DMS VERSUS NMAS ANALYSIS

Final Report

Abstract

An analysis of the resource costs of the Nevada Affordable Housing Assistance Corporation's workflow processes under the current Document Management System versus the proposed Nevada Mortgage Assistance System

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DMS vs NMAS Analysis
Final Report

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DMS vs NMAS Analysis
Final Report

Background

The Nevada Affordable Housing Assistance Corporation (NAHAC) is the "Eligible Entity" pursuant to the HFA Participation Agreement entered into by the United States Department of Treasury, the Nevada Housing Division (NHD) and NAHAC for the purpose of providing foreclosure prevention services, implementing the Hardest Hit Funds Program® (HHF).

The primary goal of NAHAC, is to disseminate all Treasury allocations ($202,911,676) by December 31, 2020, which marks the end of the HHF Program. A major step in reaching this goal is to make more Nevada homeowners aware of the HHF program's existence so that more homeowners will apply for program funding. In general, this awareness process can be accomplished by the introduction of any number of marketing methods such as television advertising, community meetings, press releases, etc.

In order to manage its funding allocations and accomplish its primary goal, NAHAC has implemented a workflow process that begins with the initial call from a Nevada homeowner and culminates with the funding or denial of funding of the homeowner's application. NAHAC currently utilizes its Document Management System (DMS) along with in-house staff, temporary staff and outside organizations to manage this workflow process. The previous DMS was significantly modified in September 2016 as a "short-term" solution to the myriad of problems associated with the original DMS. The original DMS was used by homeowners to acquire information about the NAHAC programs and to identify the homeowner documents required by NAHAC for a particular program in an attempt to obtain funding under the NAHAC HHF Programs. The website process was extremely labor intensive for both the homeowner and NAHAC. This system was woefully unsuccessful with the majority of homeowners abandoning the process long before a funding decision was made.

The Problem

The current DMS was not intended to handle a marked increase in the number of homeowner applicants entering the NAHAC workflow pipeline. The primary goal of the DMS along with call center support provided by credit.org was to ease the burden on distressed homeowners in applying for HHF funding.

Credit.org utilizes its own call center automated system during the initial contact with the homeowner and then reenters the homeowner information into the DMS as the initial steps in getting data into the NAHAC workflow pipeline. The use of the current DMS and credit.org systems was deemed to be short-term (lasting around 3 months) because predictably, the ongoing combined use of these systems has resulted in a growing number of problems which will continue to increase with their use. These problems include:

- The introduction of data errors into the NAHAC pipeline which end up being reported to NAHAC management, NHD, and Treasury oversite organizations.

- The automatic identification of which programs a homeowner is eligible for is not built into the DMS.

- Constant, on the fly, maintenance to the DMS to address errors and changing HHF program and reporting requirements. Under normal circumstances, these problems are addressed by IT change management committees and IT developers which test and implement program changes to automated systems.

- The use of a single individual to provide the development and maintenance of the DMS.

- An increased level of work being placed upon NAHAC management to address the validity of the data being reported to Treasury.

- The costs and inefficiencies of utilizing an increasing number of temp employees and outside organizations to manually handle processes that are not automated within the DMS.

- Collecting required homeowner information from outside agencies such as CoreLogic, Experian and the Nevada Department of Training and Rehabilitation (DETR), are handled outside of the DMS system and must be handled manually which slows down the workflow process.

- Funding is handled outside of the DMS system. There is no integrated system that connects the NAHAC accounting system to the disbursement of funds.

- Treasury reporting is handled outside of the DMS system. Information is collected from the DMS, formatted, and uploaded to a Treasury Department secure website.

When NAHAC implements its marketing plan, which it must do to reach its primary goal, larger and larger bottlenecks will form in the current DMS system and ultimately the workflow process will break down. This can already be seen in the backlog of homeowner files to be processed and deemed eligible for funding. This problem is occurring without implementing a marketing plan.

Under the current DMS, the only course of action that NAHAC can take in addressing these bottlenecks will be to add more permanent employees, temporary staff and contractors to the workflow process. This will result in the outcome depicted in Brook's Law of task management which states that, **"Adding manpower to a late workflow process makes it later."**

The Solution

The current Chief Operating Officer (COO) of NAHAC, has planned for the implementation of a long-term system that would replace both the DMS and the credit.org systems. The Nevada Mortgage Assistance System (NMAS) would be a clone of CMAC, which is the single integrated system used by CalHFA MAC to automate its HHF program workflow processes.

CMAC was developed and is maintained by Speridian Technologies LLC (Speridian) who will be contracted to take the CMAC base code and modify it to create NMAS. Much of this work has already been completed by Speridian and it will take 5 weeks to produce the production rollout of NMAS. This rollout will include the NAHAC prequalification, counseling, document management, processing underwriting and initial reporting systems. An additional 4 weeks are required to complete the post

funding activities and reporting modules. After that point Speridian will continue to maintain and support NMAS.

