

Insular ABC's Phase 3 Task 2
YEAR 2 SUMMARY REPORT
Performance Evaluation

November 2017



**US Army Corps
of Engineers**
Honolulu District



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Acronyms

AA	Administrative Assistant
AS	American Samoa
ATP	Authorization to Proceed
CIP	Capital Improvement Project
CNMI	Commonwealth of Northern Mariana Islands
CS	Construction Specialist
DM	Deferred Maintenance
DMRP	Deferred Maintenance Reduction Program
DST	Decision Support Tool (i.e., EAMS web viewer)
EAMS	Enterprise asset management system
EC	EAMS Coordinator
ECM	Energy Conservation Measures
ETP	Education and Training Plan
FY	Fiscal Year
H/S	Health and Safety
IFB	Invitation for Bid
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
OIA	Office of Insular Affairs
PM	Program Managers (regarding embedded team members)
PM	Preventive Maintenance (regarding facility management tasks)
PO	Purchase Order
REC	Record of Environmental Consideration
RFP	Request for Proposal
SME	Subject Matter Experts
TSP	Training and Sustainability Plan
USACE	US Army Corps of Engineers
USVI	US Virgin Islands

Preface

This report summarizes the accomplishments of the ABCs Initiative Phase 3 Task 2 (i.e., Year 2) and highlights the planned objectives of Year 3. Phase 3 represents the final phase of the ABCs Initiative. The reports prepared in Year 2 were mostly focused on education and training initiatives, with the exceptions of the Work Plans updates and revised Operating Agreements which largely guide the deferred maintenance reduction program efforts.

Year 2 reports created (available online unless otherwise indicated) include:

1. 357 weekly Program Manager status reports (not available online)
2. 15 monthly status reports (not available online)
3. Training and Sustainability Program (TSP)
 - a. Framework Plan
 - b. TSP Needs Assessments
 - c. TSP Needs Assessment Compilation and Findings Report
4. Trip 1 Briefings: to provide status updates (completed and planned projects, TSP efforts), review/revise Operating Agreements, initiate early consultation for REC 002, explore project delivery procedures, and solicit host agency input regarding Version 2 work plan update.
 - a. AS – meetings held 8/15-19/16
 - b. CNMI – meetings held 1/9-11/17
 - c. Guam – meetings held 1/11-13/17
 - d. VI – meetings held 11/21-25/16
5. Trip 2 Briefings: to vet preliminary TSP Needs Assessment and Organizational Sustainability Plan findings with host agencies and solicit input on capacity building benchmarks for Years 3-5.
 - a. AS – meetings held 8/8-11/17
 - b. CNMI – meetings held 8/14-16/17
 - c. Guam – meetings held 8/16-18/17
 - d. VI trip on hold pending recovery from Hurricanes Irma (9/6) and Maria (9/18)
6. Organizational Sustainability Plans (all territories—holding USVI report until recovery is further along; not available online)
7. Grounds Maintenance Primer (all territories)
8. EAMS overview/synopsis
9. EAMS training guides (not available online)
 - a. Maximo Basics
 - b. Asset Collection Workbook/Guide
 - c. PM Training Guide
10. Revised Operating Agreements (not available online)
11. Updated Work Plans (not available online) – Version 2.0 (all territories); Version 2.1 for AS and CNMI
12. RECs (not available online)
 - a. AS – REC 001 and 002 complete

- b. CNMI – REC 001 and 002 complete
 - c. Guam – REC 001 complete; REC 002 pending
 - d. USVI – REC 001 and 002 complete
13. REC addition memos
14. Emergent addition memos (not available online)
- a. American Samoa – August 23, 2016; October 6, 2016
 - b. CNMI – October 6, 2016; November 18, 2016
 - c. Guam – none
 - d. USVI – September 14, 2016;
15. Newsletters to report on ABCs progress
- a. AS – September 2017
 - b. CNMI – August 2017
 - c. Guam – October 2017

These reports are available (except as noted) at: <http://hhfplanners.com/>

Territory-specific reports can be accessed by clicking on the “Project Locations” tab and selecting the respective territory.

1. INTRODUCTION

The US Office of Insular Affairs' (OIA) Insular ABCs Initiative is a multi-phase effort focused on improving the physical condition of the US Insular Area Public Schools (in Guam, Commonwealth of Northern Mariana Islands (CNMI), American Samoa and the US Virgin Islands). The "ABCs Team" referred to in this report consists of the Corps' Project Management team and the HHF Planners team consisting of Honolulu based planners, architects and engineers and embedded personnel in each of the four territories.

ABCs Initiative phases:

1. Initial feasibility study and inventory phase completed in 2011
2. Comprehensive school building condition assessment completed in 2013
3. Deferred maintenance (DM) project execution and facility management capacity building (2015-2020)

Objectives of the Year 2 effort included assisting with NEPA compliance reviews, ongoing execution of DM reduction projects, re-racking priorities based on conditions observations, updating work plans to account for actual costs and revised priorities, as well as capacity building efforts to help the host agencies streamline facility management efforts.

The report outline follows the four basic scope of work tasks:

- A. Work Plan Execution
- B. Embedded Team
- C. A-E Support Services
- D. NEPA Support

Section 7 provides an overview of planned Year 3 work.

2. SUMMARY OF YEAR 2 TASKS

Table 1 below summarizes the major accomplishments of Year 2, based on the tasks scoped for execution in Year 2, and provides an outline of the summary report.

Table 1 - Year 2 Tasks and Summary of Accomplishments

Task A – Work Plan Execution	
1. Work Plan Updates and Project Execution	
a. Version 2 – January 2017 (all territories)	
b. Version 2.1 – July 2017 (American Samoa and CNMI; Guam and USVI pending host agency guidance)	
2. Agreements	
a. Operating Agreements revised—establish territory, management team, and federal roles	

Task B – Embedded Team

3. Recruit/Retain and Direct Embedded Team
 - a. Program Managers (PMs): responsible for DM project execution, embedded team supervision, and heading capacity building efforts in the host agencies.
 - b. Construction Specialist (CSs): assist with project execution and oversight, compile project documentation, and provide work plan updates.
 - c. Enterprise Asset Management System (EAMS) Coordinator (ECs): head up EAMS buildout (e.g., asset collection), update work orders, and serve as the team expert to transition knowledge to the host agency.
 - d. Administrative Assistant (AA): support document preparation, correspondence, and record keeping.

