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Operational Analysis of EMS & Fire Deployment/Response
Pinellas County, Florida

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CONSULTANT DRAFT REPORT

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EXECUTIVE SUMMARY

Pinellas County's emergency medical services (EMS) system is widely recognized as one of most clinically sophisticated in North America. In recent years, however, concerns related to the system's financial sustainability have been growing. This led to the search for solutions resulting in the submission of two proposals to the Pinellas County Board of Commissioners, who also serve as the County Emergency Medical Services Authority.

Subsequently, the County Commissioners requested Fitch & Associates ("*FITCH*" or "The Consultant") to analyze and fully vet the two proposals. *FITCH* was asked to conduct its review from an operational perspective, to cost each proposal individually, and to compare each proposal to the existing system's operational performance and cost. The proposals and the current EMS system were to be assessed regarding performance using a sophisticated simulation process incorporating input from stakeholders at multiple stages of the project. The Consultants were also asked to use professional judgment in identifying specific system changes and develop a third plan. The intent of the third plan was to align community-wide resources to enhance efficiency, maintain service levels and result in a more efficient system, position the system for anticipated "accountable healthcare" funding models, while also facilitating long-term financial sustainability. Maintaining the current system's high level of pre-hospital care for patients and fire protection for the public was a top priority in all cases.

Simulations of the following four proposals are reviewed in this document:

- **IPS**: Integrated Performance Solutions Proposal as presented to the Board of County Commissioners on October 11, 2011
- **Sanford/Millican-1** (SM-1): Pinellas County Emergency Medical Service Providers Cost Containment and Sustainability Model as presented to the Board of County Commissioners in July 2011.
- **Sanford/Millican-2** (SM-2): The SM-1 proposal as modified in the simulation process to rectify excessive workloads on 24-hour units.
- **Community-wide Alignment of Resources for Efficiency and Service** (CARES): *FITCH*'s plan to streamline the current system, maintain performance, and reduce costs.

PROJECT METHODOLOGY AND PROCESS

Between October 2012 and May 2013, *FITCH* convened on-site meetings with elected and appointed officials at state, county and municipal levels. The Consultants also met with fire agency management, labor representatives, ambulance service management, members of the EMS Advisory Council, hospital administrators, the County Medical Control Board and the County Medical Director and toured County Communications Center, Sunstar Dispatch and Sunstar operations and met directly with Fire Chiefs.

Industry accepted, commercially available, software developed by the Optima Corporation was used to compare the operational characteristics of the various models using simulation, after which a cost model was constructed using fiscal year 2010-11 (FY10-11) data. The Optima software simulation

process was vetted with Fire Chiefs, labor representatives, and Lt. Sanford and Capt. Millican in numerous meetings starting in mid-October 2012 with the final series of meetings in early May 2013. Communication with the County Public Safety Services personnel was ongoing through bi-weekly conference calls and status updates. Cost information was obtained from the County Public Safety Services Department and fire agency personnel costs were confirmed and/or amended by each agency. *FITCH* was specifically instructed to review neither revenues nor funding strategies in these proposals

FINANCIAL ASSUMPTIONS

Pinellas County, like most governmental entities, has been challenged in recent years with declining revenues on a number of fronts. There have been numerous studies, lawsuits and resolution-based collaboration efforts regarding funding for the Pinellas EMS system partners in the past several years. Significant time and effort have been expended attempting to define and defend internal infrastructure functions (and costs) required to operate various EMS system models.

In this report, *FITCH* took a high-level approach to "true costs" in the system and to focus on differences in costs between proposals. Each of the proposals set out to accomplish the task of maintaining clinically superior performance. The infrastructure and administrative functions required by all of the models will be similar. The costs of providing these administrative and infrastructure functions will be similar in each of the proposals.

It has been the experience of *FITCH* that 70% - 80% of the total operating costs of emergency medical and fire systems are the personnel costs for the frontline responders (firefighters, paramedics, emergency medical technicians (EMTs) who staff rescues, engines, ambulances, etc.). When analyzing differences in costs between proposals, the common administrative and infrastructure costs do not materially contribute to **distinguishing** between proposals. Therefore, the assumed costs for these functions have been held constant across each of the models. The end result is that changes in personnel costs will be the largest contributor to differences in costs between proposals.