NMAS will address the problems related to the DMS by:

- providing a single source interface for entering homeowner responses to prequalification assessment questions

- providing the automatic identification of all programs under which a homeowner may be qualified to receive funding

- incorporating an organized committee and a development team to address NMAS error corrections and change management

- providing built-in validation of all data entered into the system

- being able to handle and process a much larger volume of homeowner files efficiently, which will reduce the need for additional NAHAC employees, temporary staff and outside contractor agencies

- providing interfaces to other agency's systems such as CoreLogic, Experian and DETR which will reduce the need for manual interfacing

- providing a funding module that will interface with NAHAC's accounting system

- including an automated reporting module built into NMAS that will produce reports in the format that is accepted by Treasury

The NAHAC IT Office Environment

NAHAC currently has Microsoft Office Nonprofit E3 licenses to cover the IT office needs of its in-house staff but currently utilizes the older Microsoft Office 2010 software running on its on-premise server. This server and the on-premise file systems will require replacement in the near future due to age. To forego the costs of purchasing and managing new on-premise servers and to take advantage of the numerous benefits in team collaboration that will result from a cloud-based IT office environment, it is strongly suggested that NAHAC migrate its IT office environment, including its file system, to the cloud. Since NAHAC currently has Office 365 licenses, there should be no cost for the purchase of new licenses.

The Purpose of the DMS vs NMAS Analysis

The NAHAC Board of Directors has requested an analysis of the resource costs of the NAHAC workflow processes under the current DMS versus the proposed NMAS.

The **DMS vs NMAS Analysis** will accomplish this by providing a comparison of the resources and resource costs required to support specific Hardest Hit Fund program funding goals utilizing two different methodologies across a 12-month period. This 12-month period would begin after the initial NMAS rollout is completed, which is tentatively scheduled for March 1, 2017. Method #1 identifies the resources and resource costs required to reach these funding goals with the continued use of the DMS.

DMS vs NMAS Analysis
Final Report

Method #2 identifies the resources and resource costs required to reach these funding goals after the initial NMAS rollout.

It should be noted that the analysis tables are not a budget. What they can provide to NAHAC management is a look at what resources may cost depending on which Method is chosen. That, in turn, may assist NAHAC management with future budgeting decisions related to these resources. For instance, after looking at the analysis, a decision may be made not to outsource files to an underwriting company and instead add more temp employees to handle eligibility files based on the projections as to how many eligibility files would need to be processed. As far as the analysis goes, all that is required is that the resource is applied fairly within each of the two scenarios.

In general, the only cost factors that will be included in the analysis will be associated with the resources that will be affected by choosing one or the other method. The resources will include in-house management and employee reporting resources, front-end processing support services, back-end processing support services, IT support services, and IT infrastructure support services.

DMS vs NMAS Analysis Baseline

NAHAC has received Treasury allocations for 5 of its HHF programs including Principal Reduction Program, (PRP), Short-Sale Acceleration Program (SSAP), Mortgage Reinstatement Program (MRAP), Mortgage Assistance Program Alternative (MAPA), and Unemployment Assistance Program (U-MAP). Effective October 31, 2016 both the MAPA and SSAP programs have been suspended and no new HHF applicants can apply for funding under these Programs.

The basis for the **DMS vs NMAS Analysis** is the establishment of the monthly funding goals for all current Programs over a 1-year timespan. Since the costs of processing files under different individual Programs is relatively the same, the actual per Program monthly funding goals are not essential for this analysis. Only the total monthly funding goals are required. The monthly funding goals will stay within the total remaining allocations amounts available for all NAHAC HHF Programs. The total monthly funding goals (shown in Table 1) for all Programs forms the basis for the analysis. The monthly funding goals were established by Verise Campbell (NAHAC COO).

	Remaining Program Allocations	Baseline Projected Funding Goals												
		Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
Estimate of the remaining monthly program allocations	$84,586,437	$83,586,437	$82,461,437	$81,211,437	$79,461,437	$77,461,437	$75,336,437	$73,086,437	$70,586,437	$67,836,437	$64,836,437	$61,711,437	$58,461,437	
Baseline Funding Goals		$1,000,000	$1,125,000	$1,250,000	$1,750,000	$2,000,000	$2,125,000	$2,250,000	$2,500,000	$2,750,000	$3,000,000	$3,125,000	$3,250,000	$26,125,000

Table 1

To calculate the number of files that would need to be funded (see Table 2) for NAHAC to reach its desired monthly funding goals, it was decided to use a ratio of the average amount funded for the 4th quarter of 2016 to the monthly funding goals and the average number of files funded for the 4th quarter of 2016.

DMS vs NMAS Analysis
Final Report

The ratio of the average number of files funded to the average number of files processed during the 4th quarter of 2016 is 9%. This percentage was increased from 9% to 27% (the Treasury stated National average for files funded to files processed) over a 12-month timespan to project the number of files that would need to be processed for NAHAC to reach its monthly funding goal.