Task C – A-E Support Services

1. Work Plan Execution/Projects
 - a. Awarded about \$5M in design and construction contracts (as of November 2017) with a project backlog of \$14.8 in the procurement pipeline (i.e., under IFB development, out for bid, under bid evaluation or under pre-award review).
 - b. Prepared 200 Invitations for Bids (IFBs), Requests for Proposals (RFPs), and Purchase Orders (POs). A substantial effort has gone into developing a higher standard of procurement documents including more detail on specifications and warranties and the initial government costs estimates; building value into the procurement process. Templates of these documents are now being used on other non-ABCs projects in the various jurisdictions.
2. Training and Sustainability Plan:
 - a. Finalized the TSP Needs Assessment (process by which each territory identifies and prioritizes its aspirations for capacity building) which involved drawn out consultation with American Samoa and USVI points of contact. Created a Needs Assessment compilation report to document survey feedback from the host agencies and define the needed steps for capacity building.
 - b. Nearly complete with the Organizational Sustainability Plan which maps each territorial facilities management department against its national peers to identify areas of success and needing improvement. Plan due at the end of 2017 will set annual goals for each territory to improve the resilience and sustainability of the respective departments (progress towards which will be revisited on an annual basis).
 - c. Completed grounds maintenance primer which serves as a reference guide of regular school grounds maintenance tasks, the common problems that result from deferring these tasks, as well as preparation and oversight tips. This is already being used by the host agencies to scope contracts for outsourced service or create budgets for the execution of tasks in-house.
3. Enterprise Asset Management System (EAMS): develop/ operationalize system to support facility management efforts (e.g., entering/ tracking work orders), create facility assets with assignments to room-level locations (this is needed to help automate maintenance and repair schedules in the next step of EAMS roll out, which will support operations and maintenance budgeting as well as CIP planning efforts).
 - a. Created EAMS training guides and asset collection manual/template, and initiated EAMS training for ECs (CNMI EC training pending) and PMs

<p>b. Asset collection is behind schedule and is delaying the next steps of EAMS rollout. Asset collection status as of November 2017:</p> <ul style="list-style-type: none">i. American Samoa: 13 of 29 schools (45%)ii. CNMI: 0% (the EC is position is being created and recruited for by PSS; EC is still not in place)iii. Guam: 6 of 35 schools (17%)iv. USVI: 2 of 34 (6%);
<p>4. Task C Year 2 Efforts that were put on hold</p> <ul style="list-style-type: none">a. HVAC Maintenance Primer – this task was intended to provide a reference guide to maintenance requirements and steps for the types of air conditioning units in the Insular Area public schools. As with the grounds maintenance primer, this would be used to establish maintenance tasks and cost estimates for in-house work, or scopes and accountability metrics for contracted work. This task was held up by Year 2 contracting and other priorities. It is currently envisioned that this task will be rolled into maintenance program development and not published as a stand-alone guide.b. Building Condition Assessment – as we transition from the Phase 2 rapid inspection platform (rating based DM estimation with element-based replacement value and “Facility Condition Index” calculation) to the facility asset-based EAMS platform, the Honolulu team would work with the discipline subject matter experts (teams engineers and architects) to define how condition updates would be provided and develop material to train local inspectors that could continue condition inspections in the future. OIA is considering the priority of these inspections given available funding with regard to other capacity building efforts. This task is on hold until the decision and guidance is clarified.
<h2>Task D – NEPA Support</h2>
<p>5. NEPA Compliance Support</p> <ul style="list-style-type: none">a. Record of Environmental Consideration (REC) 001 – repairs at buildings < 45 years oldb. REC 002 – grounds improvements and work at buildings ≥45 years oldc. Effort for this task was focused on providing analysis of potential impacts and compiling related backup documentation that was appended to the RECs, refining work plan items item REC-specific project consideration lists, and liaising with POH and local agencies on REC determinations and project details (which extended over long periods of time).

The ABCs Team conducted two sets of territory trips in Year 2:

- Trip 1 (Nov 2016-Jan 2017): status updates (completed and planned projects and TSP efforts), review/revise Operating Agreement, initiate early consultation for REC 002, explore project delivery procedures, annual work plan update
- Trip 2 (Aug 2017): present findings from the Needs Assessment survey and OSP investigation, vet preliminary OSP recommendations, discussion of EAMS rollout status and goals, host-agency and interagency strategy meetings for work order and service request protocols, status updates

Phase 3.2 objectives are complete, with the exception of the HVAC Maintenance Primer (on hold or to be addressed as a part of maintenance program development in Year 3) and EAMS training for CNMI,

and the ABCs Team has transitioned to managing Year 3 efforts. Efforts undertaken for these tasks are described further in the following sections.

3. Task A - Work Plan Execution and Program Management

3.1 Agreements

3.1.1 Memorandum of Understanding

Memorandum of Understanding (MOU) between each territorial Governor and OIA were executed at the outset of Phase III to demonstrate a mutual commitment and affirm the Governors' desire to support the Insular ABCs initiative. Through the MOU, both parties agreed to cooperate on Phase 3 of the Insular ABCs initiative, which included technical support from OIA (i.e., the ABCs Team), with the understanding that the Governor set aside a minimum of \$1 million of OIA's annual CIP grant funding for the Deferred Maintenance Reduction Program (DMRP), for a period of five years. The Governors were also encouraged to set aside additional local funds to support the initiative (the USVI Governor set aside an additional \$2 million).

The MOUs are effective through the completion of Phase 3, and are unchanged to date.

3.1.2 Operating Agreement

Through discussions with the host agencies in Year 1, the ABCs Team mapped the organizational relationships between the planned embedded team and local counterparts, and how the various positions would work in concert to optimize support for ongoing initiatives as well as the planned DMRP efforts. The Operating Agreements cover the working relationship and roles and responsibilities of the ABCs Team and the host agency to implement the provisions of the MOU. The function of the Operating Agreement is discussed in more detail in the Year 1 report.

As stated in the Operating Agreement, it will be reviewed on annual basis (or sooner if required) to maintain relevance and incorporate lessons learned, and that any amendments to the Operating Agreement will require written agreement of both parties. Due to staff changes, as well as changing needs and responsibilities of the host agency personnel, some updates to the work plans were required.

Revised operating agreements were fully executed on:

- American Samoa: March 2, 2017
- CNMI: March 6, 2017
- Guam: August 18, 2017
- USVI: March 1, 2017

The Operating Agreements will continue to be reviewed annually, latest versions of which will remain effective through Phase 3 completion.

