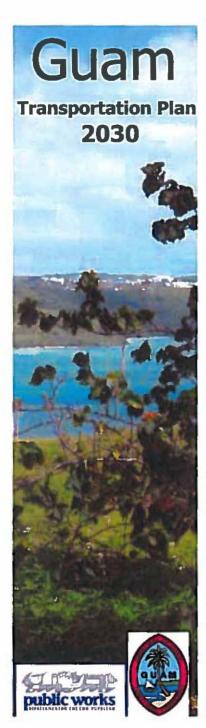


# Infrastructure Presentation on the Guam Community Buildup

As of February 26, 2008



## **Agenda**

- 1. Introduction (L. Perez)
  - Overall Outline of the Presentation, Appendices & Anticipated Next Steps
  - Original Plan & Achievements-to-Date
  - The Holistic-Integrated-Cumulative Plan & Next Steps for the Buildup
- 2. Technical Presentation on the 2030 GTP (D. McDaniel & L. Gibson)
  - Overall Goal & Objective
  - Statistical Impacts w/ & w/o Military
  - Identification of Haul Roads & Congestions Thereof
  - Asset Management for Holistic Integration of Infrastructure
  - Projected Costs, Funding Needs & Opportunities
- 3. Technical Presentation on Utilities & Community Buildup (S. Sanchez)
  - Statistics & Proposed Provisions / SPEs for Power, Water & Wastewater
  - Funding Via GOJ, Federal Subsidies, DOD Customer Base, Etc.
- 4. Technical Presentation on Solid Waste for the Community Buildup (L.Perez)
  - 1st Proposal: GIF Representation
  - 2nd Proposal: Orote "Dump", Naval Magazine MSWLF, GovGuam MSWLF
  - Business Sense: Compressed Timelines, Shared Costs, Implement Green, USEPA & USDOJ Support
- 5. Summary & Conclusion (L. Perez)
  - Guam is a Willing Partner
  - The Way Forward



### **Coordination Between Agencies**

- Interagency Working Group
  - To identify areas of concern relative to the impacts of the military buildup on the civilian population
  - To identify opportunities to make this a "Community Buildup" and mitigate adverse or unintended consequences
  - To gain support of Federal Agencies,
     Congress, JGPO and DoD in making this buildup successful for all.



# Interagency Working Group Progress to Date

- First Meeting August 2, 2007
   The Working Group was tasked to:
  - Identify infrastructure requirements
  - Collaboration between Government of Guam and federal agencies
  - Exhaust all funding possibilities for additional funds
  - Shortfall in funding to be addressed by DoD



# **Interagency Working Group Progress to Date**

- Second Meeting November 19, 2007
  - Infrastructure Working Group lead changed twice
  - No Infrastructure Working Group meetings convened to date



## We Are Requesting...

- Active Participation in the process
  - Interagency Working Group Co-Chair recognition and authority
- Regular and proactive discussion on funding opportunities
  - Teleconferencing between parties on a bi-weekly basis
  - Joint submission of information through budget process or to JGPO-DoD for support on funding
- Effective use of Quarterly Interagency Working Group Meetings
- Stronger relationships going forward



## We Are Requesting... (con't)

- Identify Federal & local funding opportunities based on this presentation and handouts
- Consider all opportunities with a holistic, integrated, and cumulative approach... "Get in, get out and stay out."
- The most expert advice and assistance possible from federal agencies throughout the process



# Transportation Infrastructure is the 1st Step

- Haul Roads, DARs infrastructure must be in place before the military build up begins
  - Our roads are the conduit for the buildup
  - Existing roads are already taxed
- Limited existing funding source is being maximized (FHWA)
- Projected funding needs are only being considered for normal organic growth
- 2030 Guam Transportation Plan (GTP) is underway and all efforts are being made to plan with and without the buildup



## **Planning Efforts To Date** 2030 Guam Transportation Plan

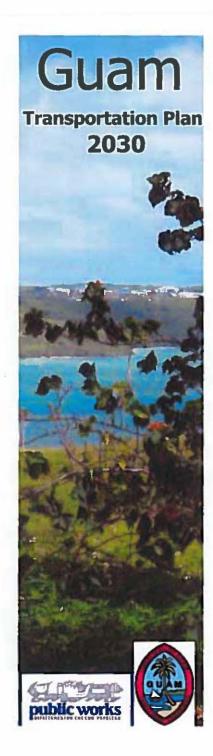
#### MISSION STATEMENT

It is the Mission of the Guam Department of Public Works to provide a safe, efficient and sustainable transportation system for residents, visitors, and military personnel that supports economic diversification, resource conservation, and exceptional quality of life.

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## 2030 GTP Goals & Objectives

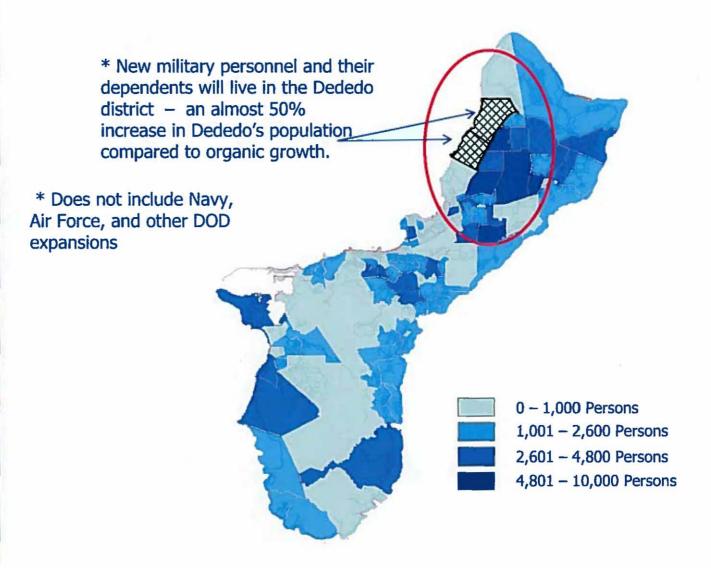
- 1. Integrated Transportation and Land Use
- 2. Safety
- 3. Accessibility, Mobility & Intermodal Connectivity
- 4. System and Services Efficiency
- 5. Environmental & Resource Conservation