The ratio of the average amount of funding for the 4th quarter of 2016 to the monthly funding goals along with the average number of homeowner calls that the credit.org call center received during the 4th quarter of 2016 were used to calculate the projected number of calls the call center would need to receive in order for NAHAC to reach its monthly funding goals. Additionally, the projected number of calls coming into the call center takes into account the projected 9% to 27% funding to files processed ratio (see Table 2).

		Baseline Projected Count of Files Funded vs Applications Processed											12-month totals
		Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	
Projected Count of Files Funded (Totals)		21	23	26	36	42	44	47	52	57	62	65	68	543
Projected Count of Files Processed (Totals)		222	213	207	257	264	254	246	252	258	262	256	250	2,941
Projected Count of Calls Received by credit.org (Totals)		2,287	2,290	2,499	3,435	3,852	4,015	4,168	4,540	4,893	5,228	5,331	5,425	47,962

Table 2

DMS vs NMAS Analysis Results

As a part of the DMS vs NMAS Analysis the following NAHAC resources were analyzed under the DMS and NMAS implementations:

- in-house management and employee reporting resources

- front-end processing support services resources

- back-end processing support services resources

- IT support services resources

- IT infrastructure resources

The following are the assumptions that went into analyzing each of these resources and the analysis results.

DMS vs NMAS Analysis
Final Report

In-house Management and Staff Support

Certain NAHAC management and staff personnel have duties and responsibilities, such as administrative and payroll, that are outside of the NAHAC workflow process. The use of DMS has resulted in between 15% to 33% of their time and salary being spent on data verification and validation, reporting, and accounting functions that take away from other duties and responsibilities. These individuals include the COO, the CPC, HCA, & Marketing Manager, the operations manager and the Accountant 1.

Table 3 shows the cost of in-house management and staff resources under the DMS and Table 4 shows the cost of in-house management and staff resources under NMAS.

In-house Management & Staff Support (DMS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
In-house Management & Staff Support Totals	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$59,610

Table 3

In-house Management & Staff Support (NMAS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
In-house Management & Staff Support Totals	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$14,974

Table 4

Chart 1 shows that approximately $45,000 of these Management and Staff salary resources will be spent on support of the DMS vs NMAS.
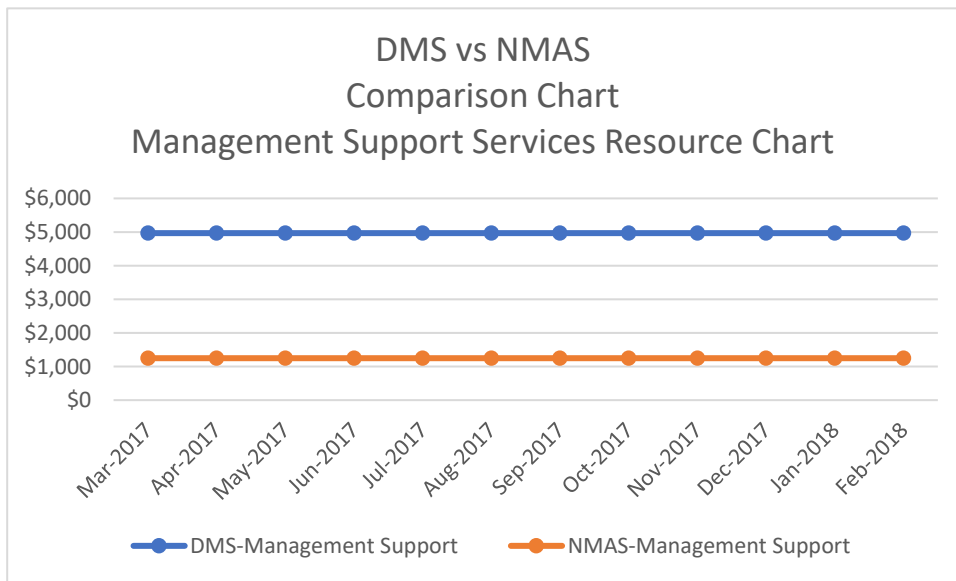
Chart 1

DMS vs NMAS Analysis
Final Report

Front-end Processing Support Services

Front-end processing support services include support services related to call center, prequalification, counseling, and document collection support services. For purposes of this analysis, the current credit.org contract was used to calculate the projected resource costs for credit.org under DMS. A proposed contract with a cap of $20,000/month compensation to credit.org was used under NMAS.

Under both DMS and NMAS, the new Tiered Compensation for Participating Housing Counseling Agencies model was used.

Table 5 shows the cost of front-end resources under the DMS and Table 6 shows the cost of front-end resources under NMAS.

