2.4 Other Maintenance Capital Improvements

Other maintenance capital improvements have been programmed in the Financial Plan discussed in Section 3 for completion during the 20-year financial plan timeline. Figure 2-5 depicts the cash flow requirements for capital improvements including both the Master Plan improvement program and maintenance replacement capital.

The cash flow requirements for Phase I tabulated in Table 2-3, which require financing and funding as discussed in Section 3, are shown as blue bars in Figure 2-5. Downstream maintenance and replacement capital expenditures, which will be financed from PAG's free-cash flow as discussed in Section 3 are shown as maroon bars. These include capital requirements for structural refurbishment of F-2, F-3, future replacement of the Subic crane and annual general maintenance capital to maintain the Commercial Port facilities.

**Figure 2-5 Master Plan CIP Capital and Maintenance & Replacement Capital Expenditures**



## 2.3 Implementation Plan Schedule

Several concurrent processes are underway to implement and finance/fund the Master Plan, including Legislative approval of the Master Plan, loan and grant applications and approvals, securing Federal Funding, and environmental and field data collection activities. Other activities

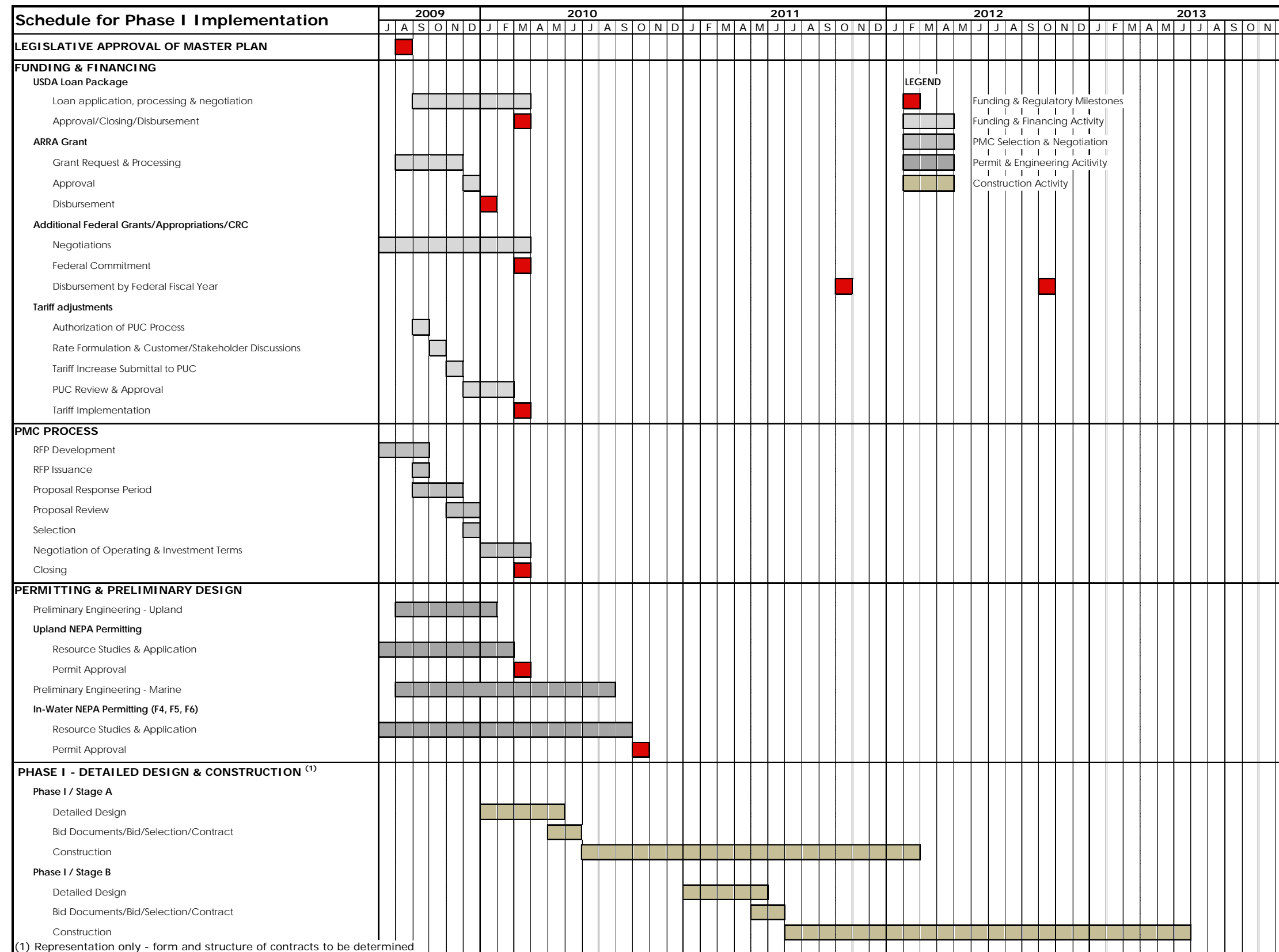
such as preliminary engineering, environmental approval process, construction contractor selection, detailed design and construction activities are imminent and are coordinated and dependent on the activities currently in progress.

Figure 2-6 illustrates the schedule for these processes and highlights the critical interrelationships between the various Master Plan implementation activities for Phase I.

Funding, financing and management deadlines between now and March 2010 are set forth under the heading "Funding & Financing Milestone". A number of these activities await legislative approval of the Master Plan in July 2009. The PMC solicitation, evaluation, selection, award and negotiation process is another set of activities identified for completion by early 2010. Preliminary engineering, environmental resource studies and permit applications related activities are currently in process or soon to be initiated by the Port. Figure 2-6 also present a generalized procurement, detailed design and construction schedule for completion of the modernization program for Guam. While the timeframe is as shown, the sequencing of the activities will be developed by MARAD and its PMT contractor later this year.



**Figure 2-6 Phase I Implementation Plan Schedule**



## Section 3 Financial Plan

---

With Legislative approval of the Master Plan, the following financing and funding<sup>1</sup> plan will be pursued for Phase I, estimated to cost \$206,920,000 (2010\$):

- Borrowing by PAG – Up to \$54.5 million
- PMC Investment – Up to \$4.4 million
- Federal Funds – \$156.9 million

### 3.1 Borrowing by PAG – Up to \$54.5 million

PAG's borrowing will include two components, a \$50 million USDA loan for Master Plan construction and a \$4.5 million USDA loan for terminal equipment that will be purchased by March 2010. Terms for the \$50 million loan are addressed in Section 3.1.2 below; terms for the \$4.5 million loan are similar to the guaranteed loan.