3.2 Work Plan Updates

The DM reduction projects are guided by the work plans that were created for each territory. These are derived from the facility inventory and condition database created in the second phase of the Insular ABCs initiative. Work Plans were initially developed in Year 1 to organize all the DM projects by priority and related actions (e.g., roof structure and roofing repair, which exist as separate work tasks in the database and could otherwise be segmented). The prioritized projects were then grouped according to available funding to provide a tentative execution strategy. Since creation of these first drafts, the need to build in more flexibility to account for ever changing priorities based on observations and condition changes became evident and work items were broken into priority tiers. The work plans continue to focus on the highest priority DM work previously identified and are continuously modified based on PM reports of worsened conditions, host-agency input on how best to utilize the limited DM repair funding, adjustments to project sequencing based on various factors (seasonal conditions, school schedules, design and procurement timeframes), or to account for projects that were completed by the host agencies or other entities. Work plan updates are formally adopted by OIA and each territory.

Work plans for each territory were updated in January-February 2017, referred to as Version 2.

Work Plan Version 2 adoption dates:

- American Samoa: February 10, 2017
- CNMI: March 9, 2017
- Guam: January 27, 2017
- USVI: March 2, 2017

Version 2.1 – July 2017 (American Samoa and CNMI; Guam and USVI pending host agency guidance)

Work Plan Version 2.1 adoption dates:

- American Samoa: August 10, 2017
- CNMI: September 8, 2017
- Guam: pending host agency guidance—GDOE is working with the PM on sharing repair responsibilities.
- USVI: pending host agency guidance—VIDE is assessing hurricane damage and needs to determine FEMA priorities before the ABCs Team can engage in additional work.

Refinements are made on an ongoing basis, and finalized on a periodic basis. As additions or reprioritizations are made, the Honolulu office confirms compliance with NEPA and prioritization criteria and records these changes in the master project tracking worksheet. In addition to informing work plan update efforts, work plan versioning is also being used on a DM work item basis to track the timing that various updates (e.g., project additions or prioritization changes) are made to the master project tracking document in case this information is needed to answer questions in the future. This process will eventually be managed in EAMS once the team is further along with deployment and data updates.

The next update, Version 3, will be issued in Year 3.

3.3 Project Execution

The embedded team PMs have been moving projects via POs, IFBs, and RFPs for design and construction work. Task Order and Design Build services are also being sought where possible and appropriate. As of October 2017, the ABCs Team executed nearly \$5M in projects to completion or award, with a project backlog of \$12.5M in the procurement pipeline (i.e., under IFB development, out for bid, under bid evaluation or under pre-award review).

OIA grant funds are released, via formal Authorizations to Proceed (ATP), for each fiscal year (FY) as the need for additional funding is demonstrated (i.e., bid solicitation requires funds be made available). ATP issuance for ABCs grant funds to date are summarized below:

Table 2 - ABCs Grant ATPs to Date

ATP	AS	CNMI	Guam	VI
FY15	1/23/16: \$1M	2/24/16: \$1M	2/24/16: \$1M	11/2/15: \$2.148M
FY16	8/22/17: \$1M	6/20/16: \$1M	6/20/16: \$1M	3/28/16: \$1.939M
FY17				7/21/17: \$1.947M
FY18				
FY19				
\$ to date	\$2M	\$2M	\$2M	\$6.034M

USVI suffered significant losses from the two Category 5 hurricanes (Irma 9/6 and Maria 9/20), including school facilities. Several USVI underway projects were put on hold, and some of those may be canceled. The numbers shown below for USVI projects may be an overrepresentation of current actuals, pending FEMA damage assessments and VIDE guidance. It is important to note that these numbers change constantly as embedded teams continue to move repair projects—out for bid numbers are particularly challenging to capture since these are short duration periods and status is still being tracked manually as ECs continue to focus attention on asset collection.

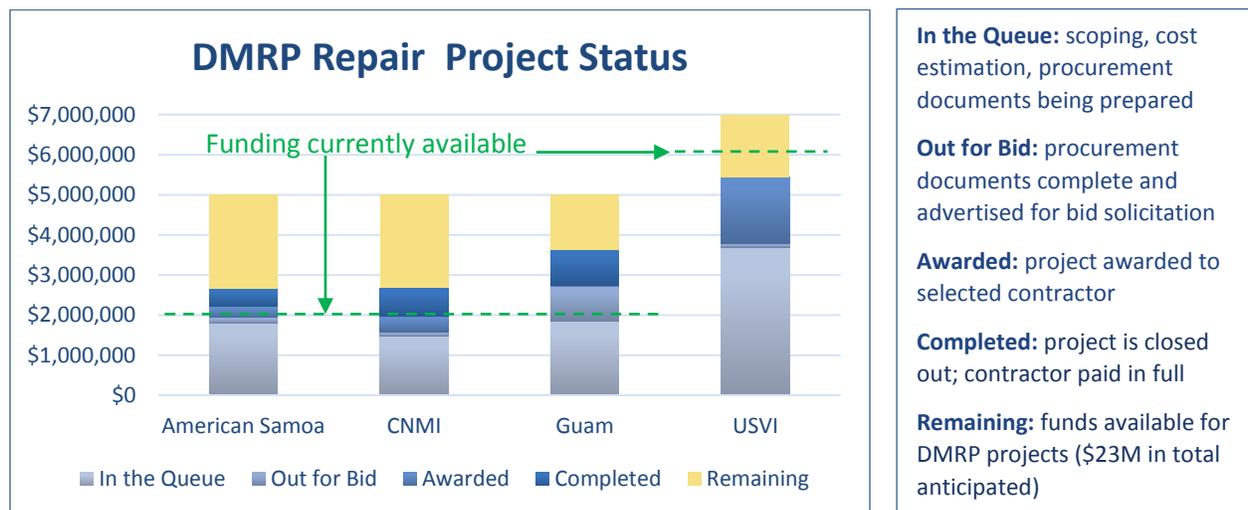


Figure 1 - DMRP Project Status (October 2017)

Overall, the ABCs Team prepared 257 design and construction solicitations (as of October)—AS (87), CNMI (117), Guam (29), USVI (24). A substantial amount of effort has gone into developing a higher standard of procurement documents including more detail on scope tasks, specifications and warranties, and the initial government costs estimates. These documents are also being archived and are already being used as templates for subsequent ABCs projects and non-ABCs projects in the territories.

4. Task B - Embedded Team Recruitment and Management

All PMs remain in place from Year 1 and continue to lead ABCs efforts in their respective territories effectively. The USVI PM, Brian Turnbull, was on extended leave from December 2016 through February 2017. During that time the St. Thomas CS, John Bedminster, severed as Acting PM.