Personnel costs for Sunstar were gathered from Sunstar and county documents and confirmed by Sunstar. Personnel costs for fire department personnel were gathered from fire agency and county documents and were confirmed or amended by the Fire Chiefs.

CURRENT SYSTEM

The existing fire, medical first response, and medical transport system in Pinellas County provides a high level of service to its citizens through a unique network of 18 fire agencies and a contracted ambulance transport provider operating under the County's trade name, Sunstar Paramedics. Fire districts and Sunstar work under performance-based contracts and consistently meet response targets. As required by the County EMS Ordinance, a single medical director oversees all clinical aspects of the system. The system is widely regarded as one of the most clinically sophisticated EMS systems in North America.

Pinellas County has 103 fire apparatus (vehicles) in its system, including "Rescues," "Engines," "Trucks," and "Squads." All of these apparatus operate on 24-hour schedules. In addition, Sunstar has 78 ambulances operating on flexible schedules. By way of comparison, Sunstar logged 306,147 actual unit hours during FY10-11, approximately equivalent to 35 24-hour Rescue apparatus.

In contrast to the fire districts operating on a fixed 24-hour schedule, Sunstar operates using flexible scheduling to match the supply of ambulances with changes in demands for service by time of day. Another significant operational difference between the fire districts and Sunstar appears in deployment strategies: the fire districts dispatch apparatus from fixed stations (static deployment) while Sunstar dispatches ambulances from variable locations (dynamic deployment) that change by time of day. The Pinellas EMS system obtains revenues from two primary sources: an EMS millage and the fees charged for transport of patients.

The fire agencies serving Pinellas County cover a vast range of district sizes. The four largest districts, St Petersburg, Clearwater, Largo, and Pinellas Park represent two thirds (66%) of all calls; the ten largest districts represent 90% of all calls. Deployment strategies that would match the staffing of units to call demand, termed peak load units (PLUs), are meaningful in only the large districts with a higher call volume.

IPS PROPOSAL SUMMARY

IPS Simulation —

- Achieves response times targets
- Decommissions 25 apparatus and 150+ firefighters
- Has crew costs of $90.8 million
- Incurs additional fleet operational costs of $5 million
- Demonstrates reserve capacity in the system

The IPS Proposal maintains the administrative functions and infrastructure of the Pinellas County EMS system. Under this proposal, all 25 Rescue apparatus in the county are decommissioned. The medical first response function of these 25 Rescues is assumed by 72 Advanced Life Support (ALS) capable apparatus; 59 ALS capable apparatus already exist in the system and 13 more are obtained by upgrades to existing Basic Life Support (BLS) apparatus.

The IPS Proposal offers the option of decommissioning a complete category of apparatus. The count of apparatus decreases from 103 in the current system to 78. Unit hours among the fire districts decrease by 24% from 902,280 to 683,280. Decommissioning 25 Rescues decommissions 50 crew positions. These changes could affect 150+ firefighters. The mileage traveled by the decommissioned Rescues must be taken up by the heavier and more expensive Engines and Trucks, resulting in increased operational costs.

Comparing the IPS simulation to the Historic simulation reveals differences in response time patterns that are insignificant. The Historic CAD and Historic simulation show that the target response times are not met in all districts. Hits and misses occur, particularly among the 14 smallest districts representing only 10% of all calls.

In summary, the IPS proposal reduces personnel costs. Increased mileage on heavy apparatus increases operational costs. The net change is still a reduction of costs compared to the current system. The IPS Proposal decommissions 25 Rescues in a fleet of 103 apparatus, decreases unit hours by 24%, and, based on the simulation, the system still achieves its performance targets. In short, this model is theoretically achievable but lacks the realistic approach to make it implementable. Pinellas county fire and EMS are not in a state of disrepair that would require such a drastic cut. This finding serves as an operational definition of reserve capacity in the system. This finding is the most important single lesson to be learned from the IPS proposal.