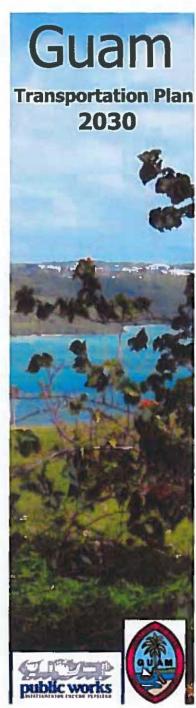


## 2030 GTP Goals & Objectives

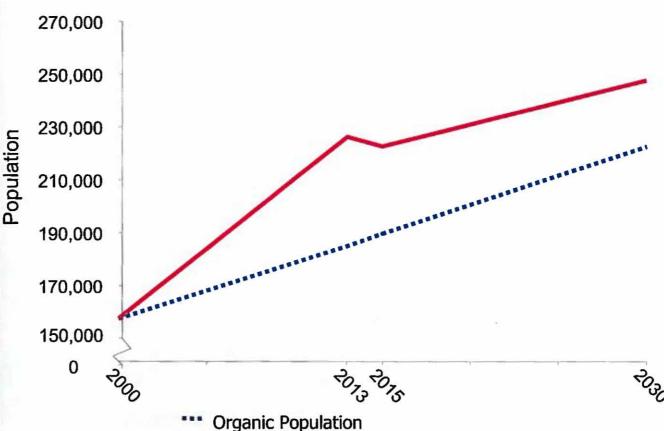
- 6. Economic Diversification
- 7. Communication & Collaboration
- 8. Program and Project Funding
- 9. Title VI Civil Rights/Environmental Justice
- 10. System Preservation
- 11. System Security

## **2030 Population Distribution**





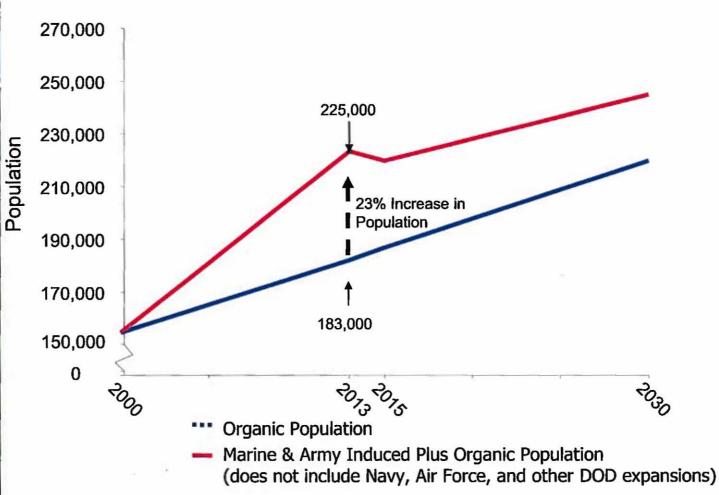
### **POPULATION COMPARISON**



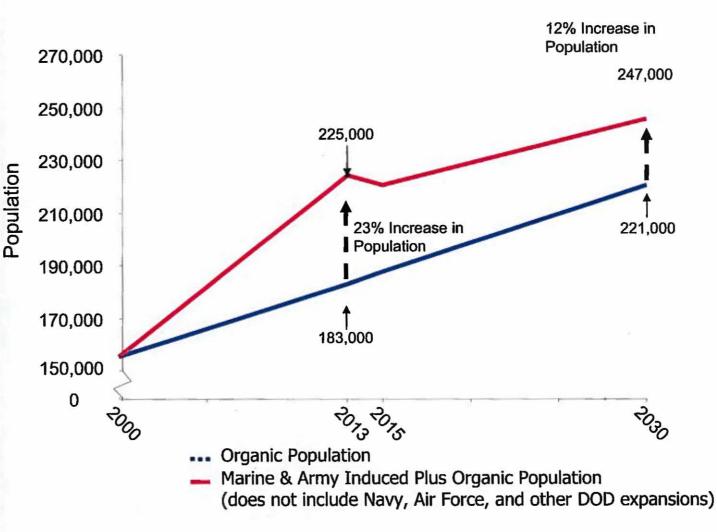
Marine & Army Induced Plus Organic Population

(does not include Navy, Air Force, and other DOD expansions)

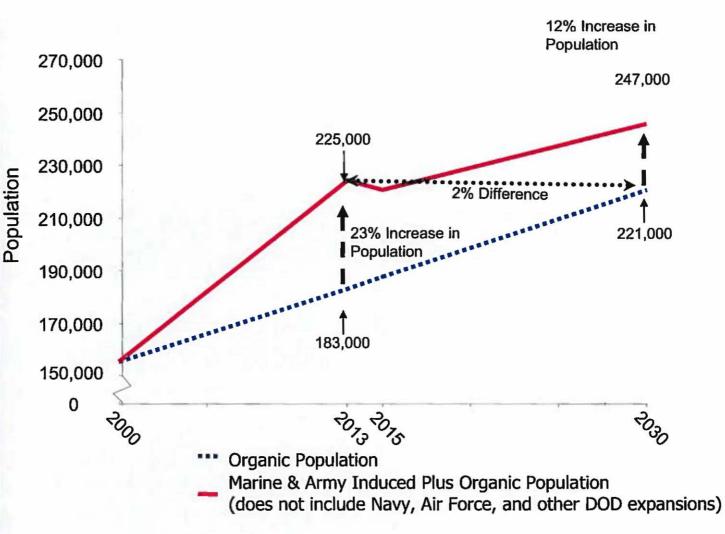
#### **POPULATION COMPARISON**



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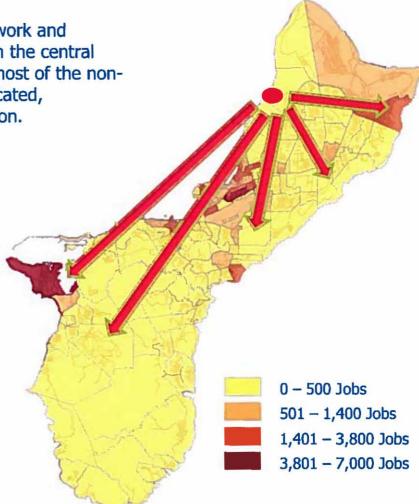




2030 Employment Distribution

\* Troop movements for work and training will travel through the central part of the island where most of the non-military employment is located, increasing traffic congestion.