Four of the planned five CSs were hired in Year 2:

1. American Samoa: Gala Ualita – April 2016 [replacement expected to be hired in November]
2. USVI St. Thomas: John Bedminster – June 2016
3. USVI St. Croix: Lionel Jacobs – June 2016
4. Guam: Henry Villanueva – December 2016

The CNMI PM recommended foregoing a CS hire because PSS staff are available to manage the DM projects proposed for that area.

The American Samoa CS provided adequate support on REC 001 projects during Year 2, but was determined to be incapable of delivering and managing the more technically challenging REC 002 work. Once this determination was made, he was reassigned to an inspector position while recruitment was conducted for a replacement. We anticipate hiring a replacement by December 2017.

The CSs in Guam and USVI are providing valuable project delivery and construction management support for DM reduction projects and have created scope, spec, and cost estimate materials that provide templates and reference material for host-agency facility managers that are already being used and will continue to bring value after the ABCs initiative is complete.

Three of the planned four ECs were hired in Year 2:

1. American Samoa: Tau Galuvau – April 2016-May 2017; Nelda Emory promoted from AA to EC October 2017
2. CNMI: PSS is assisting with project scoping and oversight; to date a CS has not been hired
3. Guam: Jack Hattig – May 2017
4. USVI: Sean Francis – June 2017

Hiring for the EC position was particularly challenging given the specialized mix of skills required for the position (e.g., technical/computer proficiency, as well as construction/building system understanding).

Administrative assistants were also hired in Year 2, for two territories:

1. American Samoa: Nelda Emory – January 2017-October 2017 (promoted from AA to EC);
Malia Tafua – November 2017
2. USVI: Christina Harper – March 2017-May 2017; Nichole Charles – October 2017

The Guam PM is effectively managing the work load for projects to date and preferred to initiate recruitment for the Guam AA position upon completion of the REC 002 NEPA compliance review as he anticipates a greater need to manage the higher volume of work.

5. Task C - A-E Support Services

5.1 A-E Support Services

HHF was tasked with providing Honolulu-based support to the DMRP and all ABCs project related matters. A-E services identified for the Year 2 effort were identified to include:

1. Design Review and Technical Assistance
2. Building Condition Assessment Method, Training, and QA/QC Procedure Definition
3. Training and Sustainability Program (TSP) Implementation

5.1.1 Design Review and Technical Assistance

The Honolulu office provided A-E support services for project delivery including scope, specification, and IFB/RFP preparation assistance, as well as with the coordination of design review and technical assistance from the engineering team. This assistance was especially needed in the USVI where various challenges to project delivery were encountered. One example of this, in addition to regular scope and specification assistance, was the creation of two task order contracts (one for each of the school districts) for solicit design and construction management services for unspecified services to cut down costs related to individually bid design contracts, as well as to reduce procurement time for related services. The two design firms were selected and the TO agreements were undergoing final legal review at the time the September hurricanes hit the territory. It is not clear when the territory will resume its review of the agreements. This vehicle is recognized as an important tool that will help VIDE streamline facility management efforts during and beyond the ABCs initiative.

5.2 Building Condition Assessment Method, Training, and QA/QC Procedure Definition

The rapid assessment method in Year 2 was rating based (on a zero to five scale). Coded algorithms were used to automatically generate DM estimates based on the conditions rating. This system was highly effective for a rapid baseline assessment, but the resulting data set is essentially static with a high margin of error when considering individual projects. The EAMS system deployed in Phase 3 serves many purposes, including the creation of work orders and reporting overall repair costs at various levels. Any future assessment data should be captured on this work order based platform, otherwise there would be redundant efforts and costs. In Year 2, the Honolulu team planned to work with the engineering team to define the condition assessment method, the work order creation process, as well

as a training and Q/C program so that local inspectors could be cross trained and used for future inspections after the ABCs initiative ends.

Due to ABCs priorities and funding limitations, the next condition assessments (e.g., in Year 3 and 5) may not be conducted. Accordingly, effort was not expended to define the assessment method and prepare guiding materials. This task could be pursued in the future if the need for follow on condition assessments are warranted. A web viewer (i.e., Decision Support Tool—discussed further in Section 9) was created to provide reporting of all open work orders in the EAMS and a graphical interface to navigate from overall summaries to building specific DM details. If schools and facility management personnel are able to maintain a thorough monitoring of maintenance and repair needs, and create work orders for these needs as appropriate, then the DST will provide a current and accurate depiction on existing conditions.

5.3 TSP Implementation

OIA's parallel objective in Phase 3 is to build local capacity, while reducing the DM backlog. The TSP, as initially conceived in the Operating Agreement aims to address systemic issues that may be hindering facility management in various ways. Through several planned "modules", the TSP guides the ABCs Team in engaging host agency facility managers and maintenance personnel in working on resolving current challenges. This includes identifying areas of concern and providing examples of facility management best practices through the creation of guidebooks, reference material, job shadowing, and hands on training. The TSP process also allows the Honolulu office to work in concert with the embedded teams in making and documenting progress. The long-term success of the TSP is highly dependent on the level of local engagement; the ABCs Team led by the PMs will provide facilitation and leadership at a programmatic level, but success also depends on the participation of related public and private sector entities. The Year 2 TSP efforts included:

1. Needs Assessment
2. Organizational Sustainability Plan
3. Civil and Mechanical Maintenance Primers

5.3.1 Needs Assessment

The TSP Needs Assessment (completed September 2017) created a process for each territory to identify and prioritize capacity building needs. An example survey was created at the end of Year 1, which was intended to help host agency facility managers engage their staff regarding current needs and challenges. These surveys were fielded with the host agencies in Year 2 through written requests for information, phone conferences, and phone interviews with key personnel. The survey results were compiled in the Needs Assessment Report. This compilation contributed to the materials briefed during August 2017 territory visits, and was also used to guide OSP development which sets a path for future TSP efforts.

As has been reiterated throughout the three phases of the ABCs initiative, in order to meet initiative goals, systemic change is needed to prevent the DM backlog at the territorial schools from recurring or

worsening. The TSP Needs Assessment identified several areas in which capacity building efforts could bolster ongoing facility management efforts. From these, six areas were selected for focused action due to the similarities identified between the territories and the economies of scale that could be realized by working on the areas in concert:

- Topic 1 - Organizational Sustainability
 - Create preventive maintenance programs to define tasks and staffing requirements
 - Recruit, train, and implement advancement programs for maintenance staff (transition planning for aging workforce)
- Topic 2 - Technical Skills
 - Apprenticeship program, focused on HVAC, electrical, plumbing, and fire systems
 - Ongoing safety training
 - Documentation of scope writing, cost estimation, and construction observation methods and resources; ongoing mentoring on applying these resources in practice
- Topic 3 - Planning and Design
 - Technical assistance for facility planning

These items were analyzed further and aligned with the action recommendations in the OSP.