Front-end Processing Support Services (DMS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
credit.org	$57,616	$57,717	$63,067	$87,052	$97,752	$101,927	$105,866	$115,390	$124,444	$133,028	$135,674	$138,085	$1,217,616
Housing Counseling Agencies	$20,018	$19,224	$18,633	$23,133	$23,748	$22,903	$22,201	$22,745	$23,211	$23,614	$23,044	$22,542	$265,015
Front-end Services Cost Totals	$77,635	$76,941	$81,700	$110,185	$121,500	$124,830	$128,066	$138,135	$147,655	$156,641	$158,717	$160,626	$1,482,631

Table 5

Front-end Processing Support Services (NMAS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
credit.org	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$240,000
Housing Counseling Agencies	$20,018	$19,224	$18,633	$23,133	$23,748	$22,903	$22,201	$22,745	$23,211	$23,614	$23,044	$22,542	$265,015
Front-end Services Cost Totals	$40,018	$39,224	$38,633	$43,133	$43,748	$42,903	$42,201	$42,745	$43,211	$43,614	$43,044	$42,542	$505,015

Table 6

By placing a cap on the total monthly compensation being paid to credit.org for front-end processing under a long-term NMAS contract (which is yet to be determined), the analysis shows a significant decrease in the front-end resource cost for front-end processing, under NMAS versus the DMS. Chart 2 shows the difference in fron-end processing resource costs between the DMS vs NMAS.
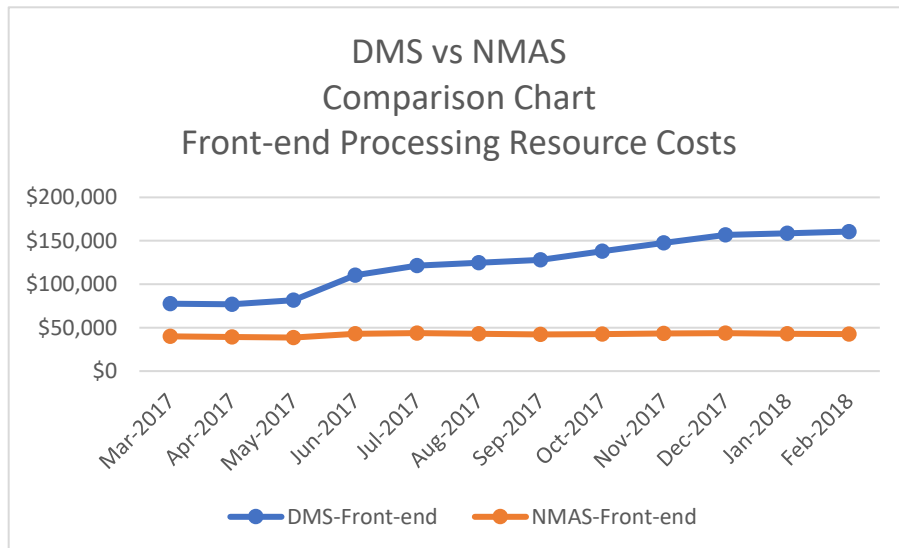

Chart 2

DMS vs NMAS Analysis
Final Report

Back-end Processing Support Services

Back-end processing support services include processing, underwriting, funding and reporting support services. An earlier version of this section of the analysis identified the high-cost of utilizing an outside contractor to handle the overflow of files requiring underwriting services. Additionally, it has been discovered that the current temp employees are capable of handling the backlog of underwriting files. **The back-end processing resources table and cost associated with underwriting services has been removed from the analysis. The costs of underwriting, by utilizing an outside underwriting company, are estimated to be $403,200 under DMS and $42,150 under NMAS.**

Table 7 shows the cost of back-end (temporary staff) resources under DMS, Table 6 shows the cost of these resources under NMAS.

Back-end Processing Temporary Employee Support Services (DMS Analysis)	hourly rate	Mar-2017 work days 23	Apr-2017 work days 20	May-2017 work days 22	Jun-2017 work days 22	Jul-2017 work days 20	Aug-2017 work days 23	Sep-2017 work days 20	Oct-2017 work days 21	Nov-2017 work days 19	Dec-2017 work days 20	Jan-2018 work days 21	Feb-2018 work days 19	12-month total
Processing Specialist (UMA)	$21.00	$15,456	$13,440	$14,784	$14,784	$13,440	$15,456	$13,440	$14,112	$12,768	$13,440	$14,112	$12,768	$168,000
Eligibility Specialist	$21.00	$7,728	$6,720	$7,392	$7,392	$6,720	$7,728	$6,720	$7,056	$6,384	$6,720	$7,056	$6,384	$84,000
Temporary Staff Cost Totals		$23,184	$20,160	$22,176	$22,176	$20,160	$23,184	$20,160	$21,168	$19,152	$20,160	$21,168	$19,152	$252,000

Table 7

Back-end Processing Services Temporary Employee Support (NMAS Analysis)	hourly rate	Mar-2017 work days 23	Apr-2017 work days 20	May-2017 work days 22	Jun-2017 work days 22	Jul-2017 work days 20	Aug-2017 work days 23	Sep-2017 work days 20	Oct-2017 work days 21	Nov-2017 work days 19	Dec-2017 work days 20	Jan-2018 work days 21	Feb-2018 work days 19	12-month total
Processing Specialist (UMA)	$21.40	$15,750	$13,696	$15,066	$3,766	$3,424	$3,938	$3,424	$3,595	$3,253	$3,424	$3,595	$3,253	$76,184
Eligibility Specialist	$21.40	$7,875	$6,848	$7,533	$7,533	$3,424	$3,938	$3,424	$3,595	$3,253	$3,424	$3,595	$3,253	$57,694
Temporary Staff Cost Totals		$23,626	$20,544	$22,598	$11,299	$6,848	$7,875	$6,848	$7,190	$6,506	$6,848	$7,190	$6,506	$133,878