#### 3.1.1 PAG Borrowing Capacity

PAG's borrowing capacity is estimated to be approximately \$57.9 million under the following assumptions, including tariff rate escalations:

- New cost items that have arisen since completion of the Financial Feasibility study:
  - The new Certified Technical Professional (CTP) salary structure; the model now assumes salaries will be increased to the 50<sup>th</sup> percentile level over an extended period of time
  - Required cost contributions to the PUC for initial management audit and its reviews of PAG tariff adjustments
  - New debt service costs for the USDA terminal equipment loan recently secured by PAG
- All lease revenues from properties with leases originated by GEDA now flow to Port
- Labor cost escalation of 4.1% per year during the CTP implementation from 2008 to 2018 and 3.0% per year thereafter
- Non-labor cost escalation of 4.8% annually
- Operation by a PMC, including payment of a management fee and productivity incentives to the PMC by PAG
- Increased efficiency and productivity due to the modernized port, most notably increased crane productivity of up to 43%, depending on the carrier
- One-time staffing reassignments based on efficiencies created in maintenance and administration due to modernized facilities, equipment and systems
- Implementation of variable terminal operation workforce practices to meet day-to-day and year-to-year volume fluctuations
- Tariff increases of 3.4% in 2010, 2.8% annually from 2011 to 2020, and 2.4% annually from 2021 to 2030, for an average annual tariff escalation of 2.6% annually

#### 3.1.2 PAG Borrowing Terms

A borrowing of up to \$50 million through the USDA Community Facility Direct and Guaranteed Loan Program will be PAG's contribution to the Master Plan cost. The exact amount will depend

---

<sup>1</sup> As used in this report, "financing" refers to borrowing methods that require repayment of principal and interest and "funding" refers to grants or other sources that do not require repayment.

on the level of investment from a PMC, which will be determined by early 2010 through an RFP process. With no PMC investment, the full \$50 million borrowing will be implemented. Authority to borrow the full \$50 million amount is needed to cover the contingency that a PMC will not be able to make an upfront investment.

The anticipated loan terms are:

- \$50 million principal amount
- Direct loan at 4.5% interest rate
- Loan guarantee at commercial bank bid/negotiated interest rate (4.95% is assumed based on PAG's recent experience with the program)
- Approximately 50/50 split between the direct loan and loan guarantee (4.725% blended interest rate assumed)
- Maximum term of 40 years or the life of the assets financed
- 20-year term
- The required coverage factor for this loan package is 1.25<sup>2</sup>, however PAG plans to maintain a coverage ratio of about 1.6 (similar to the airport and GWA) to ensure a safe margin for loan repayment

To support the USDA borrowing, a program of tariff reviews and rate adjustments under the auspices of the PUC will be instituted to ensure that revenues keep pace with PAG's costs, including maintenance and replacement capital and loan payment coverage. Tariff increases of approximately 3.4% in 2010, 2.8% annually from 2011 to 2020, and 2.4% annually from 2021 to 2030 are anticipated.

### **3.2 PMC Investment – Up to \$4.4 million**

An upfront investment in Master Plan capital by a PMC operator is included in the Financial Plan. PAG's financial analysis indicates that a maximum investment of \$4.4 million may be supported by the productivity improvements anticipated. A definitive PMC investment amount will not be known until the Request for Proposal process (currently underway) is completed by early 2010; however, the following structure is assumed:

- PMC would manage the operation and be responsible for cargo operations, maintenance and other functions
- Operating cost savings from PMC efficiencies and higher productivity would be the source of PMC compensation and return on investment
- PMC compensation would be in the form of a management fee to cover fixed costs plus efficiency/productivity incentive payments
- PMC would make an upfront investment in terminal equipment or systems; a \$4.4 million investment is estimated
- PMC would also be responsible for downstream terminal equipment replacements; these investments over 20 years are estimated to total \$20.8 million (2010\$)

---

<sup>2</sup> Cash flow must be 1.25 times the loan payment.

### **3.3 Federal Sources - \$156.9 million**

The Federal contribution to the Master Plan cost under the Financial Plan will be \$156.92 million, made up from a projected \$50 million ARRA discretionary grant in 2010, and subsequent Federal grants and appropriations in FY 2012 and 2013. Any shortfall in the necessary 2012/2013 Federal funding will be offset by a negotiated Capital Recovery Charge (CRC) assessed by PAG on military related cargo volumes. Grants and appropriations provide upfront funding and are preferred; however, the CRC provides an alternative pay-as-you-go concept that is reserved for any shortfall in the necessary Federal contribution.

#### **3.3.1 ARRA Grant**

The certification for Title XII Discretionary ARRA grant has already been submitted to Department of Transportation.

- In August 2009 a formal application for a \$50 million ARRA grant will be prepared for submission in September 2009.
- It is intended that the ARRA grant and the USDA loan will be combined to form the basis for cash disbursements for the first stage (Phase I-A) of the Phase I modernization program.
- The form of evaluation, ranking and selection criteria published in the Federal Register are a good fit with emphasis on long term benefits, job creation, improving efficiency & productivity at existing facilities.
- Phase I-A stage facility components were selected with the focus of achieving efficiencies and creating jobs in order to better address the ARRA selection criteria
- More progress must be made between now and the application deadline of September 15, 2009 on environmental clearances for the Phase I-A stage. PAG has asked for assistance from MARAD which will be the Lead Agency for securing environmental clearances
- It is anticipated that that the \$50 Million loan from USDA discussed in Section 3.1.2 will be considered as the Owner's contribution to the ARRA funded project since this amount must be paid back with interest by PAG. Owner contributions are deemed to be beneficial according to the published selection criteria
- GovGuam and PAG have asked for and is receiving support for this application from the Joint Guam Program Office (JGPO), Office of Insular Affairs (OIA), USDA, MARAD and U.S. House of Representative Congresswoman Madeleine Z. Bordallo.

#### **3.3.2 Other Federal Grants & Appropriations**

The effort to secure additional Federal grants and a supplemental appropriation through DOD for FY 2012 and 2013 will continue in conjunction with JGPO, MARAD, OIA and other agencies.

- PAG and GovGuam are also initiating outreach to work with other Federal Agencies including those belonging to the DOD-EAC group of agencies.
- OEA continues to provide strong support to the program for work that falls within their policy guidelines
- JGPO has expressed a desire to work with other agencies in Washington DC in order to identify funding for the Port modernization program since the current facilities do not have the capacity to handle the large volumes of cargo during base construction and relocation of forces to Guam

- Certain improvements such as port security systems have a history of substantial Federal support through Homeland Security grant funding

### 3.3.3 Capital Recovery Charge on Military Cargo

The preferred and most likely method for Federal funding set forth in the financial plan is through grants and appropriations as discussed previously. However, PAG and GovGuam will cover any shortfall in the \$106.9 million Federal contribution (FY 2012 and 2013 for Phase I) through a Capital Recovery Charge paid by the military in return for the port capacities and efficiencies that will be provided to support the surge in military cargo. Preliminary brief discussions have taken place with military representatives on a pay-as-you-go basis through a mechanism such as a CRC.

A negotiated agreement with DOD for payment of stipulated CRC rates on stipulated cargo volumes is the preferred structure to ensure that all anticipated DOD cargo is assessed. The alternative is to assess a CRC through the tariff on cargo identified through PAG's operations as military-related cargo; this method is relatively ineffective because of the difficulties in identifying military-related cargo shipped by private firms. The estimated CRC rate levels for representative Federal funding ranges are shown in Table 3-4.