\* This work and training distribution reflects 100% on base housing as provided by NavFacPac and does not include any additional housing for any military other than the Marines

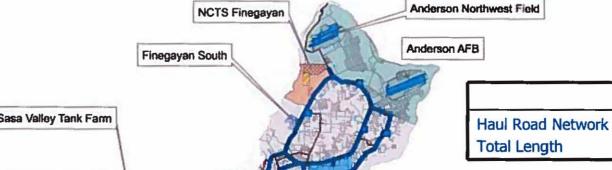


## Guam

### **Haul Road Network**

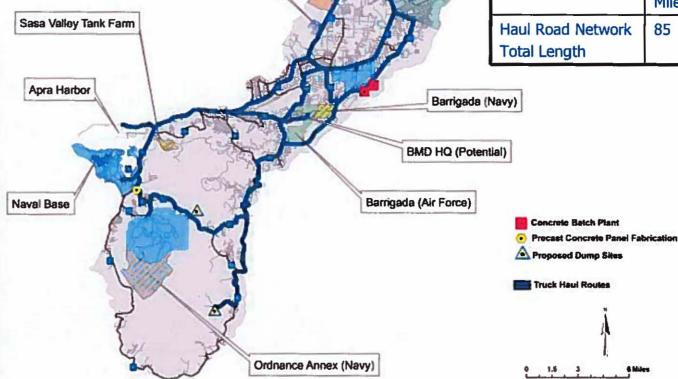
**Transportation Plan** 2030





Miles

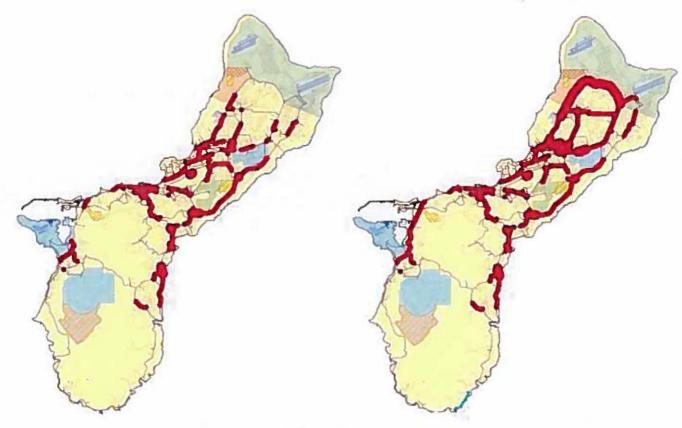
85



#### **Travel Demand Model Results**

2030 Congestion Resulting from Organic Growth

2030 Congestion Resulting from the Military Build Up

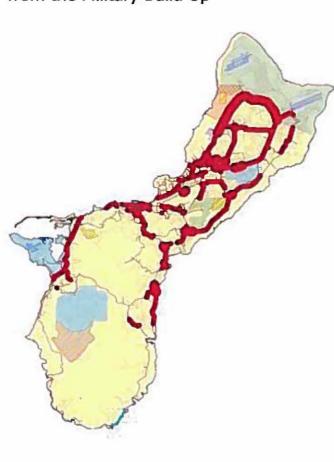


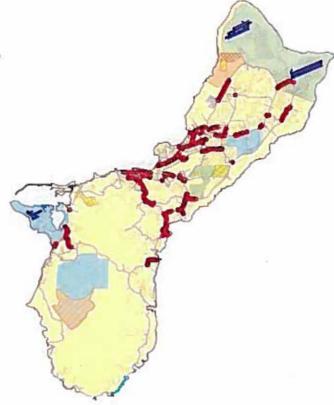
44% Increase in Congestion

#### **Travel Demand Model Results**

2030 Congestion Resulting from the Military Build Up

2030 Congestion with Improved Haul Roads





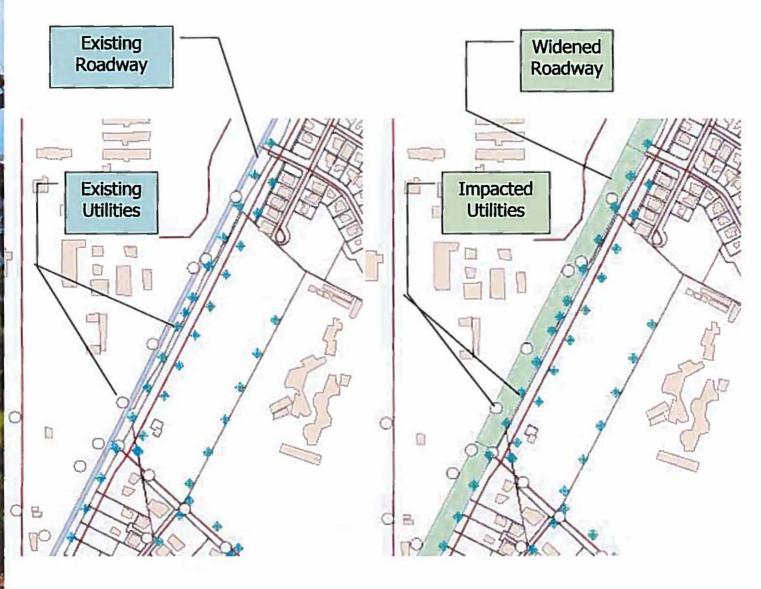
55% decrease in congestion by military buildup in 2030.