SANFORD-MILLICAN PROPOSAL

The Sanford-Millican Proposal calls for a complete change in the structure of the Pinellas County EMS system. Sunstar is decommissioned and responsibility for medical transport is transferred to the 18 independent fire agencies. The structure of the resulting system does not conform to the requirements of the County EMS Ordinance. Many of the centralized administrative and infrastructure functions of the current system would be dispersed among the 18 independent fire agencies. For purposes of costing this proposal, *FITCH* assumed that the 18 fire districts would execute these functions at no increase in costs over the current system.

The Sanford-Millican Proposal, as presented, is silent regarding the stationing of apparatus and deployment strategies. *FITCH* engaged Lt. Sanford and Capt. Millican in direct discussions of these details so that the simulations would correctly reflect their vision of the proposal.

Simulation SM-1 Summary

Simulation Sanford-Millican-1 (SM1) —

- Achieves response times targets
- Has crew costs of $110.8 million
- Crew utilization levels are not safe to implement
- New governance structure operationally difficult to implement

Comparing the SM-1 simulation to the Historic simulation reveals differences in response time patterns that are insignificant.

The critical failure of the SM-1 simulation is related to Unit Hour Utilizations (UhU). Under the SM-1 proposal, crew workloads on the medical transport units are at 62.18% (.62 UhU) for the 12-hour PLUs and 40.84% (.41 UhU) for the 24-hour Rescues. Both of these crew utilizations are considered unrealistically high and dangerous. The Pinellas County Fire Chiefs recommend that utilizations on 24-hour units not exceed 30% (.30 UhU). Even more stringent recommendations are made in a study by the International Association of Fire Chiefs detailed later in this report. The Pinellas EMS medical director has expressed strong concerns related to fatigue from long shift lengths and excessive unit hour utilization as a contributing factor in medical errors.

To reduce its costs, the Sanford-Millican Proposal intends to staff the 12-hour PLUs with "single-patch" personnel using ex-Sunstar EMTs and Paramedics hired at Sunstar rates. The 24-hour Rescues will be staffed with "double-patch" personnel using firefighter Paramedics hired at fire department rates. The new Rescues and PLUs will be stationed in particular cities, and the staffs will become new employees of those cities.

The personnel costs of SM-1 are almost equal to the personnel costs of the current system. This is a most curious outcome. In the current system, all of the positions on transport units are filled by lower cost Sunstar employees. In the SM-1 model, more than half of the positions on transport units are filled by higher cost fire department employees. Yet, the personnel cost of SM-1 is slightly less than in the current system. Reserve capacity already existing within the fire departments serves to internally subsidize the increased costs of using firefighters to staff medical transport units.

The same conclusion is reached considering unit hours. Decommissioning Sunstar transfers 297,000 unit hours of transport responsibility to the fire fleet, yet, the fire fleet needs to add only 163,000 unit hours to pick up this responsibility, implying that 134,000 unit hours exist within the current system as "reserve capacity," equivalent to approximately fifteen 24-hour apparatus. Once again this theoretical reserve capacity is based on unrealistic workloads and could not be implemented in a way that these cost savings could be achieved or maintained.

Simulation SM-2 Summary

Simulation Sanford-Millican-2 (SM-2) —

- Achieves response times targets
- Crew costs significantly more than other models: $120.9 million
- Complies with utilization recommendations
- New governance structure operationally difficult to implement

SM-1 should not be implemented because crew workloads are too high on the Rescues and PLUs conducting medical transport. SM-2 rectifies this issue by adding seven more 24-hour Rescues and 32

more 12-hour PLUs into the model in order to reduce workloads back to acceptable values; 24.00% (.24 UhU) on Rescues and 36.00% (.36 UhU) on PLUs.

Comparing the SM-2 simulation to the Historic Simulation reveals differences in response time patterns which are immaterial. To the extent that the performance in the Historic Simulation is deemed acceptable, then the same judgment needs be accorded to the performance of SM-2.

With the increased inventory of apparatus, the personnel costs of SM-2 are higher than in the SM-1 model, the current system, and the IPS model. It should be noted that with significant effort some unit hours could be reduced by having better experience and matching demand with tighter schedules. This would, however, be eroded over time as unionized fixed schedules would eventually become part of the equation.