5.3.2 Organizational Sustainability Plan

The OSP (draft completed November 2017) was a collaborative study, between the ABCs Team and host-agency contacts, focused on improving the effectiveness and sustainability of school facilities management. The scope covered operations and maintenance staffing and budgeting, as well as facilities planning. Recommended strategies and policies, identified in the report, are many and far reaching. It is not expected that all recommendations be implemented during the ABCs initiative, but it is the goal to implement as many as possible, track accomplishments, and put the host agencies on a trajectory of continuous improvement. As many as 34 actions were recommended, falling into categories such as:

- Staffing and Organizational Structure
- Work Order Management
- Maintenance Management
- Resource Management
- Project Procurement
- Dedicated Maintenance Funding
- Recurring CIP Funding
- Supplemental Funding
- Facility Inventory
- School Right Sizing
- Site Maps
- New Building Design
- Energy Monitoring
- Planning Tasks

The OSP establishes tasks and completion year goals for each territory. The embedded team members will play critical roles in actualizing efforts and guiding host-agency partners. Honolulu office staff will provide technical assistance, as authorized by USACE, to bring tools and information to bear in executing recommended actions. Progress towards these goals will be measured on an annual basis. ABCs/OIA support for the continuation of territory-specific capacity building efforts will be determined by/contingent upon the level of engagement and accomplishment for each respective territory.

5.3.3 Civil and Mechanical Maintenance Primers

The maintenance primers were conceived because of the common issues observed in Phase 2 that could be addressed with fairly simple routine maintenance. The primers serve as a guide to the types of tasks that should be executed, and the frequencies with which they should occur, as well as to provide other considerations that should be incorporated in maintenance program creation and management (e.g., site specific challenges, pros and cons for outsourcing or conducting work in house).

5.3.3.1 Civil Maintenance Primer

The grounds maintenance primer (completed April 2017) identifies regular school grounds maintenance tasks, issues that result if these tasks are deferred, management considerations, and staffing levels required for execution with notes on additional resources to help facility managers to learn more if interested. The primer also includes reference material for local staff to implement and manage grounds maintenance.

The team civil engineer and landscape architect conducted site visits to the majority of schools in each of the four territories to observe existing conditions, inform primer content, as well as to check current conditions (e.g., changes at adjacent properties that affect the projects proposed in Phase 2) and confirm that needed improvements were addressed in the work plan. This primer is already being used by the host agencies to scope contracts for outsourced service or create budgets for the execution of tasks in-house.

5.3.3.2 Mechanical Maintenance Primer

The mechanical maintenance primer was intended to provide a reference guide to maintenance requirements and steps for the types of air conditioning units in the Insular Area public schools. As with the grounds maintenance primer, this would be used to establish maintenance tasks and cost estimates for in-house work, or scopes and accountability metrics for contracted work.

Due to task timing and conflicting priorities, it was considered to be more effective if the Mechanical Maintenance Primer was addressed as a part of EAMS maintenance program development, one of the TSP modules planned for Year 3.

5.4 EAMS

In Year 1, the EAMS was developed using IBM's Maximo Asset Management System, an industry leader in asset management and a system that provides a comprehensive solution for managing physical assets on a common platform. The EAMS encompasses the entire lifecycle management of physical assets of an organization in order to maximize the value and life of those assets. It is a discipline covering areas

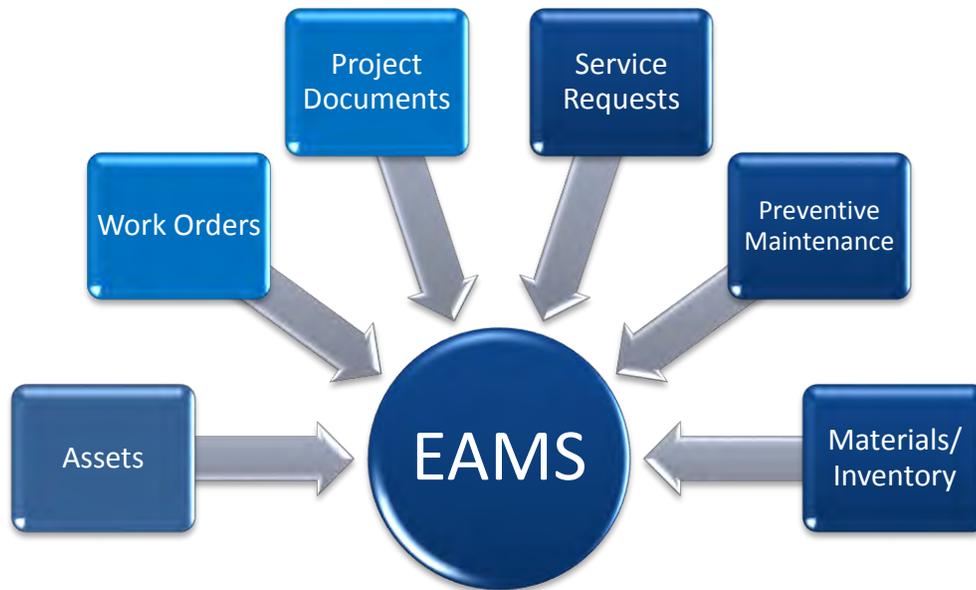
such as the design, construction, commissioning, operations, maintenance and decommissioning or replacement of facilities, equipment, and other high-value assets. Asset intensive organizations such as public school districts, face harsh realities of dealing with high value facilities and equipment where maintenance budgets fail to provide adequate resources necessary to maintain the assets in acceptable condition. Implementing an EAM has shown to reduce labor costs by 10 to 20%, reduce inventory costs by 10 to 15%, and reduce time lost to equipment failure by up to 25%. More than simply maintaining facilities and equipment, EAM collects data and generates reports for enterprise-wide decision making and planning.

This system integrates, among other things, inventory wide facility data, staff-specific work task assignment and monitoring, full-life-cycle service request management, document storage, and reporting from general overviews to work-order-specific detail. EAMS was implemented to maximize resources expended for facility management, aide in planning investment decisions, and to support facility operations analysis. Planned EAMS utility includes the ability to:

1. manage the entire inventory of assets and locations, including work orders necessary for maintaining and recapitalizing facilities
2. account for the current deferred maintenance items (as defined in Phase 2 and refined by embedded teams on an ongoing basis) as well as future work orders and preventive maintenance needs
3. manage preventive maintenance schedules to assign regular maintenance tasks to staff, as well as to inform budgeting processes and provide data for medium-to-long range capital improvement planning budgets (preventive maintenance program and associated cost estimates to be created in Year 3)

Initial EAMS functionality included work order management for the DMRP (e.g., combining individual DMs items into larger projects, capturing project cost and execution details) as well as document management (e.g., archiving project delivery documents).