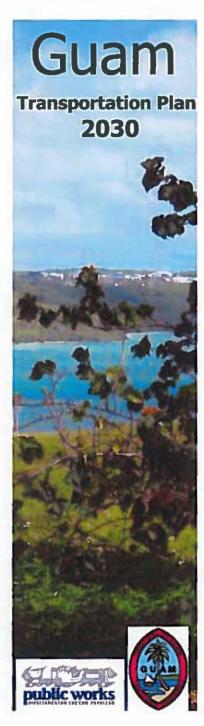


# Identification & Cost Estimation of Haul Road Impacts

- Asset Mapping utilized to capture & quantify potential impacts
- GIS based data collected for Haul Road network
- Data collected for roadways, water, sewer, power, telecommunications
- Identification of impacts to assets due to congestion mitigation
- Calculation of costs of impacts based on unit costs per type of asset.
- The costs for utility impacts are only for the impacts due to roadway reconstruction & widening. Costs for the utilities' increased capacity due to the military growth are included in the appendices.

## **Identification of Impacts**





## **Estimation Assumptions**

 Loading for pavement design purposes assumes no loadings greater than current design truck loading.

 Pavement reconstruction is estimated for all identified Haul Roads due to increased and more frequent heavy truck loading.

 Bridge replacement has been estimated for the bridges on the "Haul Routes" due to required widening and reconstruction due to the increased frequency of heavy truck loading

 Traffic signal improvements will be required at military installations and along the "Haul Roads"

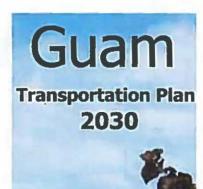
 Intersection improvements will be required due to widening of "Haul Roads"

Refinement of assumptions with dialogue

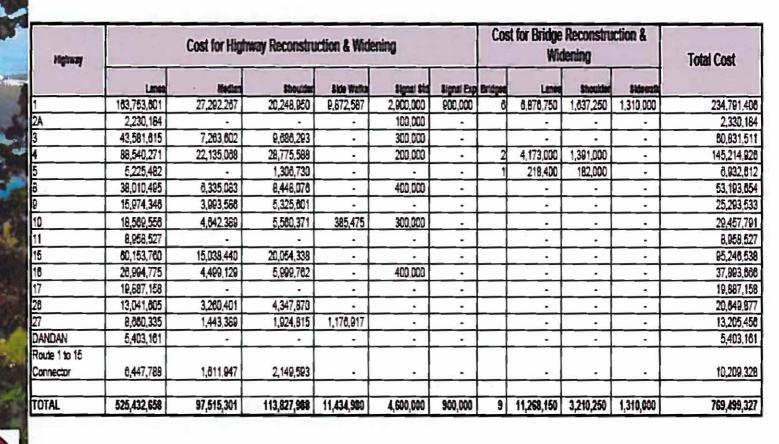


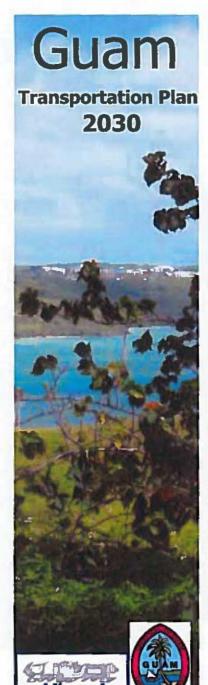
# Haul Roads Cost Impact Summary

Highway	DPW Road & Bridge Reconstruction & Widening	GWA	GTA	GPA	Totals	
1	234,791,406	47,739,460	1,153,226	11,788,894	295,472,987	
2A	2,330,184	0	234,895	10,321	2,575,401	
3	60,831,511	9,406,458	1,533,359	2,224,719	73,996,046	
4	145,214,926	13,613,944	3,039,873	1,364,596	163,233,340	
5	6,932,612	1,986,123	550,074	222,475	9,691,284	
8	53,193,654	13,887,598	1,335,860	1,918,546	70,335,658	
9	25,293,533	6,706,253	843,994	529,954	33,373,733	
10	29,457,791	8,593,732	979,153	1,036,234	40,066,909	
11	8,958,527	6,698,874	686,136	106,315	16,449,852	
15	95,246,538	12,460,602	3,175,584	2,125,600	113,008,324	
16	37,893,666	6,400,156	950,389	1,262,978	46,507,188	
17	19,887,158	4,547,903	2,099,788	191,264	26,726,112	
26	20,649,877	4,389,876	688,030	810,079	26,537,863	
27	13,205,456	4,466,699	304,593	522,001	18,498,750	
DANDAN	5,403,161	292,284	0		5,695,446	
Route 1 to 15 Connector	10,209,328	0	0		10,209,328	
Totals	769,499,327	141,189,962	17,574,955	24,113,976	952,378,220	
Planning Level Factor @ 25%	192,374,832	35,297,490	4,393,739	6,028,494	238,094,555	
Subtotal (\$2008)	961,874,159	176,487,452	21,968,694	30,142,470	1,190,472,775	
Total with Escalation to Mid-	4 000 000 045	000 077 077	00.400.000	50 740 000	0.000 114 000	
Point Const.	1,682,323,915	308,677,657	38,423,383	52,719,368	2,082,144,323	