Table 8

Under DMS, NAHAC estimates that it will require 4 Processing Specialist and 2 Eligibility Specialists throughout the 12-month analysis time period. Under NMAS, NAHAC will require 4 Processing Specialist and 2 Eligibility Specialists for the first 3 months of the analysis time period; 1 Processing Specialist and 2 Eligibility Specialists for the fourth month of the analysis time period and 1 Processing Specialist and 1 Eligibility Specialist for the final eight months of the analysis time period.

DMS vs NMAS Analysis
Final Report

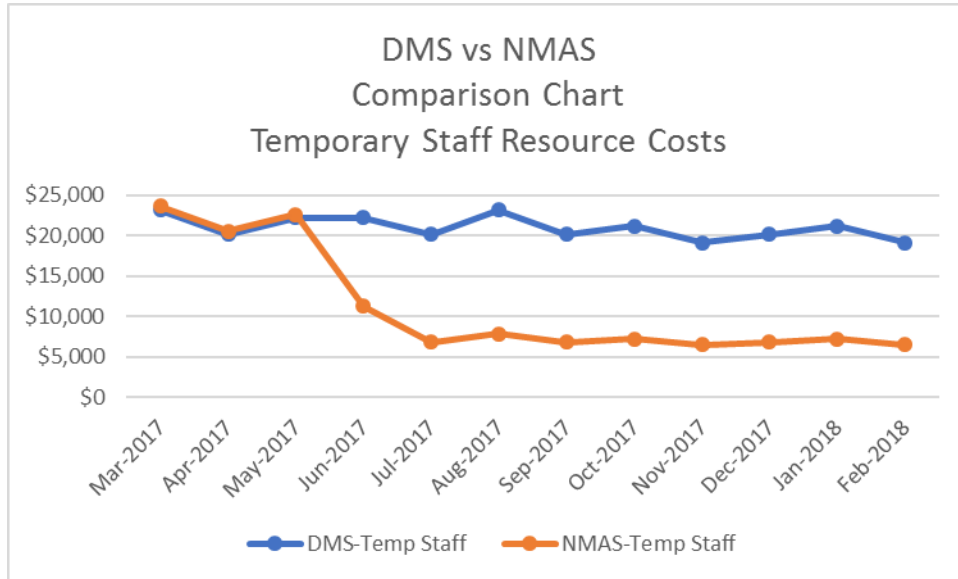Chart 3 shows a comparison of the costs of temporary staff support resources for DMS versus NMAS.

Chart 3

DMS vs NMAS Analysis
Final Report

IT Services Support Resources

IT Support Services Resources include all of the in-house and contractor resources required to support the DMS and NMAS environments. It also includes the in-house and contractor resources that are needed to support the business office IT environments under DMS and NMAS.

The DMS IT Support Environment

Under DMS, the Project Manager/CIO duties and responsibilities will be much more directed toward CIO functions. These duties and responsibilities will include the design, development, implementation and administration of the Microsoft Office 365 cloud environment; supervise the dismantling of the NAHAC on-premise server; rewrite the NAHAC IT policies and procedures; and rewrite the NAHAC IT security, compliance, risk assessment, disaster recovery; and other related IT plans. It is projected that these duties and responsibilities will last through July 2017 at which time the IT administrative functions would be turned over to IT in-house support person.

Under DMS, IT support will be transitioned from Agilitec IT (the current outsourced IT support company) to in-house staff support. This transition is projected to last approximately 3 months at which time Agilitec's contract would end.

Under DMS, development and maintenance of the DMS is outsourced to C&C Consulting LLC. This function is provided by one individual. As more and more temporary fixes are put in place in an attempt to keep the DMS system functioning as required, the cost of support services provided by C&C Consulting will increase.

Table 9 shows the cost of IT support resources services under DMS.

IT Support Services (DMS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
Project Manager/CIO	$13,300	$13,300	$13,300	$13,300	$13,300	$0	$0	$0	$0	$0	$0	$0	$66,500
IT in-house support	$0	$0	$0	$0	$0	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$52,500
AGILITEC IT	$2,500	$2,500	$2,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,500
C&C Consulting LLC	$5,500	$5,600	$5,700	$5,800	$5,900	$6,000	$6,100	$6,200	$6,300	$6,400	$6,500	$6,600	$72,600
IT Support Cost Totals	$21,300	$21,400	$21,500	$19,100	$19,200	$13,500	$13,600	$13,700	$13,800	$13,900	$14,000	$14,100	$199,100

Table 9

The NMAS IT Support Environment

Under NMAS, March 2017 would mark the third month of 12 monthly payments to Speridian for the development of NMAS. The monthly maintenance payments to Speridian for NMAS would also begin in March 2017 and culminate in February 2018.