**Table 3-4 Estimated CRC Rate Levels**

Timeframe for CRC Application		Representative 2012/2013 Federal Funding & Associated CRC Amounts (2010\$)					
		Federal Funds \$106.9 Million		Federal Funds \$50 Million		Federal Funds \$0 Million	
		CRC Recovery \$0 Million		CRC Recovery \$56.9 Million		CRC Recovery \$106.9 Million	
6-Year Build-up Period	2012-2017	N/A		\$145/box	\$4.50/RT	\$270/box	\$8.50/RT
10-Years	2011-2020	N/A		\$107/box	\$3.50/RT	\$200/box	\$6.50/RT
20-Years	2011-2030	N/A		\$70/box	\$2.50/RT	\$138/box	\$4.50/RT

Note: Based on a negotiated CRC agreement. Tariff escalation does not apply to these CRC rates. These charges will not be paid for non-DOD related cargo.

## Section 4 Economic Impact Statement

---

### 4.1 Purpose & Need for the Master Plan Improvements

The Jose D. Leon Guerrero Commercial Cargo Port facilities were designed and put into service in 1969, and have not undergone a major capital improvements since that time. The Port serves the needs of not only Guam but also the entire Micronesian Region for which it is a transshipment hub. Over 90% of the day-to-day goods and supplies consumed by the population in the region pass through the Port. The Jose D. Leon Guerrero Commercial Port Master Plan Update 2007 (Master Plan) analysis showed that, due to organic growth in Guam and the Micronesian Region, the commercial port facilities are at or near capacity and in a deteriorated condition. It is imperative that the Port put in place a program for structural rehabilitation of its facilities.

In addition, on February 17, 2009 an agreement was endorsed between the government of Japan and the government of the United States concerning the relocation of Marine Expeditionary Force personnel and their dependents from Okinawa to Guam. The upcoming military base move from Okinawa to Guam as a key part of the nation's Defense Posture Realignment Initiative (DPRI) is estimated to increase Guam's population by some 22% by the year 2014. This coupled with the demands for cargo movement during base construction and future organic growth in the region served by the Port is expected to put considerable demands on the Port which it cannot support in its current condition and configuration.

The Port will be one of the first critical and immediate infrastructural components in Guam that will experience tremendous impacts from the impending surge in cargo demand. The modernization of the berths, wharves and upland areas upon completion of the engineering and environmental studies would provide the critical and immediate infrastructure improvements necessary to handle the increased cargo demands and improve cargo handling operations and efficiency. The proposed modernized port will generate revenue for the Port and the island economy as a whole. It is imperative that the Port immediately begin the facility modernization and improvements needed to meet these projected demands in an environmentally acceptable manner.

### 4.2 Financial Impact on PAG of Improved Operating Efficiency

The Master Plan improvement program will result in numerous positive financial impacts on the Port Authority of Guam and leave PAG in a sound financial condition over the life of the project. Based on the assumptions contained in this plan, PAG's operating costs, revenues, cash flows and PAG's working capital balance will all reflect positive results.

#### 4.2.1 Reduced Operating Costs

The improvements will modernize the port operations and increase efficiency and productivity, resulting in reduced operating costs. Direct operating expenses per revenue ton for all container and break-bulk cargo are projected to decrease by approximately 16% from \$6.33/revenue ton in 2009 to \$5.33 in 2030 (2009\$). Specifically, the following improvements will reduce costs:

- New terminal equipment and cranes will increase container handling speed and efficiency, thereby reducing operating costs



- A new computerized terminal operating system will computerize container inventories and better integrate operational functions, increasing accuracy and reducing costs
- The new terminal operating system will also integrate operating and financial functions, leading to computerized billing and lower administrative costs
- The new truck gate system will decrease gate processing times and reduce unit processing costs
- New terminal equipment and new facilities will be less costly to maintain

#### **4.2.2 Increased Revenue**

The Master Plan improvements will increase cargo handling capacity approximately 150% over current levels, enabling PAG to handle the anticipated DOD cargo buildup in the next seven years as well as organic cargo growth in the long term.

As a result of the DOD buildup, volumes are projected to increase dramatically from 2010 to 2016. Container volumes are projected to increase as much as 75% and break-bulk volumes are projected to increase as much as 125%. After the DOD construction buildup, container volumes will remain at least 50% higher compared with 2007. Because revenues are based directly on volumes, revenues from cargo operations are projected to increase rapidly, especially during the DOD buildup. Annual operating revenues are projected to increase 69% from approximately \$26 million in 2009 to \$44 million in 2015 (2009\$) based on volume alone (without tariff increases).

#### **4.2.3 Positive Cash Flow**

The financial modeling performed as a part of the Master Plan analysis has analyzed PAG's finances to ensure that sufficient cash flow is projected to cover:

- PAG direct and indirect operating expenses
- Maintenance and replacement capital requirements over the next 20 years, including refurbishment of Berths F2 and F3 and refurbishment/replacement of the Subic crane
- Debt service on the \$50 million USDA loan package
- A 1.6 coverage factor on debt service

Based on the operating efficiencies, volume increases and estimated tariff adjustments projected over the next 20 years, PAG's cash flow is projected to be sufficient to meet all of these obligations. The projected average annual cash flows over the 20-year period from 2011 to 2030 are:

- |   |                   |
|---|-------------------|
| ■ Cash flow after maintenance/replacement capital         | \$6.6 million/yr. |
| ■ Cash flow available for debt service after 1.6 coverage | \$4.1 million/yr. |
| ■ Nominal debt service payment on \$50 million loan       | \$3.7 million/yr. |

#### **4.2.4 Positive Working Capital Balance**

PAG's audited cash balance at the end of FY2008 was approximately \$14 million. Over the 20-year life of the project, the working capital balance will increase as a result of yearly cash flow from operations and decrease as a result of yearly maintenance/replacement capital expenditures and debt service on the USDA borrowing. In 2010 dollars, PAG's working capital balance is projected to change over the life of the project as follows:

- Increase to over \$30 million during the DOD buildup
- Decrease to about \$12 million after refurbishment of Berths F2 and F3 in 2014-2016 and refurbishment/replacement of the Subic crane in 2018-2019
- Stabilize at \$10-\$12 million in 2025-2030

While the financial projection used for the Master Plan implementation shows some depletion of working capital over time, future tariff adjustments approved under the auspices of a PUC review process can be refined to ensure that PAG's working capital balance is sufficient to meet its operating needs.

## 4.3 Potential Increase or Decrease in the Cost of Living on Guam

### 4.3.1 Need for Rate Increases

As the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) concludes, there is a need to establish increases in port charges to cover future charges, which benefits both the Port authority and port users. It benefits the Port Authority by ensuring it is financially viable and sustainable and benefits users by allowing for modest changes annually as opposed to significant increases occurring erratically over time. UNESCAP reports:<sup>3</sup>

*Ports are also increasingly required to be financially viable and sustainable. For the majority of public and even private sector ports in the region, however, price changes require government approval. The revision of port tariffs can, therefore, be a lengthy process. This results in infrequent yet substantial price increases...*

The need for annual increases in Port tariffs is required in order to cover increases in operating costs, which are documented elsewhere in this report (e.g., port labor expenses are expected to increase approximately 3.5% per year) as well as to generate cash flow to cover maintenance and replacement capital requirements and debt service on loans to improve the Port.