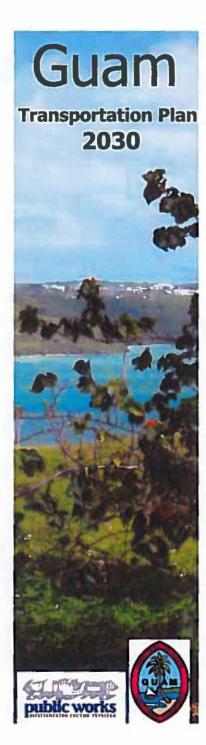
# Haul Roads DPW Roadway & Bridge Costs





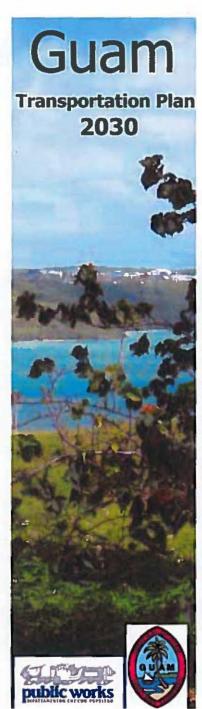
# Haul Roads GWA Water & Sewer Costs

Highway	Sewer Line	Replacement	Water Line	Replacement	Man Hole		
	Length Feet	Replacement Cost	Length Feet	Replacement Cost	Man Holes	Total Adjustment Cost	Total Costs
1	112,927	33,877,964	131,990	13,198,997	265	662500	47,739,460
2A	-	-	-	-	0	0	
3	17,670	5,300,923	40,005	4,000,535	42	105000	9,406,458
4	16,739	5,021,802	84,546	8,454,642	55	137500	13,613,944
5	5,409	1,622,814	3,233	323,310	16	40000	1,986,123
8	34,193	10,258,013	34,221	3,422,084	83	207500	13,887,598
9	11,561	3,468,342	31,354	3,135,411	41	102500	6,706,253
10	25,024	7,507,346	9,389	938,885	59	147500	8,593,732
11	21,573	6,471,761	2,271	227,114	0	0	6,698,874
15	3,150	945,047	114,856	11,485,556	12	30000	12,460,602
16	12,898	3,869,295	23,934	2,393,360	55	137500	6,400,156
17	2,266	679,710	38,607	3,860,693	3	7500	4,547,903
26	6,404	1,921,092	24,413	2,441,284	11	27500	4,389,876
27	12,564	3,769,213	6,350	634,986	25	62500	4,466,699
DANDAN	-14	-	2,923	292,284	0	0	292,284
Route 1 to 15 Connector	II 12	0 0 0-	_0,1,4	0-	0	0	-
TOTAL	282,378	84,713,321	548,091	54,809,141	667	1667500	141,189,962



# Haul Roads GTA Telecommunication Costs

Route	Length	Unit Cost Per Mile	Cost
1	20.99	54,931	1,153,226
2A	0.86	273,847	234,895
3	5.59	274,432	1,533,359
4	11.07	274,666	3,039,873
5	2.01	273,696	550,074
8	4.87	274,127	1,335,860
9	3.07	274,738	843,994
10	3.57	274,190	979,153
11	2.50	274,334	686,136
15	11.57	274,514	3,175,584
16	3.46	274,610	950,389
17	7.65	274,521	2,099,788
26	2.51	274,334	688,030
27	1.11	274,334	304,593
DANDAN			
Route 1 to 15			
TOTAL	80.83		17,574,955

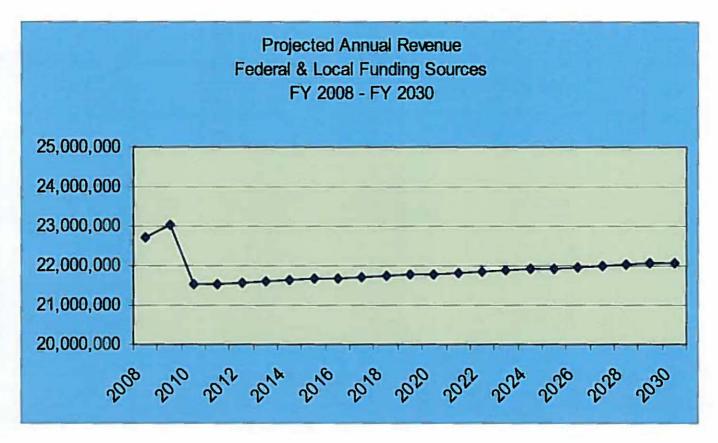


# Haul Roads GPA Power Costs

Highway	Poles	Pole Replacement	Pole Removal	Secondary Config	Transmission Config	Transformer	Transmission Wire	Secondary Wire	Secondary	Removal of Transmission Wire	Total Route Cost
1	1,173	7,407,948	469,200	228,400	561,600	138,603	621,997	1,194,473	595,875	569,625	11,788,894
2A	1	7,112	400	200	600			958	525	525	10,321
3	262	1,562,386	104,800	26,600	72,600	8,439	171,110	125,747	69,300	83,475	2,224,719
4	165	798,844	66,000	35,200	31,800	75,331		237,031	91,875	28,350	1,364,596
5	25	169,752	10,000	2,000	5,400	7,942		18,432	4,725	4,200	222,475
8	209	1,271,603	83,600	27,000	70,200	33,420	113,587	182,427	69,825	66,675	1,918,546
9	51	348,446	20,400	3,400	27,600	13,801	71,583	12,123	8,400	24,150	529,954
10	95	612,148	38,000	25,000	38,400	25,440		189,526	65,625	42,000	1,036,234
11	14	56,626	5,600	4,600		7,419		19,456	12,075	525	106,315
15	223	1,204,302	89,200	41,400	66,000	62,345	178,539	315,065	108,675	59,850	2,125,600
16	124	801,684	49,600	29,000	60,000	31,893		162,052	74,025	54,600	1,262,978
17	27	99,036	10,800	5,600	1,800	24,196		33,530	14,700	1,575	191,264
26	75	452,313	30,000	23,200	37,200	27,778		146,588	59,850	33,075	810,079
27	64	383,826	25,600	5,200	27,000	3,452	3,150	33,284	13,650	26,775	522,001
	2,508	15,176,026	1,003,200	456,800	1,000,200	460,059	1,159,966	2,670,693	1,189,125	995,400	24,113,976