Figure 2 shows the current and planned EAMS functionality to date.



In progress:	<ul style="list-style-type: none"> Assets: collection/definition, creation within the EAMS, and assignment to respective locations (e.g., schools, buildings, and classrooms) is underway and will continue well into Year 3.
In place/ready for use:	<ul style="list-style-type: none"> Work orders: can be created, tracked, and closed out; EAMS is capable of reporting costs of existing and completed work orders Project documents: can be saved within work orders; documents can also be attached to locations to allow for storage of photos or site/floor plans, or diagrams that can help identify equipment or repair steps.
Continued buildout:	<ul style="list-style-type: none"> Service requests: being defined with the host agencies as a part of the OSP capacity building efforts. Once defined, this structure will be incorporated into EAMS. Preventive maintenance: tasks and job plans have to be defined (proposed for Year 3) and input into the system. Materials/inventory: This module could be activated and deployed for managing the ordering and issuance of equipment, materials, tools, or spare parts. Could be pursued in Year 3 or Year 4.

Figure 2 - EAMS Capabilities – Current and Planned

These modules or function areas are described further in respective sections.

5.4.1 EAMS Coordinator Recruitment

As a part of EAMS deployment, the HHF Honolulu PM and EAMS PM worked collaboratively to recruit ECs in the four territories. As a frame of reference, with regard to the recruitment of the remaining embedded team members, “Year 2” started in October, 2015. Start dates for ECs in each territory were:

- American Samoa – April 2016 (replaced October 2016)
- Guam – May 2016
- USVI – June 2017
- CNMI – PSS is working to establish an internal EC position

Several job advertisements were published through local newspapers, job boards, and internet job advertising companies. More than 200 EC application were received and reviewed, and several interviews were held in an effort to identify qualified candidates. Clearly, the recruitment effort was challenging, and is not complete for CNMI. Delays in hiring have delayed EAMS rollout steps.

Because the EAMS is a very complex system, with very broad capabilities, training is being conducted in phases, meaning that training for one module or overarching function is provided at a time to ensure that the learner is mastering each step along the way.

Once fully trained, the DMRP ECs will be able to:

1. manage work order creation, tracking, and closeout
2. organize construction documents (e.g., plans, purchase orders, specs)
3. manage preventative maintenance (PM) scheduling and budgeting
4. manage medium/long range capital improvement project (CIP) plan budgets
5. use EAMS data to provide reporting to senior management on inventory performance.

5.4.2 EAMS Training

Year 2 EAMS training included PM and EC sessions for system navigation, work order management, and asset definition via asset collection by the ABCs Team ECs. Formal training guides include the “Basics” (April 2016), ABCs Facility Data Workbook (i.e., Asset Collection instructions and field data collection template; June 2016), and “PM Training” (September 2016) guides. Basics and PM Training sessions were provided to help familiarize the PMs with the system, navigation, and the key functions that we will be focused on for the ABCs initiative. The most important function initially, for the PMs, was work order management, including the rules on how to update information points and change the status of the work order as projects progress. ECs were briefed on Basics, overall system use, and asset collection.

The EAMS PM started with group training sessions, but observed that the embedded team PMs learned and advanced at different rates, so individual training was required and provided as appropriate. As an example of varying adoption rates, the CNMI and USVI PMs are not using the system and will rely on the ECs. The USVI EC is progressing, after an extended recruitment period, but the CNMI EC is still not in place (pending PSS job position creation and recruitment). Conversely, the AS PM is very skilled with

system use and is helping to train the EC. The Guam PM is competent in work order management and is helping the EC to progress with asset collection.

In addition to training, the EAMS PM provided ongoing troubleshooting as required throughout year 2, as well as quality assurance with work order management and asset collection. This level of central oversight is still required as the ECs continue to develop their skills and understanding of the system.

5.4.3 Asset Collection

Asset collection is the most time consuming task and is needed before other aspects of the system can be built out and serve a facility management function. Accordingly, a significant part of the EC training is on the correct procedure to inventory asset data at the schools and how to input that data into the Asset Management module. As noted in Section 9.2, the EAMS PM created an ABCs Facility Data Workbook to serve as an asset collection instruction guide. Asset collection progress varies between territories:

- American Samoa: 13 of 29 schools (45%)
- Guam: 6 of 35 schools (17%)
- USVI: 2 of 34 (6%); current school count pending FEMA damage assessments from September hurricanes
- CNMI: not applicable as the EC is still not in place

Defining and quantifying the assets of each building, or school site, is the first step of asset collection. Asset information is next used to create asset templates/classifications, and those templates are used to assign asset types and quantities to each respective location (e.g., rooms, building, or site). This step is required in order for preventive maintenance tasks and trouble-call or replacement-type work orders to be created at the asset level, which is critical for defining level of effort for various tasks. As an example, with this information costs can be calculated for inventory wide lighting upgrades, painting, or AC maintenance without requiring staff to go out and take counts and measurements each time the task is pursued. Facility managers can use this information to calculate the number of man hours required to execute all the preventive maintenance tasks planned for a given year, as well as to analyze the agency's ability to execute the work given various resource limitations or scenarios. The ECs are just starting to create asset templates and location assignments.

5.4.4 Decision Support Tool (DST; i.e., the GIS-enabled web-viewer)

One of the more tangible EAMS-buildout tasks for Year 2 was the creation of the Decision Support Tool (DST), or the "web-viewer" that provides graphical and tabular reports of DM information, from region to building specific levels, for use by territorial or school (or ABCs initiative) administrators. Most simply, this module provides real-time reporting of facility conditions as work orders are created and closed out. The greater utility of the tool is to monitor and report on funding trends and the effect on DM totals (i.e., to show whether or not funding in the last five years been effective in reducing DM), and to create future scenarios to show the level of funding required to address existing DM, and prevent DM accrual, or the consequences of underfunding facility repair and maintenance (i.e., to show how much DM will

accrue if funding levels are inadequate). This information is critical for creating and justifying budget requests.