With the exception of selected rates such as the fuel surcharge and transshipment rates, PAG's tariff rates have not been adjusted since 1993. As a result, the current tariff rate levels do not allow the Port to generate funds for renewal and replacement. The projected rate increases allow the Port to borrow much needed funds to finance required improvements.

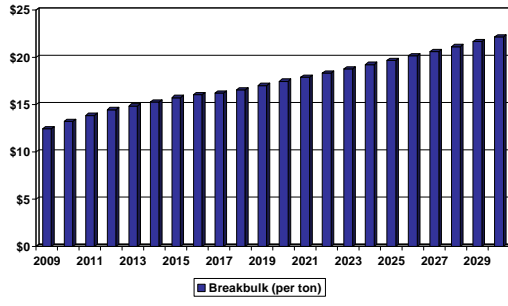
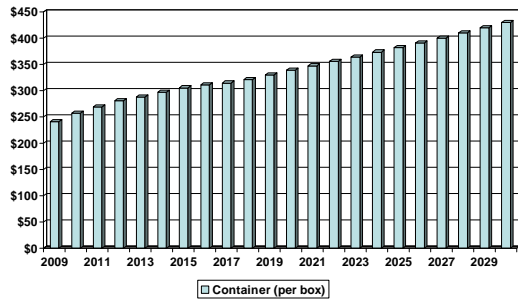
### 4.3.2 Impact on Cost of Living

This section summarizes the impacts of projected tariff increases at the Port of Guam on the price of retail products.

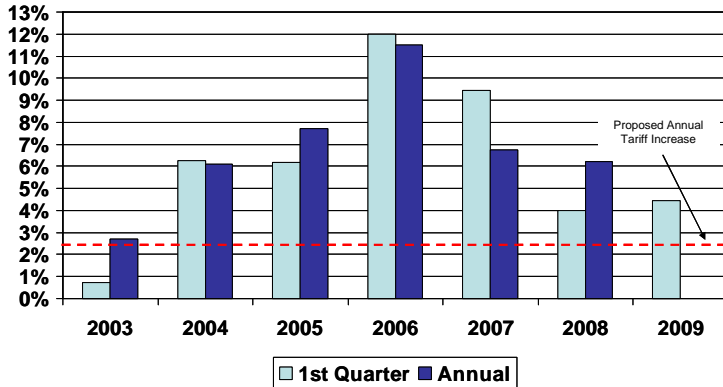
The average Port terminal revenue for containers (across all length ranges and trade routes) is approximately \$482 per loaded box in 2009. The total terminal revenue per box is projected to increase to \$860, mainly as a result of the projected 2.6% average annual tariff escalation. For break-bulk cargo, the average Port revenue (across all cargo types and trade routes) is approximately \$11.46 per ton in 2009, which is projected to increase to \$22.16. See Figure 4-1.

<sup>3</sup> Source: UNESCAP, Comparative Analysis of Port Tariffs in the ESCAP Region, 2002, page 44

**Figure 4-1 – PAG Projected Revenue Increases for Containers and Break-bulk Cargo**



**Figure 4-2 – Consumer Price Index in Guam (percent)**



The consumer price index (CPI) in Guam has averaged more than 6% per year during the past six years. As shown in Figure 4-1, this is substantially more than the projected 2.6% port tariff escalation for breakbulk and containers, respectively.

Source: Bureau of Statistics and Plans, Government of Guam

In addition, the projected tariff increase would have a minimal impact on retail prices. The 2.6% tariff adjustment would increase the port charges for a 40 foot loaded container from the U.S. West Coast by approximately \$378 over current (2009) rates. On a per unit basis, this would increase the cost per unit in 2030 over current levels by:

- Canned Beverages – increase of \$0.0073 per 12 ounce can after 20 years (Virtually no Immediate Impact)
- Canned Spam – increase of \$0.0077 per can after 20 years (Virtually no Immediate Impact)
- Lettuce – increase of \$0.0158 per head after 20 years (Virtually no Immediate Impact)
- Rice – increase of \$0.1658 per 20 pound bag after 20 years (Virtually no Immediate Impact)
- Lumber – increase of \$0.1065 per two-by-four (8 feet long) after 20 years (Virtually no Immediate Impact)

**Table 4-1 – Increases in Retail Costs per Unit**

Item	Canned Beverages (12 ounce can)	Canned Spam (12 ounce can)	Lettuce (heads)	Rice (20-pound bag)	Lumber (two-by-four, 8 feet long)
Increase in port tariff charge in 2030	\$378.00	\$378.00	\$378.00	\$378.00	\$378.00
Units per container	51,744	49,032	24,000	2,280	3,550
Cost increase per unit	\$0.0073	\$0.0077	\$0.0158	\$0.1658	\$0.1065

Source: Port of Guam, Matson Navigation, Hormel, PB Ports, BST Associates

## 4.4 Increase or Decrease in the Cost of Doing Business on Guam

This section summarizes the impacts of projected tariff increases at the Port of Guam on the cost of doing business in Guam.

#### 4.4.1 Size of the Private Sector in Guam

According to the U.S. Census Bureau<sup>4</sup>, the private sector in Guam had gross sales of \$6.2 billion in 2007, the latest year for which data is available.

**Table 4-2 – Guam Private Sector Economy (2007)**

Sector	Sales (\$1,000s)	Percent of Sales
Utilities	406,976	6.5%
Construction	578,869	9.3%
Wholesale trade	799,845	12.8%
Information	197,574	3.2%
Finance and insurance	466,024	7.5%
Real estate and rental and leasing	201,565	3.2%
Professional, scientific, and technical services	230,912	3.7%
Management of companies and enterprises	7,507	0.1%
Administrative and Support Services	189,912	3.0%
Educational services	11,656	0.2%
Health care and social assistance	245,079	3.9%
Arts, entertainment, and recreation	87,581	1.4%
Accommodation and food services	635,286	10.2%
Other services (except public administration)	180,543	2.9%
Manufacturing	166,790	2.7%
Retail trade	1,618,402	25.9%
Transportation and warehousing	219,946	3.5%
Total Private sector	6,244,465	100.0%

Source: U.S. Census Bureau

As shown in Table 2, the three largest sectors of the economy are:

- Retail trade, which accounts for 25.9% of the private economy
- Wholesale trade, which accounts for 12.8% of the private economy
- Accommodations and food services, which accounts for 10.2% of the private economy

Combined, these three sectors accounted for 48.9% of the private economy in Guam. This is not unexpected because the economy in Guam is dominated by two primary industries: tourism and the military.

The remaining sectors represent the remaining 51.1% of the private economy. Construction, finance and insurance and utilities are the next largest sectors with 9.3%, 7.5% and 6.5% respectively of private sectors sales.

In terms of employment the private sector accounts for approximately 75.4% of total civilian jobs in Guam<sup>5</sup>, with government accounting for the remaining 24.6% in 2008 (the Government of Guam accounts for 18.8%, the Federal government accounts for 5.7% and foreign governments accounted for 0.1%).