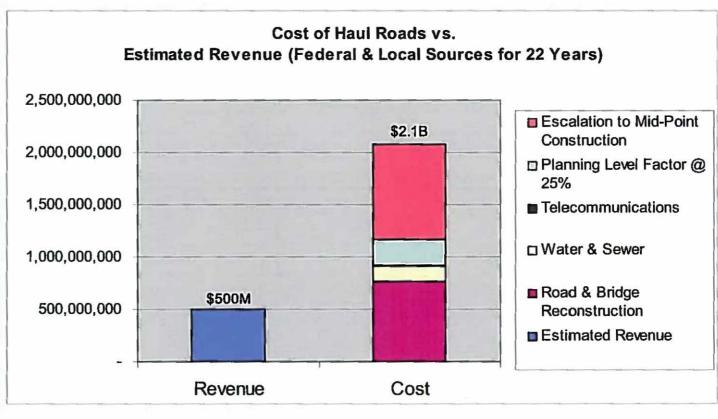


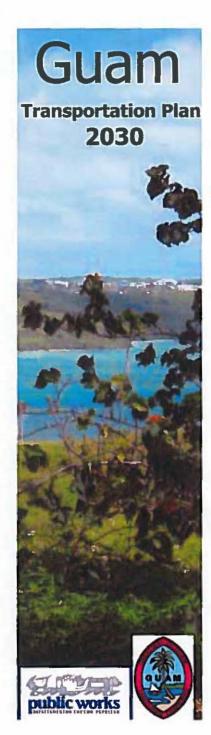
### **Financial Resources**





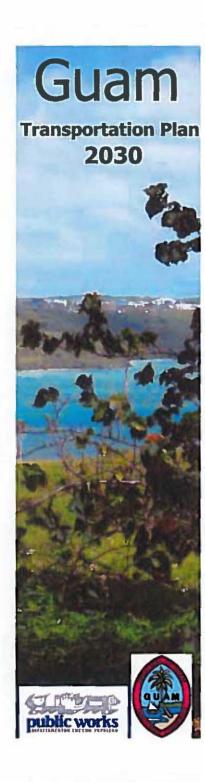
### **Financial Resources & Needs**





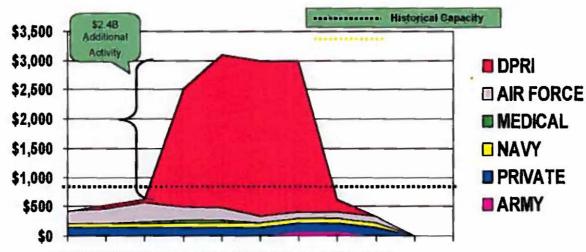
## **Funding and Financing**

- Federal & Local Funding Sources
  - DAR
  - DoD
  - FTA
  - FHWA
  - USEPA, and other Federal Agencies
  - THF (Local)
  - Utilities (GPA, GWA, GTA, etc.) (Local)
- Innovative Financing Options
  - GARVEE, TIFIA, Municipal Bonds
- Public Private Partnerships
  - SPE's, DBOM



# **Current JGPO Construction Plan**

#### **Notional Guam Construction Activity**



#### FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15

- Historical construction capacity approximately \$800M/yr
- FY14 completion will require excess of \$3B/year

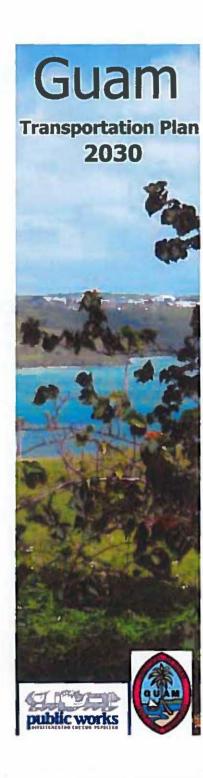
#### \$10.27B Construction Program

- US Share: \$4.188
- GOJ Share: \$2.80B Direct Funds

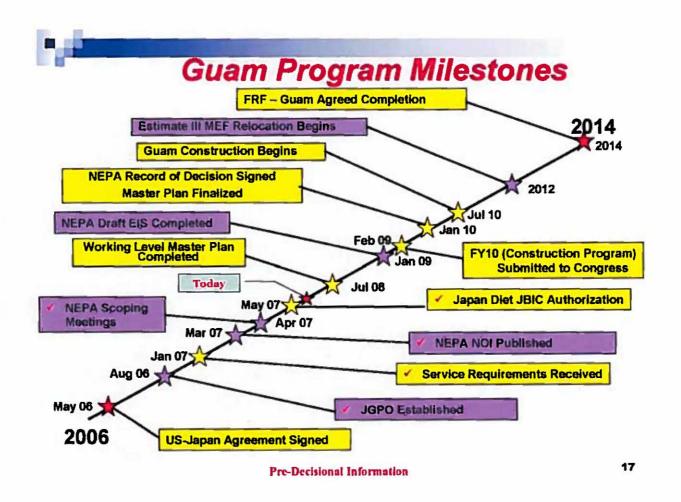
\$3.29B Financial Instruments

(\$2.55B Housing; \$.74B Utilities

**Pre-Decisional Information** 



# **Current JGPO Proposed Milestones**





## **Guam Power Authority**

Summary Report to Federal Agencies February 2008









## **Guam Power Authority**



#### **Fact Sheet**

- Sole Provider of Electricity on Guam
- 46,000 customers
  - 38,000 Residential
  - 18 Metering Points Serving the Navy (DOD)
  - 13% Base Revenues from the Navy
- Projected Fiscal Year 2008 Budget
  - \$331 MM Total
  - \$178.6 MM Fuel





## **Guam Power Authority**



#### **Fact Sheet**

- Peak Demand 281.5 MW
- Installed Generation: 552.4 MW
  - http://www.guampowerauthority.com/operations/generation/generationmix.html
- 663 miles of transmission and distribution lines
- 4 Bulk Power Transfer Substations
- 25 Distribution Substations
  - 594.5 MVA Installed Capacity