Under NMAS the duties and responsibilities of the CIO would be similar to that of DMS but the plans would be related to the NMAS environment and would include working with NAHAC end users and Speridian support personnel as part of the change management team. Under NMAS the CIO function would be in place until October 2017 at which time it would be turned over to an in-house IT support person with a higher skill set than the in-house IT support person under DMS.

DMS vs NMAS Analysis
Final Report

As with DMS, under NMAS, IT support will be transitioned from Agilitec IT (the current outsourced IT support company) to in-house staff support. This transition is projected to last approximately 3 months at which time Agilitec's contract would end.

Under NMAS, assistance in the transition from DMS to NMAS would be provided by C&C Consulting LLC. This support would continue through May 2017.

Table 10 shows the cost of IT support resources services under NMAS.

IT Support Services (NMAS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
Speridian Technologies, LLC (Implement)	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000			$200,000
Speridian Technologies, LLC (Support)	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$180,000
Project Manager/CIO	$13,300	$13,300	$13,300	$13,300	$13,300	$13,300	$13,300	$13,300	$0	$0	$0	$0	$106,400
IT in-house support	$0	$0	$0	$0	$0	$0	$0	$0	$9,500	$9,500	$9,500	$9,500	$38,000
AGILITEC IT	$2,500	$2,500	$2,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	
C&C Consulting LLC	$11,000	$11,000	$11,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$33,000
IT Support Cost Totals	$61,800	$61,800	$61,800	$48,300	$48,300	$48,300	$48,300	$48,300	$44,500	$44,500	$24,500	$24,500	$557,400

Table 10

Chart 4 shows a comparison of the costs of IT support service resources for DMS versus NMAS.

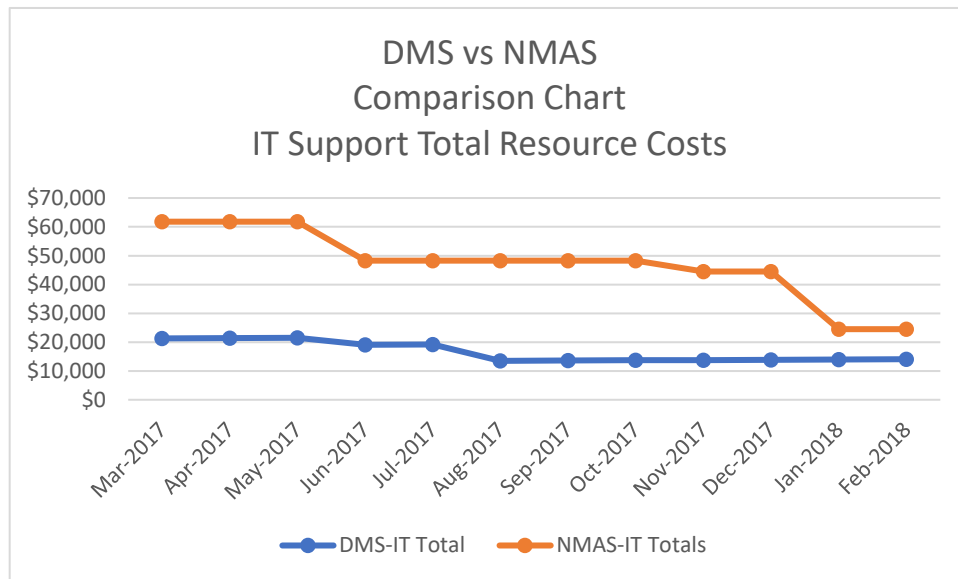*Chart 4*

DMS vs NMAS Analysis
Final Report

IT Infrastructure Resources

IT infrastructure resources includes the cost of computer hardware (servers, desktops and networking equipment), software (off-the-shelf or licensed), and the cost of 3rd party providers such as COX Cable.

Under both DMS and NMAS, the IT Office environment will migrate from an on-premise environment to a cloud environment. A new NAHAC file system would be housed at a Microsoft Data Center and managed by NAHAC in-house IT personnel. NAHAC has already purchased the Microsoft Office 365 licenses.

The standard desktop environment used by NAHAC in-house staff are **Compaq Convertible Elite 8200 mini towers** with:

- Intel i7-2600 CPU at 3.40GHz

- 4GB RAM

- 1TB hard drive

- Windows 7 Pro 64 bit OS

This configuration is acceptable for the cloud based office environment that NAHAC will migrate to.

With the closure of the NAHAC Reno office, NAHAC currently has enough desktop systems for the estimated 12 in-house staff, 6 temporary staff and 3 contractor employees that will work within the office environment.

The DMS IT Infrastructure

Under DMS, the IT Infrastructure for the DMS application would remain in a virtual environment. Currently, this server is paid for as a part of the monthly support contract paid to Agilitec. Once the Agilitec contract ends, NAHAC may need to relocate the DMS application to another hosted server. This server may be located in the same Microsoft data center as the NAHAC data files.

Table 11 shows the cost of IT infrastructure resources under the DMS.