<sup>4</sup> Source: 2007 Economic Census of Guam; U.S. Census Bureau, Release Date: 5/29/2009

<sup>5</sup> Source: Guam Department of Labor's Bureau of Labor Statistics

#### 4.4.2 Relative Size of Transport Costs

The cost of transportation in Guam is significantly higher than in the mainland United States due to longer distances traveled and because market is much smaller. This section provides an estimate of the transportation costs in the U.S. and in Guam.

In the United States, the estimated cost of logistics was \$1.3 trillion, representing 9.4% of the U.S. Gross Domestic Product (GDP). Transportation costs via all modes (Intercity trucks, local trucks, railroads, water carriers, oil pipelines and air carriers as well as freight forwarders) accounted for 6.0% of the GDP.

**Table 4-3 – Total U.S. Logistics Cost (billions of dollars in 2008)**

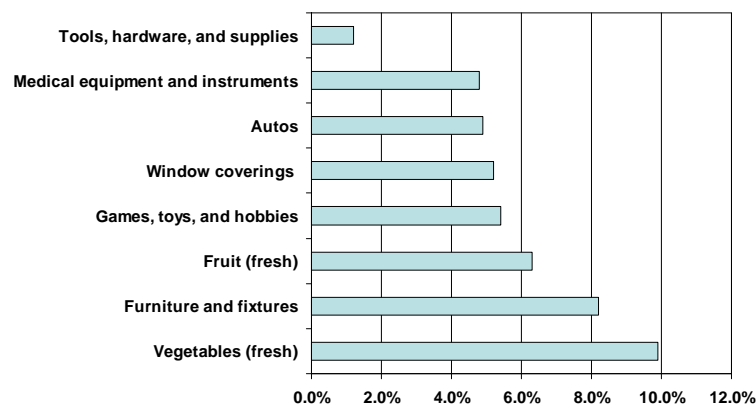
Category	2008	Percent GDP
Inventory Carrying Costs	\$421	2.9%
Transportation Costs	\$864	6.0%
Shipper related costs	\$8	0.1%
Logistics Administration	\$52	0.4%
TOTAL	\$1,345	9.4%

Source: Council of Supply Chain Management Professionals, State of Logistics Report 2008.

The percentage of the transportation cost to the purchaser price (retail price paid by consumers and businesses) varies widely across products, depending on the:

- Value of the product - the lower the product value, the higher the transport costs as a percent of retail prices,
- Cost of transportation - some products (such as chilled and frozen foods) require more expensive refrigerated containers, which results in higher transportation costs, and
- Speed of delivery – time sensitive cargoes (like perishables, apparel, electronics et al) require faster delivery to preserve product quality or meet retail store schedules, which typically increases the transportation cost, among other factors.

**Figure 4-3 – U.S. Transportation Cost as a Percent of Purchaser Price**



As an example, in the U.S.<sup>6</sup>, the cost to transport tools is approximately 1.2% of its price in stores while the cost to transport fresh vegetable is approximately 9.9% of its retail price. See Figure 3.

<sup>6</sup> Source: U.S. Benchmark Input-Output Accounts, 2002; By Ricky L. Stewart, Jessica Brede Stone, and Mary L. Streitwieser, October 2007



As indicated above, due to the distance from suppliers, transportation costs from the U.S. or Asia represent a major cost of doing business in Guam.

The typical retail value of a 40-foot container in Guam is estimated to range from approximately \$30,000 (low) to \$300,000 (high). The cost to transport cost a container from the U.S. West Coast to the business is estimated to cost between \$4,500 (low) and \$7,500 (high) in Guam.

For a cargo of medium value, the total transport cost represents approximately 8% (low) to 14% (high) of the retail value in Guam.

Port charges currently represent only 0.1% to 1.0% of the product's retail value. The additional Port charge (\$235.08 per container in 2030) will increase the retail price of retail goods by only 0.1% to 0.8%. This level of retail price increase will likely have a minimal effect on the cost of doing business in Guam.

**Table 4-4 – Relative Prices and Transport Costs in Guam**

<b>Per Container</b>	<b>Low</b>	<b>Mid</b>	<b>High</b>
Estimated retail value (typical)	\$30,000	\$100,000	\$300,000
Transportation cost (typical)			
Low	\$4,500	\$4,500	\$4,500
High	\$7,500	\$7,500	\$7,500
Transport cost % of retail value			
Low	15%	8%	2%
High	25%	14%	3%
<b>Impact of Port Charges of Retail Value</b>			
Current Port charge (40 foot container USWC)	\$300.75	\$300.75	\$300.75
Port charges as % of Retail Price	1.0%	0.3%	0.1%
Increase in Port charges per container (2030)	235.08	235.08	235.08
Impact on retail prices over 20 years (percent)	0.8%	0.2%	0.1%

Source: BST Associates, PB Ports, U.S. Department of Commerce, U.S. Census Bureau.

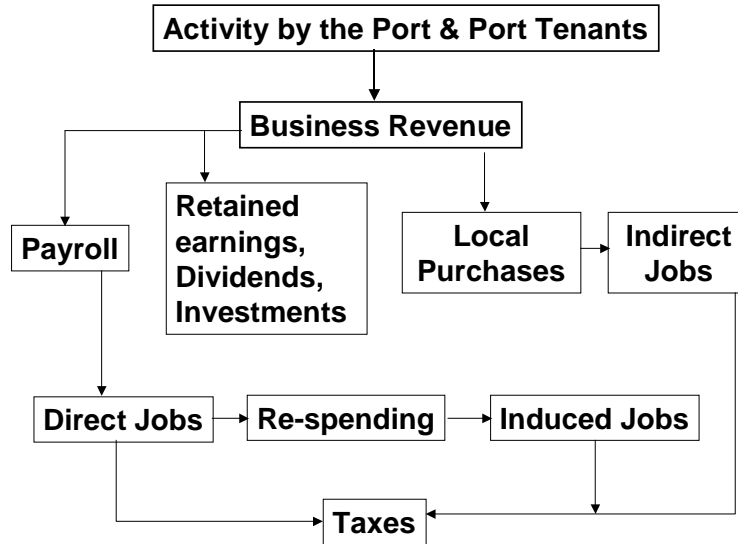
## **4.5 Direct & Indirect Impact on Guam Employment**

This section summarizes the economic impacts of planned improvements at the Port of Guam on employment and income in Guam both during construction and afterward.

### **4.5.1 Methodology**

The flow of economic activities is described in Figure 4. Economic activity generated by the Port and its tenants creates business revenues, which in turn, creates spending on payrolls for people working directly for the firm, retained earnings/dividends/investments and local purchases of supplies, materials, and outside labor. The local purchases by firms create indirect jobs. Payroll for direct employees creates additional expenditures, which creates induced jobs.

**Figure 4-4 – Flow of Impacts**



BST Associates prepared an economic impact model tailored to Guam using the following data sources: U.S. Census Bureau Economic Census of Guam (2007) and the Guam Department of Labor (2008) in order to identify the direct impacts from construction and operations. Key variables included:

- Revenue/sales by type of business,
- Payroll/income as a percentage of sales,
- Employment and average wage rates.