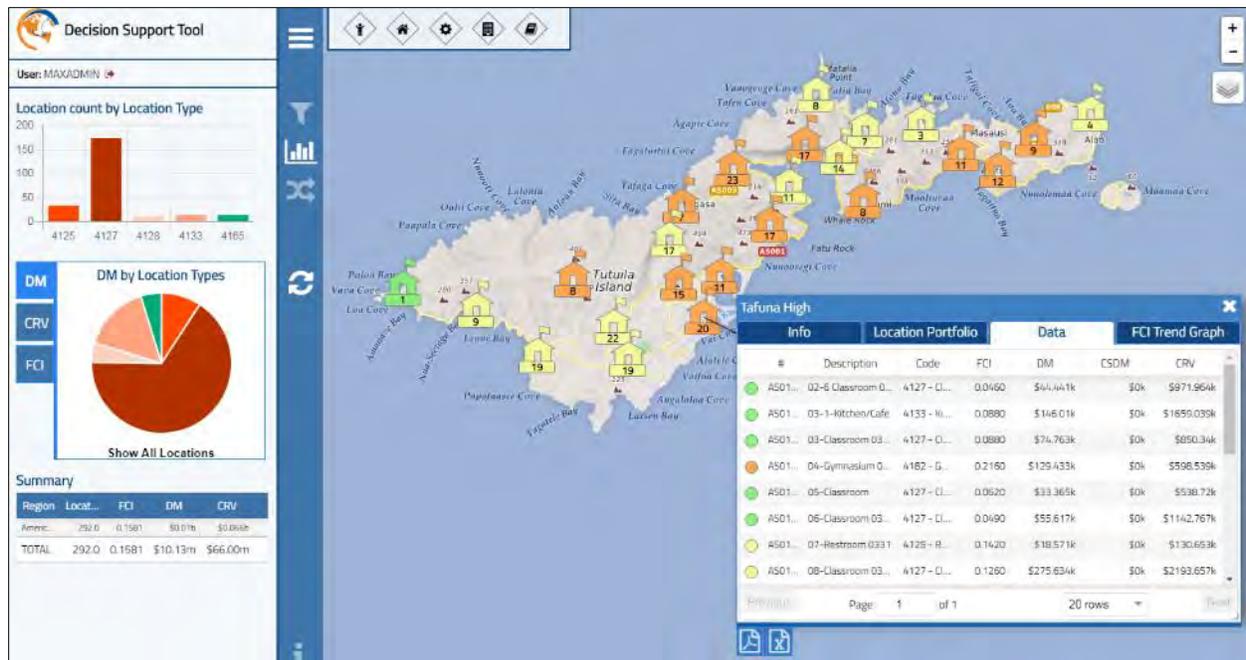


Figure 3 - Decision Support Tool (i.e., EAMS web viewer)

Once system refinements are complete (anticipating January 2018), login information will be provided to host-agency contacts and ABCs Team leadership.

Through Year 2, work order tracking has been taking place mostly in Excel, in order to provide ongoing progress updates. As ECs get further along with asset collection and creation within EAMS they will be able to put more attention into completing and closing out work orders. As work orders within the EAMS are updated these changes will be visible in the DST.

5.4.5 EAMS Access

EAMS access is currently limited to HHF embedded team and Honolulu staff. In order to help manage expectations and prevent frustration on the part of host-agency staff, it is preferred that EAMS access remain limited until three critical steps are complete:

1. asset collection and the respective assignment of locations for all assets
2. service request protocol are agreed upon by the host agency and the practice of these protocols are in place
3. the initial tasks of the regular maintenance program are defined and built out, to include specific steps for all maintenance work orders that will be activated

This may be done in a cross-training capacity with host-agency facility managers, but maintenance staff will not be engaged until these functions are defined and tested. Host-agency facility managers may also be granted EAMS access to assist with work order updates, project document storage, and close out for work orders if they would like to do so.

6. Task D - NEPA Support

The NEPA compliance review process is ongoing as the team works to conclude the final foundational document for Guam and create supplemental documents as work plans are revised and projects are added to address priorities not previously captured on the territory work plans. The ABCs Team supported USACE NEPA compliance review for all facility repairs identified on the work plans and associated school buildings and campuses. Efforts for this task included providing analysis of potential impacts and compiling related backup documentation that was appended to the Records of Environmental Consideration (RECs), refining work plan items into REC-specific project consideration lists, and liaising with POH and local agencies on REC determinations and project details (which extended over long periods of time). Components of the overall process to date entailed:

1. Informal/early consultation: This involved the creation of documents that were used in informal, early consultation with related territorial agencies, and numerous briefings and communications on project types and extents. This engagement gave the related agencies a general understanding of the nature of the work and an opportunity to provide information of possible concerns or to make requests for additional information where needed.
2. REC 001 (analysis prepared to consider potential impacts related to repairs at buildings under 45 years of age with no ground disturbance), and supporting documents; REC 001 completion dates:
 - a. American Samoa – January 1, 2016
 - b. CNMI – February 12, 2016
 - c. Guam – February 16, 2016
 - d. USVI – October 28, 2015
3. Emergent addition memos were also created to solicit expedited review of REC 002 projects (buildings 45 years of age or older or ground disturbance) that were considered critical to address life safety issues (referred to as emergent additions); emergent additions were executed:
 - a. American Samoa – August 23, 2016; October 6, 2016
 - b. CNMI – October 6, 2016; November 18, 2016
 - c. Guam – none
 - d. USVI – September 14, 2016;
4. Floodplain Management Compliance Reports (for Executive Order 11988 compliance) detailing the eight-step floodplain evaluation process conducted for each territory, including documentation of analysis and public notices in local newspapers

5. Supporting USACE and OIA Section 106 consultations with local Historic Preservation Offices: this effort built off of the early consultation efforts pursued late in Year 1 and in early Year 2 and included the creation of consultation letters and supporting information (e.g., site maps, project descriptions); Section 106 consultation process conclusion dates:
 - a. American Samoa – August 9, 2017
 - b. CNMI – June 26, 2017
 - c. Guam – November 13, 2017
 - d. USVI – March 15, 2017
6. REC 002 (for buildings 45 years of age and old and projects that include ground disturbance); REC 002 completion dates:
 - a. American Samoa – August 17, 2017
 - b. CNMI – July 6, 2017
 - c. Guam – pending
 - d. USVI – May 15, 2017
7. REC additions were made via memos, based on work plan additions, with concurrence by OIA and the USACE. American Samoa was the first to have an additional project memo approved, August 22, 2017. Memo submittal for the other territories is pending additional work plan updates.