COMMUNITYWIDE ALIGNMENT OF RESOURCES FOR EFFICIENCY AND SERVICE (CARES) PLAN SUMMARY

Simulation CARES Plan (CARES) —

- Achieves response times targets
- Crew costs are less than current system: $105.7 million
- Retains a balanced inventory of apparatus – matched to call demand
- Utilizes current governance structure

The IPS and SM Proposals represent the extremes in the continuum of possible approaches to make the system more efficient. To develop a third approach, the Consultants considered multiple stakeholder ideas, including "hybrid" models. It was a difficult task given the core mandate not to negatively impact clinical or other service levels. The Consultants balanced the risk of change with economic value obtained and utilized an intermediate approach, elaborated below, as the Communitywide Alignment of Resources for Efficiency and Service (CARES) Plan. The CARES Plan maintains the current administrative functions and infrastructure of the Pinellas County EMS system.

When looking at the Sanford / Millican models, it was noted that the demand for service dropped significantly through the night hours and that in the current system there was overstaffing in these hours. Thus, 19 units were identified that required multiple fire apparatus for coverage during daylight hours and required fewer apparatus for coverage during nighttime hours. Apparatus, particularly Rescues, in these stations were realigned from 24-hour units to 14-hour PLUs.

Medical Priority Dispatch (MPDS) protocols are recognized worldwide as a clinically appropriate mechanism to facilitate assigning the correct resource and response priorities for medical calls. Each 911 call received does not require a response by both fire first agency and transport ambulance units. The

county has taken steps to reduce multiple agency responses to low acuity calls. The fire departments expressed concern about reducing their first response role. While such a change is clinically appropriate, fire agencies feared it would negatively impact perceptions of FD service in the individual communities. The CARES model continues to utilize fire units to first respond to all medical calls. Fire becomes the primary responder on lower acuity calls significantly reducing the number of assignments to which the transport system responds.

FITCH recognized that since the FD currently responds to lower acuity calls and an FD role reduction on these calls did not translate into any demonstrative cost savings, *FITCH* therefore opted to maintain the FD role and community involvement on these calls while potentially better positioning the system under a future accountable healthcare delivery model.

The personnel costs of the CARES plan are less than the current system, but more than the IPS Proposal.

MODEL COMPARISON TABLES

Tables 1 and 2 provide side-by-side comparisons of the apparatus inventory and crew costs across all simulation models. Important notations are provided under cost comparisons.

Table 1. Inventory of Apparatus per Simulation

Apparatus Count 24-Hour Units	Historic Simulation	IPS	SM-1	SM-2	CARES
Engines	51	51	51	51	51
Trucks	19	19	19	19	18
Squads	8	8	8	8	5
Rescues	25	0	36	43	11
Totals	**103**	**78**	**114**	**121**	**85**
Peak Load Units	**0**	**0**	**16 12-hour PLU's**	**48 12-hour PLU's**	**19 14-hour PLU's**

Table 2. Comparison of Personnel Costs of the Proposal

Major Costs Items [$$ Millions]	Historic Simulation	IPS	SM-1[1,2]	SM-2[1,2]	CARES
Fire Agencies	$99.1	$77.9	$110.8	$120.9	$92.8
Sunstar	$12.9	$12.9	0.0	0.0	$12.9
Subtotal	**$112.0**	**$90.8**	**$110.8**	**$120.9**	**$105.7**
Fleet Ops Costs	0.0	4.9	0.0	0.0	0.0
Total	**$112.0**	**$95.7**	**$110.8**	**$120.9**	**105.7**
Change	**0.0**	**-$16.3**	**-$1.2**	**+$8.9**	**-$6.3**

[1] Assumes single patch (non-firefighter) crews on the PLU's at Sunstar pay rates.

[2] A pay premium of 3-5% typical for FF EMT's and paramedics on transport duty is not included in pay rates for firefighters as this would be subject to negotiation by the individual agencies.