The process for estimating total economic impacts included evaluations of other economic impact studies conducted in Guam and at several port authorities. Sources included:

- Final Environmental Impact Statement Establishment and Operation of an Intelligence, Surveillance, Reconnaissance, and Strike Capability Andersen Air Force Base, 2006
- Guam Tourism Economic Impact Study by Global Insight, May 2007,
- Economic Contribution Study A.B. Won Pat Airport, Guam, by Jacobs Consultancy June 2007
- Guam Power Authority Presentation to Standard & Poor's June 6, 2007
- Economic Impact reports for the U.S. ports of Seattle, Tacoma, Oakland, and the Australian ports of Mackay, Gladstone and Sydney.

Economic impacts include direct, indirect and induced effects. These are defined as:

- Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the spending.
- Secondary effects include both indirect and induced effects. These result from circulation of the initial spending through the local economy and are captured by the multipliers.
- Indirect impacts refer to expenditures by businesses on outside goods and services.

- Induced impacts refer to purchases based on the employment earnings from direct and indirect economic activities. As wages are paid out, workers' families spend their income on a wide array of goods and services, much of which are supplied by the local economy.
- Total impacts incorporate the sum of direct, indirect, and induced impacts.

It is important to note that these effects are limited for any region because of spending "leakages" at each round of inter-industry and household purchases. That is, the goods and services required at each stage are partly purchased from outside the study area, thus reducing the total supplies provided locally.

#### 4.5.2 Construction Impacts

This section provides an estimate of construction-related economic impacts. It should be emphasized that these impacts occur during actual construction, and end after construction is completed.

As documented elsewhere in this report, the first and second phases of the construction project at the Port of Guam are expected to cost \$206.9 million in 2010\$, and will be accomplished between 2010 and 2013.

During the course of construction (2010 through 2013) the project will generate direct impacts of:

- Income - \$40.1 million in total or approximately \$10.0 million per year during construction,
- Employment – 1,366 full time equivalent workers (FTEs) in total or approximately 342 FTEs per year during construction.

Including direct, indirect and induced impacts, the project will generate total impacts of:

- Income - \$45.8 million in total or approximately \$11.4 million per year during construction,
- Employment – 1,675 jobs in total or approximately 419 FTEs per year during construction.

Details are provided in Table 4-5.

**Table 4-5 – Construction Impacts of PAG Improvements (2010)**

Item	Direct Impacts	Total impacts	Multiplier
Sales	206,920,000	248,264,000	1.20
Wages/income			
Total for all years 2010 through 2013	40,102,000	45,794,000	1.14
Annual (Per Year)	10,025,500	11,448,500	1.14
Employment			
Total for all years 2010 through 2013	1,366	1,675	1.23
Annual (Per Year)	342	419	1.23

#### 4.5.3 Annual Operations Impacts

After construction is completed, the Port will be able to handle more cargo than before, which creates additional economic impacts in Guam.

In the development of the Financial Plan for the Port of Guam, PB Ports developed a detailed model of Port terminal-related activities, including:

- Stevedoring (unloading cargo from the ships)
- Terminal operations
- Equipment maintenance and repair
- Terminal management
- Terminal security
- Port management and administration, among other activities

BST Associates estimated the number of jobs associated with other cargo-related activities, including:

- Vessel activities such as bunkers, stores, tugs, etc.
- Government of Guam activities (Customs and Immigration)
- Truck transportation to/from the Port
- Warehousing and storage

As shown in Figure 4-5, jobs are created by the vessel/cargo related activities, Government (Customs, Immigration et al) and trucking/warehousing. This includes both public and private sector jobs. The peak occurring in the period 2011 to 2016 is related to construction activity. As construction is completed, the number of jobs decreases slightly and then grows steadily in response to continued population and economic activity. It should also be noted that the number of jobs created by port activities increases significantly from current operations throughout the study period.

**Figure 4-5 – Direct Employment from Port of Guam Operations (Number of Jobs)**

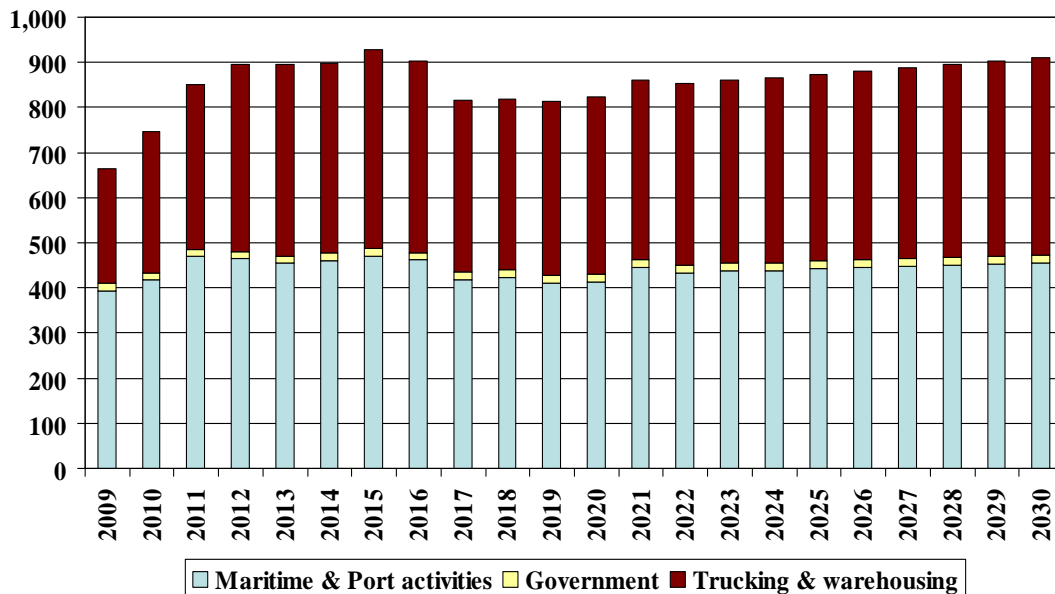


Table 4-6 summarizes the economic impacts from operations at the Port of Guam by comparing existing levels of activity with the average level of activity experienced during the study period.