#### **Potential Project Summary Table**

(x \$1,000)	
Generation System Reliability Improvement and New Supply Projects	313,800
Substation Reliability Improvement Projects	55,843
System Improvement Projects	1,890
Transmission & Distribution System Reliability Improvement Projects	126,689
Fuel Diversification or Renewable Energy Projects	140,000
Additional Fuel Reserve Storage Project	27,545
TOTAL ESTIMATE	665,767







# **Generation System Reliability Improvement and New Supply Projects**

(x \$1,000)	
Baseload Units – Plant Upgrades	8,600
Emergency & Peaking Units – Plant Upgrades	5,200
60 MW Baseload Design & Construction (Pending Completion of IRP and Military Buildup Input)	300,000
TOTAL ESTIMATE	313,800







# **Substation Reliability Improvement Projects**

(x \$1,000)	
Dededo Indoor 34.5 kV and 13.8 kV Substation and 30 MVA Transformer Upgrade	7,150
Harmon Substation Switchyard Reconstruction	1,000
Talofofo Substation 30 MVA Upgrade	933
New Orote 115 kV Substation	4,700
New Substation to Support New Power Plant	6,431
Marbo Substation Upgrade-Control System, Conversion to Indoor Switchgear & 30 MVA Transformer Upgrade	7,150
Orote Substation Upgrade-Control System, Conversion to Indoor Switchgear	10,310
Radio Barrigada Substation Upgrade-Control System, Conversion to Indoor Switchgear	6,000
Andersen Substation Upgrade-Control System, Conversion to Indoor Switchgear	7,725
Hagatna 115 kV & 34.5 kV Breaker Replacement and Protection Upgrade	2,706
Protection System Upgrades: Hagatna, Tamuning, Tumon, Piti, Anigua	1,738
TOTAL ESTIMATE	55,843

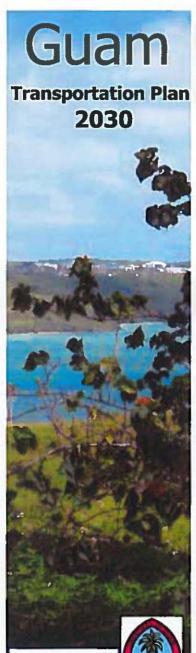






#### **System Improvement Projects**

(x \$1,000)	
System Stability / Relay Coordination Upgrade	1,190
Substation & Distribution Capacitor Program	450
Demand Side Management Program	250
TOTAL ESTIMATE	1,890







# **Transmission & Distribution System Reliability Improvement Projects**

(x \$1,000)	
New Transmission Lines to Existing Substations for Improved Service & Reliability	22,535
Reconductoring of Existing Overhead Lines for Increased Capacity	2,943
Distribution System Improvements Island Wide	6,050
P003 UG Extension to Port Authority	
Underground Conversion of Existing Transmission Lines Serving Military Installations	
Underground Conversion of Distribution Line P332 to Andersen & Surrounding Customers	7,800
New Underground Distribution Line from Marbo Substation	4,600
TOTAL ESTIMATE	126,689







#### **Fuel Diversification or Renewable Energy Projects**

(x \$1,000)	
20 MW Wind Farm	40,000
Guam Sea Water Air Conditioning (GSWAC) & Other Renewables	100,000
TOTAL ESTIMATE	140,000







#### **Additional Fuel Reserve Storage Project**

(x \$1,000)	
Additional 60-day fuel oil (RFO) storage facilities	27,545
TOTAL ESTIMATE	27,545







Military Growth on Guam (MILGROG)

&

Local (GWA) Impacts







#### **Fact Sheet**

- \$50M Annual Budget
- 245 Employees
- 38,0000 Customers
- \$337M in Total Assets
- GWA website http://www.guamwaterworks.org







#### **Total Projects to 2012**

(x \$1,000)	
Bond and EPA Funded	99,439
Master Plan Program (FY 2008-2012)	195,280
Anticipated Military Buildup Impacts	192,260
TOTAL ESTIMATE	486,979







#### **GWA Project Impacts**

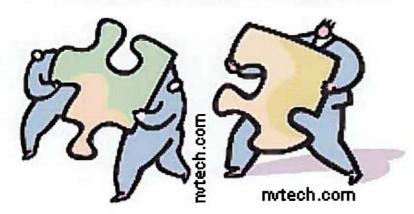
- Water Supply and Distribution \$121M Including:
  - 16 new wells at 300 GPM to produce approximately 7 MGD \$12M
  - Water Transmission Lines \$35M
  - Water Distribution Line Replacements/Improvements \$40M
- Wastewater Collection and Treatment \$66M Including:
  - Wastewater Treatment Plant Expansion \$60M
  - Collection Line Upgrades \$6M
- Efficiency Upgrades & Additional Staffing \$5M



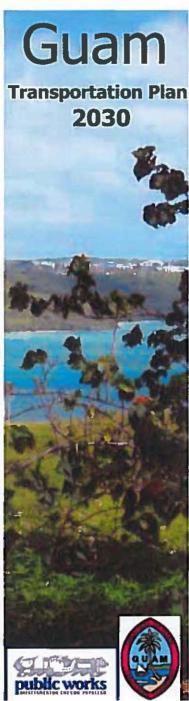




#### **MILGROG PUZZLE**



- Two Pieces Required for Success
  - Primary Base Relocation&
  - Local Impact Mitigation







#### **Without Funding Support**

- Inadequate water pressure throughout island
  - Inadequate service for construction workers
  - Inadequate service for off-base civil servants/contractors
- Inadequate sewage collection/pumping/treatment systems
  - Frequent Sanitary Sewer Overflows
  - Failure to adequately treat raw sewage
  - Polluted oceans
  - Public health and the environmental Impacts
- Ratepayers cover bulk of local impacts
  - Likely to oppose build-up







# DOD POSITION ON LOCAL IMPACTS (As Understood by GWA)

- Local Impacts Yes
- Local Resource Issues Acknowledged
- DOD funding pursued No
- Funding Sources Other Fed Agencies/Grants







# Agency Share Allocations (of GWA Impacts)

- DHHS: Personnel & Water Source \$13M
- DOI: Water Transmission \$35M
- Dept. of Ag.: Wastewater Treatment \$60M
- Homeland Security: SCADA \$5M
- HUD: Water Distribution \$40M
- DOJ: Reimburse fine impacts \$Immeasurable
- CONGRESS/EXEC BRANCH/DOD: All unpaid allocations - ???