IT Infrastructure (DMS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
Office 365 Licenses	$216	$216	$216	$216	$216	$216	$216	$216	$216	$216	$216	$216	$2,592
DMS Virtual Server Environment (IaaS)	$0	$0	$0	$706	$706	$706	$706	$706	$706	$706	$706	$706	$6,351
IT Infrastructure Cost Totals	$216	$216	$216	$922	$922	$922	$922	$922	$922	$922	$922	$922	$8,943

Table 11

The NMAS IT Infrastructure

Under NMAS, a more robust cloud-based infrastructure will be required as shown in Table 12.

DMS vs NMAS Analysis
Final Report

Additionally, there are 3rd party software components that are required as a part of the NMAS application the majority of which will be paid for in full while NMAS is under development. Only a few will have monthly license fees.

Table 12 shows the cost of IT infrastructure resources under UMAS.

IT Infrastructure (NMAS Analysis)	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	12-month total
Office 365 Licenses	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$1,080
NMAS Virtual Server Environment (Azure)	$987	$987	$987	$987	$987	$987	$987	$987	$987	$987	$987	$987	$11,844
3rd party applications	$99	$99	$99	$99	$99	$99	$99	$99	$99	$99	$99	$99	$1,188
IT Infrastructure Cost Totals	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$12,924

Table 12

Chart 5 shows a comparison of the costs of IT infrastructure resources for DMS vs NMAS.
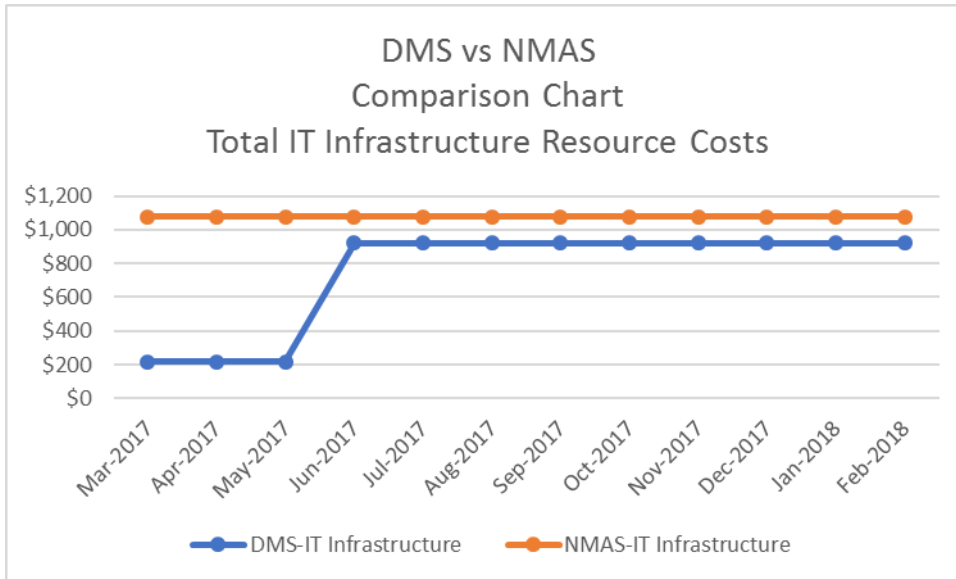

Chart 5

DMS vs NMAS Analysis Conclusions

Based on the DMS vs NMAS Analysis, the overall costs of resources under NMAS are considerably less (**$770,593**) than that of DMS over the time period that the analysis covers. This difference is mainly due to the current short-term credit.org contract versus what is being proposed for the long-term contract. It should be considered that if the current credit.org contract is set equal to the proposed credit.org long-term contract that has a $20,000/month cap in place, then the overall cost of resources is virtually the same (NMAS at **$207,023** higher than DMS).

DMS vs NMAS Analysis
Final Report

It should also be noted that these calculations do not include the estimated resource costs of outsourcing files to a company that provides underwriting services, an estimated cost difference of **-$361,050** from DMS to NMAS.

What the **DMS vs NMAS Analysis** does not show is the costs in time, particularly for reporting resources, that will be required to rectify the increased number of human errors that will be inserted into the DMS workflow process. NMAS will produce a more efficient, streamlined and less error prone workflow process than the DMS at a comparable price. Under NMAS you would have greater economies of scale than with DMS which would allow for an even greater capacity than the current funding goals if such activity were to transpire in the future, and would result in an even greater savings if the analysis period were extended even further.

Table 13 shows the total monthly resource costs under DMS and Table 14 shows the total monthly resource costs under NMAS.