The IPS Proposal incurs material and significant increases in fleet operating costs due to the use of heavy fire apparatus in place of lighter weight rescue units. Increased fleet costs are noted in a separate line in the table and included in the IPS Proposal total.

The changes in personnel costs, shown in Table 2 above, specifically accrue to the fire districts. The distribution of these changes across the districts will not be uniform. The extent to which any of these changes flow through to the County is a matter of policy decisions at the County level of governance.

A number of regional enhanced service opportunities, including community paramedicine outreach programs are detailed in this report. Among them are services that could address special response needs and additional support for hard-to-serve areas. Such services could potentially be funded or partially funded by applying the cost savings which are detailed in the report.

Achieving cost savings while maintaining service levels from any course of action is the short-term goal of the recommendations made. The report provides a positive framework for thoughtful dialogue between the County and its EMS partners to address achieving potential savings, timing of implementation of the selected model and any subsequent potential long-term service enhancements noted.

SUMMARY

Determining how and by whom Emergency Medical Services should be provided has been a historically contentious issue in Pinellas County. The *FITCH* consulting process was designed with high levels of transparency and stakeholder engagement. Each of the proposed models was objectively analyzed in a manner to ensure they achieve current response time performance levels and allow a reasonable comparison of costs. *FITCH* strongly suggest that this world class system not be fundamentally altered but rather tweaked in a way that maintains the system strength, positions the system for the future and reduces cost based on excess capacity. The Consultants acknowledge the professionalism and dedicated involvement of leaders from each fire agency, Sunstar and the County Department of Public Safety Services throughout the process leading to this report.

INTRODUCTION

The Pinellas County Emergency Medical Services (EMS) system is unique from both an operational and financial perspective. It integrates public and private sector response organizations to serve a large, densely populated geographic area on Florida's central Gulf coast. Revenues derived from the private, non-profit ambulance transport entity funds ambulance operations and system enhancements and are coupled with EMS restricted special tax revenues to fund advanced life support fire first response efforts. Both the ambulance provider and fire agencies operate in conformance with performance based contracts.

The Pinellas County EMS system is a sophisticated emergency medical service and fire first response model. It represents one of the most effective patient-centric systems in the United States today. The system delivers advanced care life support to the citizens of Pinellas County through both the fire first responders and the ambulance transport company.

In recent years, declining property values negatively impacted the County's EMS tax revenues. The system weathered the economic downturn by drawing on reserve funds that had accumulated under a best practice reserve policy. As a result of concerns about the system's long-range economic health, several proposals were brought forward that would materially change its operational foundation and financial structure.

Fitch & Associates ("*FITCH*" or "The Consultant") was engaged by Pinellas County perform an in- depth review of two such proposals and, through computer simulation, to model the impacts and outcomes of the proposed changes. *FITCH* also was asked to develop an operational model based on its experience that would improve efficiencies in the system while maintaining system performance. The project utilized computer simulation software and expertise provided by the Optima Corporation. The County asked that system stakeholders at all levels be thoroughly engaged in the simulation processes as the project moved forward.

The project scope undertaken by *FITCH* focuses on performance, efficiencies and costs. Issues related to future system funding were not within the project scope. The three proposals/models that were utilized for the simulations are summarized below.

INTEGRATED PERFORMANCE SOLUTIONS PROPOSAL (IPS PROPOSAL)

Findings, Analysis and Recommendations for the Pinellas County EMS System was presented to the Pinellas Board of County Commissioners on October 11, 2011 by Integrated Performance Solutions of Wilmington, NC. The distinguishing points of this proposal are to effectively remove 25 fire department Rescue vehicles currently in the system and to replace their functions by using 72 rescue-capable engines.

SANFORD-MILLICAN PROPOSAL (SM PROPOSAL)

Pinellas County Emergency Medical Service Providers Cost Containment and Sustainability Model was presented to the Board of County Commissioners in July 2011 by Lt. Scott Sanford, Palm Harbor Fire Rescue, and Capt. James Millican, Lealman Fire Rescue. The distinguishing points of this proposal are to remove Sunstar as the private contractor for medical transports and to have the 18 fire agencies handle all calls for medical first response (MFR) as well as emergency medical and inter-facility patient transports. Medical calls are to be dispatched according to ProQA/Medical Priority Dispatch System (MPDS) determinants.