#### **UNCERTAINTIES**

- Federal response is fragmented and uncertain regarding
  - Non DoD Agency roles/funding needs
  - Executive Branch support for funding
  - Congressional support for funding
- Timing
  - Guam infrastructure cannot be ready in time if funding is not available NOW
  - Result = DELAY and growing concern/emerging opposition on Guam





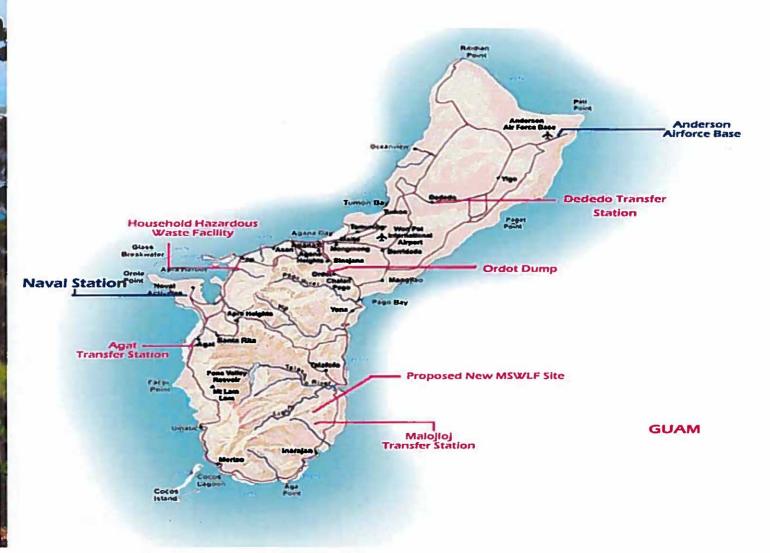


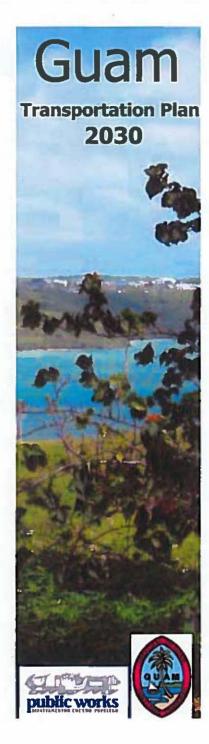
# SUCCESS REQUIRES MORE EFFORT AND COLLABORATION

- GUAM'S NEEDS NOT BEING MET SINCE FEDERAL GOVERNMENT IS DISORGANIZED AND NOT COORDINATED TO IMPLEMENT NEW GLOBAL DEFENSE POLICY ON GUAM
- FEDERAL GOVERNMENT AND GUAM MUST UAVE A UNIFIED AND COORDINATED FUNDING APPROACH TO BUILDUP IF WE ARE TO BE SUCCESSFUL

# Guam **Transportation Plan** 2030

# Department of Public Works DIVISION OF SOLID WASTE MANAGEMENT





# Department of Public Works DIVISION OF SOLID WASTE MANAGEMENT

- 1<sup>st</sup> Proposal: Guam Industry Forum Presentation
- 2<sup>nd</sup> Proposal:
  - Orote "Dump"
  - Naval Magazine MSWLF
  - GovGuam MSWLF
- Business Sense, Compressed Timelines, Shared Costs, Implement Green, USEPA & USDOJ Support



## **Cost Impact Summary**

DPW - \$2,082M

GWA - \$192M

• GPA - \$666M

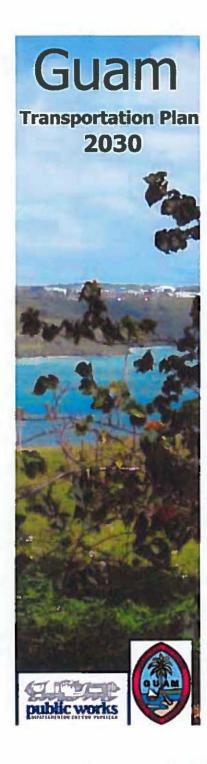
Subtotal \$2,940M

Others (GTA, MCV, PAG, GIAA, etc.)
 TBD



## **Guam is a Willing Partner**

- Time is of the essence
  - Haul Roads, DARs and utilities must be ready for the buildup
  - Planning and implementation will not happen overnight
- Guam is ready, willing and able to partner for the success of this build up
- Quality of Life, "No-Fence" Approach to transportation system. An "islandwide" community plan for Guam.



## **The Way Forward**

- Immediately convene a meeting of the Interagency Infrastructure Breakout Group to establish "holistic" goals and objectives.
  - Identification of what resources each participant can muster (GovGuam, Federal and DoD)
  - Share in the planning efforts and updates
  - All agencies to be included (PAG, Airport, Transit, etc.)
  - Bi-weekly working group telcons to report on progress
  - Joint Chairmanship for Guam in the Interagency Infrastructure Breakout Group



#### **Contact Information**

Presentation & Appendices available at <a href="ftp://fhwaftp.fhwa.dot.gov">ftp://fhwaftp.fhwa.dot.gov</a>
Login - HIGUEST; Password – higuest; Folder – HI; Folder - TO



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