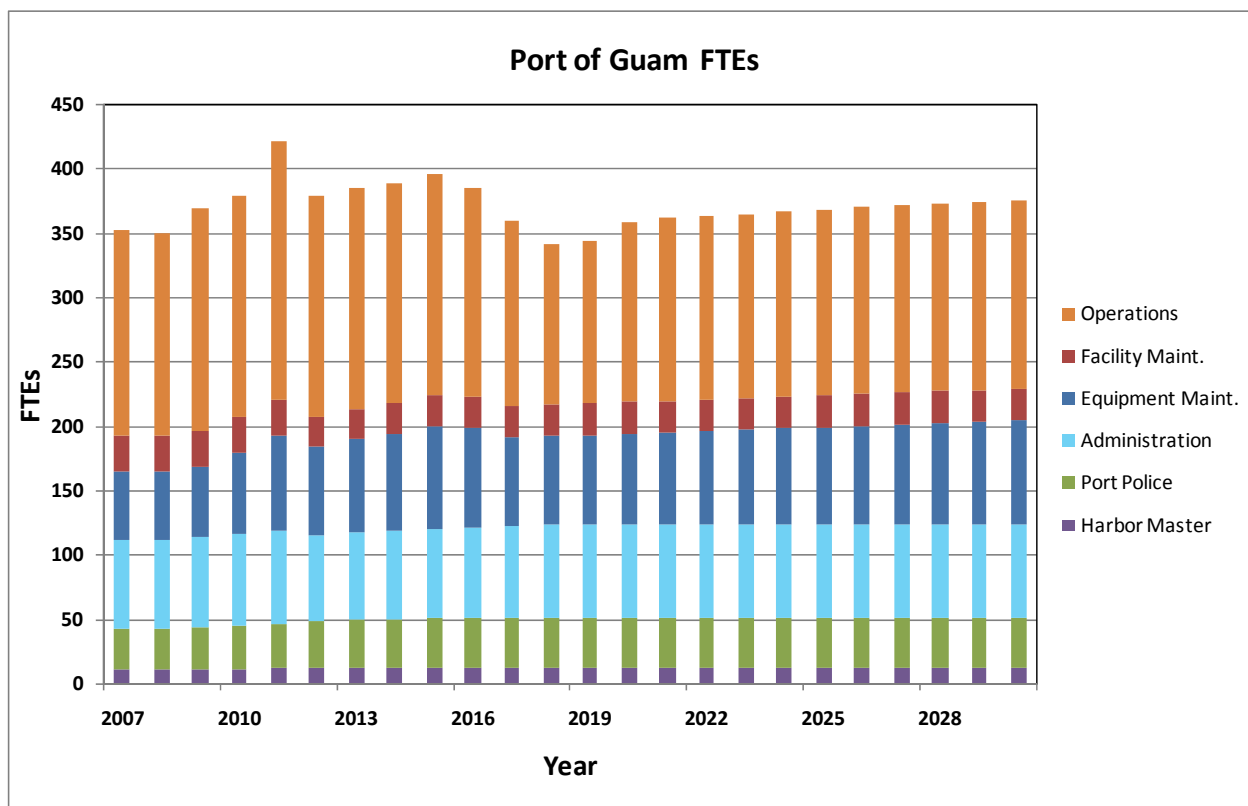
Direct revenues associated with the activities by the Port of Guam (charges for cargo handling) and other private firms engaged in the Port-related supply chain (tugs, warehousemen, truckers etc) were estimated at \$53.0 million in 2009. During the average year from 2009 to 2030, inflation adjusted revenues<sup>7</sup> are estimated at \$74.8 million or \$23.1 million more than in 2008. This is 44.8% increase over existing operations.

With respect to employment:

- Direct employment is expected to increase from approximately 655 jobs at present to 857 jobs in the average year (2009-2030) resulting in an increase of 201 jobs on average, which is a 30.8% increase.
- Total employment is expected to increase from approximately 1,053 jobs at present to 1,377 jobs in the average year (2009-2030) resulting in an increase of 324 jobs on average, which is a 30.8% increase.

Figure 4-6 presents projections of the breakdown of direct employment by the Port. The jobs are included in the light blue bars depicted in Figure 4-5 for “Maritime & Port Activities”. It provides detail projections of employment for Operations, Facility Maintenance, Equipment Maintenance and Administration over time.

**Figure 4-6 Port Authority of Guam Employment**



<sup>7</sup> An inflation factor of 3.0% per year was used throughout the study period (2009 to 2030)

With respect to income:

- Direct income is expected to increase from approximately \$21.6 million at present to \$28.6 million in the average year (2009-2030) resulting in an increase of \$7.1 million on average, which is a 32.8% increase.
- The average wage in Port-related activities is \$32,930, which is approximately 52% higher than the average wage in Guam.
- Total income is expected to increase from approximately \$39.0 million at present to \$51.7 million in the average year (2009-2030) resulting in an increase of \$12.6 million on average, which is a 32.8% increase.

**Table 4-6 – Economic Impacts of PAG Operations**

<b>Economic Impacts</b>	<b>Existing (2008) \$Mil</b>	<b>Average Year (2009-2030) \$Mil</b>	<b>Additional Revenues \$Mil</b>	<b>% Increase</b>
Revenues (millions)				
Direct	\$51.6	\$74.8	\$23.1	44.8%
Employment				
Direct	654.9	856.7	201.8	30.8%
Total	1,052.6	1,376.9	324.3	30.8%
Income (millions)				
Direct	\$21.6	\$28.6	\$7.1	32.8%
Total	\$39.0	\$51.7	\$12.8	32.8%

Source: BST Associates, PB Ports, various sources.

## 4.6 Other Adverse or Beneficial Economic Impacts

The redevelopment of the Port of Guam will facilitate development of several projects by the Department of Defense (DOD). This includes the construction valued at approximately \$15 billion and introduction of approximately 12,510 new active duty personnel and 11,450 dependents. This will generate substantially greater economic impacts for the citizens of Guam. These impacts were not quantified as a part of this analysis. The Port of Guam has been identified "a choke point in the flow of material and equipment for this DOD build-up on Guam.<sup>8</sup>" If the proposed Port improvements are not made, the Port will not have the capacity to support the approximate \$15 million DOD program. Thus, completion of the Port improvements will enable creation of anticipated tens of thousands of construction and permanent jobs associated with the DOD program. Estimating the economic impacts of the DOD program was not included in the scope of this analysis.

<sup>8</sup> Source: General Bice, Joint Guam Program Office, Guam Industry Forum 2007

# Appendix 1    Scope of Work

---

This Appendix describes the Consultant's Scope of Work for performing this master plan update.

## Port Authority of Guam (PAG)

### Owners Agent/Engineer Consultant Agreement

#### Master Plan Approval Documents

#### Scope of Services

##### Introduction

PAG wishes to apply for a low interest loan which is potentially available through a USDA program in order to fund the Port Improvement Program. A blending of two or more types of loan programs to support funding up to a \$50 Million in loans with average rates of 4% to 4.5% with long terms would be available under recently passed Federal legislation. However in order for PAG to apply for and execute this loan must obtain approval from the legislature for the Port Master Plan completed in 2008. The legislature requires the following documents from PAG in order to consider approval of the Master Plan. Accordingly, PAG requested the OAE to submit this proposal to prepare the following documents.

- High Level Implementation Plan
- A Financial Plan
- An Economic Impact Statement

These documents would have to be prepared in draft from within 30 days of receiving a notice to proceed from PAG. This would be followed by refinement and adjustment by PAG and key stakeholders and will be then be followed by presentations to key legislators. Accordingly the OAE proposes to perform the following work activities.

##### High Level Implementation Plan

The OAE is currently working on an implementation plan under Task Order 1. However this detailed Implementation Plan is dependent on a number of parallel field and preliminary design development activities that are not expected to be completed for several weeks.

##### Purpose

This task fulfills one of three requirements necessary for the Legislature of Guam to approve the Port Authority of Guam's Master Plan expansion and apply for a \$50 million USDA loan to partially finance the expansion. In addition to the Master Plan itself, a financial plan, an implementation plan and an economic impact statement are needed for legislative action. The work performed under this task will provide an interim implementation plan based on a high-level analysis using assumptions based on the information currently available to OAE.