COMMUNITY-WIDE ALIGNMENT OF RESOURCES FOR EFFICIENCY AND SERVICE (CARES) PLAN FOR THE PINELLAS EMS SYSTEM

Fitch was to use its professional judgment to identify a third approach and provide a simulation based on that model. A number of ideas and options were considered including various "hybrid" approaches. There were several fundamental issues that quickly became apparent with the hybrid models. One suggestion involved the fire departments providing emergency transport functions and Sunstar being responsible for the provision of non-emergency transports. In such an approach the system exchanges low cost wages for high cost wages on the emergency side, which increases the cost of delivering the service and creates two functional streams within the system. Other "hybrid" suggestions such as allowing the existing rescue vehicles to transport were also initially considered. The rescue transport approach adds complexity and expense, as the system would have to hive off areas that have rescues from the areas that do not. The number and complexity of possible configurations is staggering and underscores the potential difficulty ensuring quality service and reducing costs if the system becomes fragmented. [1]

Upon reflection, all of the difficulties with governance, accountability, and logistics that apply to the Sanford-Millican Proposals were seen to apply equally to any and all possible hybrid systems. Consequently, in our professional judgment the best opportunity to operationalize a model to reduce costs without compromising quality or service could be found in an optimized version of the existing system that focused on more efficient operations.

In the CARES model, optimization is to achieve response times equal to those currently experienced in each Fire/EMS District; to increase efficiency by taking into account both temporal and geographic variations in demand; to avoid duplication of resources on low acuity calls, and to avoid dispatch of transport resources to those calls that are unlikely to require transport.

[1] Considering each potential system configuration in which the 18 cities/districts reorganize transport and non-transport (e.g. emergency only, both emergency and non-emergency, some elect to transport and others do not) becomes a confounding, complex, set of permutations.

The comparisons between the proposals are to be based on simulations using Optima Predict®, a software package specifically developed for the emergency services industry by the Optima Corporation, Auckland, New Zealand. It is utilized by major EMS systems worldwide. The most important results coming out of these simulations will be compliance with targets for response times, the inventory of apparatus required to achieve this compliance, and the number of unit hours required to achieve this compliance. The required unit hours will be used to build cost models of the various proposals. In turn, models of performance will be juxtaposed against models of costs to show the cost-performance trade-offs inherent in each proposal.

PROJECT METHODOLOGY

The following section outlines the methodology utilized for stakeholder engagement, the methodology to determine projected costs and a detailed description of the simulation methodology utilized.

STAKEHOLDER ENGAGEMENT

Over the course of the project, The Consultants and Pinellas Public Safety Services staff maintained ongoing communications through regular update reports and bi-weekly conference calls. Area Fire Chiefs, in particular, were engaged throughout the project. Fire Chiefs responded to two online surveys that gathered information about proposal implementation attributes.

Stakeholder groups that were interviewed or attended meetings are listed below in no particular order.

- Pinellas County elected and appointed officials
- City and Fire District Managers
- Fire Chiefs
- Pinellas County staff
- Lieutenant Scott Sanford and Captain James Millican
- Fire Union Labor Leaders and Representatives
- EMS Advisory Council
- Hospital Administrators
- Medical Control Board
- Medical Director
- Sunstar Management and staff
- State elected officials

Consultants were on-site at least once each month and often more than once a month for the duration of the project.

FINANCIAL ASSUMPTIONS

One purpose of this report is to objectively compare the costs of the IPS and Sanford-Millican Proposals, along with a newly developed CARES model for Pinellas County fire and EMS services. During simulation processes, Sanford-Millican was amended to two separate deployment models so that there are now four models to be compared for costing purposes.

A typical approach to comparing proposals is based on the concepts of cost-performance analysis. In such comparisons, a change in performance is designed into the system, which results in a change in the cost of the system. In applying this method, rational comparisons between proposals are based on changes to the cost-performance ratios.