7. YEAR 3 OVERVIEW

In the third year of Phase 3, efforts made in Year 2 to move forward on design work (e.g., structural repairs, fire protection) will transition to larger construction projects. As previously noted, accomplishing the Phase 3 goals (improve facility and site conditions per the annual work plan, and to assist long-term facility management capability through the TSP) requires multifaceted efforts. In addition to the DM reduction projects, Year 3 effort will be focused on general program management and providing guidance to the embedded teams, creating a standard maintenance program for integration in the EAMS and tuning the program to provide cost and labor estimates for related tasks, and providing technical assistance for the creation of school facility master plans for each territory that set objectives over a five-year timeframe and can be updated annually. EAMS deployment will also continue with asset collection, work order updates, and the establishment of service request protocol and functionality.

7.1 Program Management

7.1.1 Agreements

The Operating Agreements established in Year 1, and revised in Year 2 will be assessed with the host agencies and updated as necessary. The ABCs Team continues to learn of capacity building opportunities and will look for opportunities to improve business process through the OSP and day-to-day embedded team activities. Related findings, as vetted with the host agencies, may result in changes to the operating agreement.

7.1.1 Territory Briefings/Strategy Meetings

HHF Honolulu staff intend to continue providing on the ground DMRP oversight and host-agency status briefings/interagency strategy meetings twice a year.

7.2 Embedded Team

After some recruitment and turnover challenges, the embedded team positions are filled for each territory (Guam administrative assistant hire pending; CNMI EC to be hired by PSS), and respective team members are settled into their positions and performing as needed. These team members will continue to provide these service through the remaining years of the program unless otherwise instructed by the host agencies or OIA.

Honolulu-based team members will continue to provide oversight and assistance to embedded staff and guide efforts and information sharing needed for the ABCs initiative Year 3 DM reduction and process improvement objectives. Assistance includes the provision of A/E services as needed for related efforts.

7.3 DMRP Technical Support

HHF project management responsibilities are significant and a critical part of the success of the project. The burden is expected to transition to the local teams over the course of the five year initiative. Year 3 includes a significant increase in volume of planned construction work, due to recent REC 002 approval (NEPA review for older buildings and grounds projects) and the continued operationalization of the EAMS embedded staff.

7.3.1 Work Plan Updates, Project Tracking/Delivery, and Design Review Assistance

HHF Honolulu will continue to assist with project tracking and work plan updates, as well as to provide technical assistance to implement projects from the approved work plan. Project delivery includes scope, specification, and cost estimate creation. Honolulu-based team members, including architects, civil, structural and MEP engineers, provide technical input and resource contributions to the process and maintain the competent and timely DM project delivery services. Preparation and review of engineering designs and construction details will continue as the embedded teams move the larger scale health and safety projects that were held up by REC 002.

7.3.2 TSP Implementation

Ongoing capacity building activities are needed to continue working towards operational effectiveness. Year 3 Training and Sustainability Plan (TSP) efforts are based on priorities captured in the Needs Assessments that were conducted with the host agencies in each territory. The two highest needs identified were: 1. Maintenance program definition for staffing and budgeting; 2. School facility planning.

1. Maintenance Program Assessment and Recommendations:

The ABCs team, in collaboration with host-agency facility managers and using information from asset collection (e.g., material and equipment types), will create maintenance tasks and job plans (the work steps needed to execute tasks) and establish frequencies for task execution. Defined maintenance tasks will be mapped with existing, or reasonably planned, staff to

standup a sustainable preventive maintenance program that, in concert with ongoing capital improvement efforts, will extend the life of facility systems and reduce trouble call related expenses. Agreements will be made with each territory on task extents, and host agency facility managers will help define maintenance staff crafts and rates for inclusion in an EAMS-based maintenance program that will automate task assignment and scheduling.

2. Facility Planning Components:

Also expected to be done in close collaboration with the host agencies, the ABCs will define needed master plan components and set related goals and standards—e.g., enrollment analysis and related capital improvement planning principles, capacity analysis, conditions tracking and major repair/ replacement planning (i.e., capital improvement project planning), educational facility and site design considerations, and new schools site selection criteria. Outputs will be provided to the host agencies in each territory as reports or technical analyses for use in master plan creation.

7.3.3 OSP Action Plan Follow-through and Status Reporting

The OSP identified as many as 34 recommendations for improvements that could be made to facility management practices, along with target timeframes for execution. The recommended strategies and policies will be tracked in as the OSP execution plan, with annual reporting on accomplishments.

7.3.4 EAMS Rollout/Management

Honolulu-based team members will continue to provide remote quality assurance and technical support, including the provision of ongoing training to the embedded team and host-agency staff, leading continued system build-out, and coordinating with embedded team and the IT vendor on trouble call issues. The EAMS PM will guide the embedded teams in the use of the asset-sub components needed to enable work order, job plan, and asset template applications. The EAMS PM will assist the ECs in integrating the maintenance program tasks, job plans, frequencies, and staffing data and assignments into the EAMS (e.g., establishing business rules/process definition and setting up permissions for maintenance access staff and work tracking reporting systems).

The major tasks for EAMS rollout in Year 3 include: 1) finalizing asset collection, 2) building maintenance program details into the system, and 3) creating the service request process for creating work orders. Tasks 2 and 3 are largely dependent on host-agency input and cooperation at various levels. The timeframes for task completion shown in Table 2 are estimated with the assumption that the host-agencies provide needed information and action.

Table 3 - Year 3 EAMS Task Rollout Timeframes

Task	Estimated Completion Timeframe
1. Asset Data Collection/Entry	May 2018
2. Work Flows and Maintenance Program: <ul style="list-style-type: none"> • Job plan creation • Business process definition • Craft codes and labor data • Permissions • Reporting systems and feedback 	August 2018
3. Service Request (process/functionality)	October 2018

Once the site investigations and asset collection are complete, Maximo will be utilized to store job plans that describe the maintenance tasks step-by-step, the necessary labor hours, discipline, skill level, costs, tools required, scheduling requirements, among other project-related details for each of the asset types within the inventory.

As the embedded teams master the system and execute the tasks required in Year 3, the EAMS PM will work with them on utilizing other functions available in the EAMS (e.g., inventory module) to the extent that these functions are desired by and will be helpful to host-agency facility management. Other modules that may be pursued in subsequent years for system optimization include Maximo Scheduler and designing Work Flows, Maximo Spatial, Mobile Inspection Tool, Maximo Mobile.

EAMS user groups were established in territory to identify staff that would benefit from using the system, or be called upon to support system maintenance. The ABCs team continues to engage with these staff and will continue to engage them in system buildout, to the extent practicable, and provide demonstrations of system functionality as system rollout progresses.