##### Assumptions

The implementation plan will be prepared using the following assumptions:

- Expansion area to the east of the terminal can be permitted in a reasonable time frame without a PAG directed EIA or EIS process.
- A categorical exclusion can be obtained for modernization of the wharves F-4, F-5 and F-6.
- Construction of F-7 would be deferred.
- Cargo forecast as prepared in the 2008 Master Plan would be assumed.
- It would be assumed that ship service can be performed using the above berth arrangement for the master plan based cargo forecast.

TO No. 8 Master Plan Approval Documents

2

## Port Authority of Guam (PAG)

### Owners Agent/Engineer Consultant Agreement

- Other facility items and capital cost estimates would be as described in the master plan.

#### Specific Tasks

Individual subtasks for this element include:

- Startup – Review of the existing master plan documents and agree on assumptions for implementation based on discussions with PAG.
- Develop a brief schedule based on the most current information and assumptions.
- Modify Master Plan a cost estimate.
- Report – Prepare a brief draft report and a layout drawing documenting the essential elements of the implementation plan; review the plan with PAG; prepare a final report.

#### A Financial Plan

##### Purpose

This task fulfills one of three requirements necessary for the Legislature of Guam to approve the Port Authority of Guam's Master Plan expansion and apply for a \$50 million USDA loan to partially finance the expansion. In addition to the Master Plan itself, a financial plan, an implementation plan and an economic impact statement are needed for legislative action. The work performed under this task will provide a financial plan including a specific financing/funding plan for the Master Plan expansion; specific operating assumptions including operating cost measures and tariff surcharges/increases; and an analysis of the long-term financial outlook for PAG under the proposed development, financing, funding and operating approach.

##### Assumptions

The financial plan will be prepared using the financial model developed for the Financial Feasibility Study (FFS) completed in 2008. The plan will be based on the following assumptions:

- Financial model calibrated to PAG's 2007 actual financial results (not updated to 2008 actuals).
- Cargo forecast based that in the 2008 FFS (not updated based on the most recent DOD estimates).
- \$195 million Master Plan capital improvement program (CIP), modified to reflect known, assumed or anticipated changes since its completion, such as time-deferred development of Berth F7 if applicable and revised crane assumptions based on the Matson/Horizon cranes.
- Financing/funding of the program to come from a \$50 million USDA loan with a maximum 40-year term and 4% to 4.5% annual interest rate with the balance from Federal grants and/or supplemental appropriations.
- Implementation of an across-the-board construction surcharge on all cargo during the CIP construction period if directed by PAG.
- Long-term tariff increases as need to maintain PAG cash flow after maintenance and replacement capital requirements.
- Other assumptions as those previously modeled in the FFS to be discussed and directed by PAG upon commencement of work.

TO No. 8 Master Plan Approval Documents

3



## Port Authority of Guam (PAG)

### Owners Agent/Engineer Consultant Agreement

#### Specific Tasks

Individual subtasks for this element include:

- Startup – Review of the existing FFS and financial model; identification of key issues for review with PAG, such as staffing, PMC and crane assumptions; review with PAG.
- Model Revision/Reprogramming – Revise and reprogram the FFS model to address extension of the analysis time frame to new terms as provided by USDA loan financing; revise crane acquisition assumptions; revise grounded/wheeled operating assumptions as needed; incorporate an across-the-board construction tariff surcharge if directed by PAG; revise PMC assumptions as directed; verify or modify other model assumptions and input variables as needed.
- Scenario Analysis & Plan Definition – Develop and analyze the scenario with the assumptions as directed by PAG.
- Report – Prepare a brief draft report documenting the essential elements of the PAG Master Plan Financial Plan; review the plan with PAG; prepare a final report.

#### Economic Impact Assessment

##### Purpose

This task fulfills one of three requirements necessary for the Legislature of Guam to approve the Port Authority of Guam's Master Plan expansion and apply for a \$50 million USDA loan to partially finance the expansion. In addition to the Master Plan itself, a financial plan, an implementation plan and an **economic impact statement** are needed for legislative action.

5 GCA Chapter 9 § 9301 requires that any changes related to rules, regulations or fee increases are required to be accompanied by an economic impact statement at the time they are submitted for review and approval by the Governor and the Legislature. The economic impact statement will address:

- The purpose and the need for the rule or regulation;
- The financial impact of the proposed rule or regulation;
- Any potential increase or decrease in the cost of living on Guam;
- Any direct or indirect impact upon employment on Guam;
- Any increase or decrease in the cost of doing business as an enterprise or industry on Guam;
- Any adverse or beneficial economic impact which is attributable to the proposed rule or regulation.

##### Methodology/Assumptions

The economic impact assessment will be based on the following methodology and assumptions:

- The purpose and need for the proposed rule or regulation will be described in this study. (Item 1 above)
- The financial impact of the proposed project will be evaluated during the financial plan update, which is being undertaken in conjunction with this economic impact assessment. The financial results will determine the rate increases by commodity handling group during and after construction. (Item 2)

TO No. 8 Master Plan Approval Documents

4

## Port Authority of Guam (PAG)

### Owners Agent/Engineer Consultant Agreement

- The potential increase or decrease in the cost of living on Guam will be evaluated based upon the impact of potential tariff increases on retail prices in Guam. It will build on the analysis of specific products evaluated in the Master Plan, which included an assessment of potential retail price increases caused by assumed tariff increases for the following products: canned beverages, canned spam, lettuce, rice and lumber. This task will include an assessment of total estimated cost increases for the average consumer in Guam. (Item 3)
- The economic impact will also assess the potential impact on the cost of doing business in Guam. This will include an assessment of potential tariff increases on typical business-related expenditures in Guam for selected types and sizes of businesses. (Item 5)
- The proposed project will enable additional cargo volumes to occur in Guam than would not be possible without the improvements. This study will estimate the direct and indirect impact on employment as a result of the port development project. The number of employees at the terminal will come from the updated financial model. The other associated transportation-related employment impacts will be estimated based upon a review of trucking, distribution and other related sectors. The employment impacts will be presented separately for construction buildup and post-construction periods. Multiplier effects (indirect and induced effects) will be estimated based on the recent economic impact study for the airport (Item 4)
- The economic impact assessment will also evaluate all other. Positive and negative impacts associated with the port development project (Item 6).

#### Specific Tasks

Individual subtasks for this element include:

- Startup – Review of the existing studies; identification of key issues for review with PAG, such as tariff increases; review with PAG.
- Model Development – Prepare a spreadsheet model that estimates economic impacts on the cost of living for consumers and businesses as well as an estimate of direct and indirect employment associated with the project during and after construction.
- Report – Prepare a brief draft report documenting the essential elements of the PAG Economic Impact Assessment; review the results with PAG; prepare a final report.
- One trip for presentations to PAG and legislative representatives is included in this proposal

#### Time Frame

Draft report to be completed within 45 days of Notice to Proceed; final report within 10 days of receipt of all comments from PAG.

END OF REPORT