In-house Management & Staff Support Totals	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$4,968	$59,610
Front-end Services Cost Totals	$77,635	$76,941	$81,700	$110,185	$121,500	$124,830	$128,066	$138,135	$147,655	$156,641	$158,717	$160,626	$1,482,631
Temporary Staff Cost Totals	$23,184	$20,160	$22,176	$22,176	$20,160	$23,184	$20,160	$21,168	$19,152	$20,160	$21,168	$19,152	$252,000
IT Support Cost Totals	$21,300	$21,400	$21,500	$19,100	$19,200	$13,500	$13,600	$13,700	$13,800	$13,900	$14,000	$14,100	$199,100
IT Infrastructure Cost Totals	$216	$216	$216	$922	$922	$922	$922	$922	$922	$922	$922	$922	$8,943
TOTAL DMS RESOURCE COST													
Total Resource Costs (DMS)	$127,302	$123,685	$130,559	$157,350	$166,750	$167,403	$167,716	$178,892	$186,496	$196,590	$199,775	$199,767	$2,002,284

Table13

In-house Management & Staff Support Totals	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$1,248	$14,974
Front-end Services Cost Totals	$40,018	$39,224	$38,633	$43,133	$43,748	$42,903	$42,201	$42,745	$43,211	$43,614	$43,044	$42,542	$505,015
Temporary Staff Cost Totals	$23,626	$20,544	$22,598	$11,299	$6,848	$7,875	$6,848	$7,190	$6,506	$6,848	$7,190	$6,506	$133,878
IT Support Cost Totals	$61,800	$61,800	$61,800	$48,300	$48,300	$48,300	$48,300	$48,300	$44,500	$44,500	$24,500	$24,500	$557,400
IT Infrastructure Cost Totals	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$1,077	$12,924
TOTAL NMAS RESOURCE COST													
Total Resource Costs (NMAS)	$127,769	$123,893	$125,356	$105,057	$101,221	$101,403	$99,673	$100,560	$96,541	$97,286	$77,059	$75,872	$1,231,691

Table 14

DMS vs NMAS Analysis
Final Report

Table 15 shows the difference in resource costs between DMS and NMAS

In-house Management & Staff Support Totals	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$3,720	$44,636
Front-end Services Cost Totals	$37,616	$37,717	$43,067	$67,052	$77,752	$81,927	$85,866	$95,390	$104,444	$113,028	$115,674	$118,085	$977,616
Temporary Staff Cost Totals	-$442	-$384	-$422	$10,877	$13,312	$15,309	$13,312	$13,978	$12,646	$13,312	$13,978	$12,646	$118,122
IT Support Cost Totals	-$40,500	-$40,400	-$40,300	-$29,200	-$29,100	-$34,800	-$34,700	-$34,600	-$30,700	-$30,600	-$10,500	-$10,400	-$365,800
IT Infrastructure Cost Totals	-$861	-$861	-$861	-$155	-$155	-$155	-$155	-$155	-$155	-$155	-$155	-$155	-$3,981
TOTAL DIFFERENCE IN RESOURCE COSTS													
Total Resource Costs Differences (DMS to NMAS)	-$467	-$209	$5,203	$52,294	$65,529	$66,000	$68,042	$78,332	$89,955	$99,304	$122,716	$123,895	$770,593

Table 15

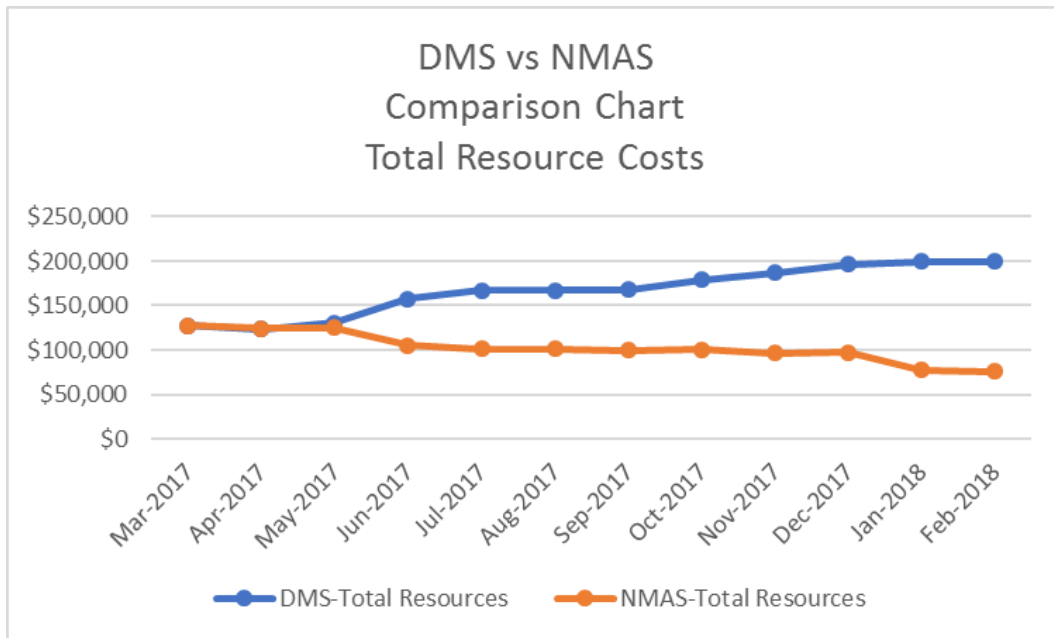Chart 6 shows a comparison of the total resource costs for the DMS versus NMAS.

Chart 6