Comparing cost-performance ratios sounds straightforward on paper. In reality, these comparisons become very subjective and non-quantitative. Cost is easily quantified: the metric being dollars. Performance values are subjective and not easily quantified. When seven seconds is shaved off of a 7:30 response time, how many dollars should go towards buying this increased performance? This question does not lend itself to an easy quantitative answer.

In keeping with the County's directives to *FITCH*, comparisons designed into this report are conducted such that resources allocated to each proposal are adjusted to provide the ***same*** level of emergency medical and fire service performance in each case. Approaching the comparisons from this direction has the powerful virtue of avoiding subjective judgments regarding the dollar value of specific changes in performance. A change in resources between proposals results in a quantifiable change in cost, **but results in no change in performance**. Proposals can then be compared based solely on **differences** in cost.

Focusing on **differences** allows the calculation to be simplified. To arrive at an answer when looking at differences in costs, it is not necessary to calculate all the cost items of a proposal. It is only necessary to calculate those cost items that *change*.

If a cost item is common to two proposals, that cost item becomes neutral when the costs of the two proposals are subtracted from each other. This in no way denigrates the importance of the common functions, but rather holds constant the costs of those functions that are deemed common in the four models. The implication of this point is that common cost items add nothing to the validity of the comparison between the proposals.

It is implicit that different organizations will manage some of the administrative practices differently, but at this point any function that cannot be affirmatively substantiated by all stakeholders as different from one model to the other is not considered in this exercise.

Therefore, the costs associated with functions of governance, accountability and logistics as described in a later section of this report were assumed not to vary from one model to the other. There remain real challenges specifically for implementation of the Sanford-Millican models that some would argue could significantly increase administrative and coordination costs among the 18 independent agencies. But again, costing for comparison purposes will focus on the single dominant cost in EMS and fire organizations — that of the cost to staff response units.

SIMULATION METHODOLOGY

To prepare for running simulations of the proposals, the Optima Predict® software was first used to simulate the current operations in Pinellas County, integrating the operations of the fire agencies and Sunstar. This first simulation is referred to as the Historic Simulation, HIS-1.

To conduct this simulation, the Optima Predict® software was "tuned" to incorporate the physical realities of the Pinellas County environment. To this end, historical demands for service, travel times from AVL/GPS data, and historic response times were taken from the period October 1, 2010 through September 30, 2011.

"Tuning" the model involves adjusting parameters in the Optima Predict® software so that simulation results satisfactorily match the historic results. Tuning proceeds in two stages: First, tuning the representation of the road network and then tuning the representation of the operations.

This methodology is a rigorous approach to simulating travel times. Tuning the representation of the road network matched the simulated travel times with that of the historic travel times throughout Pinellas County. The process resulted in a mathematical model to capture estimates of road speed for both normal travel and lights-and-sirens travel for each road segment, for different days of the week, and for different times of the day. The purpose for creating the road network model was to provide realistic estimates of travel times when evaluating trip routes outside the historical record. Tuning Pinellas' operations allowed *FITCH* to incorporate dispatch logic and operational rules, including enroute diversion strategies.

The Historic Simulation steps through each call in the historic call set over the October 1, 2010 to September 30, 2011 period of fiscal year 2010-2011 (FY10-11). The simulation assigns responses using the dispatch logic and operational rules that approximate the behavior of the Pinellas medical first response (MFR), fire suppression, and ambulance operations. Apparatus then travels across the mathematical model of the road network. When the performance seen in the simulation closely matches the performance seen in the historical record, the model of the road network, the dispatch logic and operational rules embedded in the software are assumed to correctly reflect reality.

Methodology Applied to Sanford-Millican Proposal

The Sanford/Millican Proposal as presented did not include deployment plans or simulations to validate performance. Lt. Sanford and Capt. Millican relied on their intuitive understanding of operations occurring in Pinellas County for guidance. As a component of this project, *FITCH* conducted rigorous simulations of the Sanford-Millican proposal. In hindsight, Lt. Sanford's and Capt. Millican's intuitions were very close to the mark when judged only on the performance outcomes of their proposal.

Methodology Applied to Integrated Performance Solutions Proposal

To provide clarity regarding simulation processes, the Optima Predict® methodology needs to be contrasted to the methodology used by IPS in their simulations. The Optima Predict® software is a discrete-event simulator. The demands for service input into the Optima Predict® software are the actual demands for service present in the historic record. Dispatch time intervals and chute time intervals are those intervals present in the historic record for a specific call.

The IPS approach to simulations was based on queuing theory and a Hypercube Approximation Model, as used by Dr. Jeff Goldberg at the University of Arizona. To implement this model, Pinellas County was partitioned into zones and the zone location of each vehicle station was set. In each zone, historic data was used to calculate a temporal and geographic distribution function for calls ringing into the system, a distribution function for dispatch time intervals, and a distribution function for chute time intervals.

These distribution functions were fed to a general purpose systems simulator as *inputs*. Response times were simulated by adding a drive time interval to these distributions. Drive time intervals were calculated by assigning a single road speed to all travel, regardless of the acuity determinant (lights and sirens or not), regardless of the specific road segments required by the route, regardless of day of week and regardless of time of day.

The use of a distribution function to simulate calls ringing into a zone is a good approximation of reality when the number of calls is high. This condition probably holds true for large districts such as the City of St. Petersburg. The use of distribution functions likely fails for the small districts where the numbers of calls are low. This is not a serious criticism because the districts are small and have a small impact on overall performance within the County.

The two most serious criticism of the IPS approach to simulations in Pinellas County is the use of a single road speed to derive all travel times. The drive time interval is the largest contributor to response time (unit available for dispatch to first arrival) and total response time (call ring-in to first arrival). It is poorly represented in the IPS simulations. The second is that it results in a very difficult if not impossible plan to execute, thus making this model a theoretical model and not a realistic model.

INTERPRETING RESULTS OF OPTIMA SIMULATIONS

Once the Historic Simulation was tuned, scenarios corresponding to the various proposals were created by adjusting the operational environment in the Historic Simulation (that is, by introducing new shifts or bases, or changing the business rules, or even generating additional call demand), and then processing the historical call set under these “what-if” adjustments. The results of the simulation for the scenario indicate whether the adjustments have a negative or positive impact on the performance of the operation, and whether that impact is small or large.

The simulation model is not expected to provide the exact results that would be seen in reality and, therefore, simulations of proposals are always compared to the Historic Simulation rather than to the Historic CAD data. This approach ensures that any approximations made within the simulations are consistently accounted for when comparing proposals. The value of the simulation approach is that it provides the ability to generate operational evidence for strategic decisions. This evidence can be used to build compelling business cases for operational changes and to objectively evaluate alternative proposals.

PINELLAS COUNTY EMS SYSTEM DESCRIPTION

BACKGROUND

The County's EMS system is framed by a Special Act of the Florida Legislature (Chapter 80-585) that created the Pinellas County EMS Authority in 1980. The Authority is governed by the Pinellas County Board of County Commissioners acting as the Authority. As a result of the Special Act, a countywide tax was passed and implemented. Those revenues are dedicated to the provision of emergency medical services and have been specifically used to fund advanced life support (ALS) first response services provided by area fire departments and fire districts.

The system today operates with a centralized 911 dispatch and communications center, and centralized medical direction and quality improvement functions. Periodically, the Authority conducts a competitive proposal process to choose one entity to provide emergency and non-emergency ambulance response and transport countywide. That entity is awarded a Certificate of Public Convenience and Necessity (COPCN) that provides for exclusive rights to handle emergency and non-emergency/interfacility medical calls in Pinellas County and operates under the County's trade name, Sunstar Paramedics.

Within the County there are 24 municipalities and 18 fire service agencies. Pinellas County Public Safety Services Department provides coordination between the fire services and the ambulance contractor and provides administrative support that includes billing and collection services and management of system finances. Other essential components of the Pinellas system governance are:

- The Medical Control Board, an 11-member board consisting of emergency physicians and hospital administrators that are appointed by the Authority,
- The EMS Advisory Council, a group of 24 interested citizens, elected officials and system providers, appointed by the Authority,
- The system Medical Director who is contracted by the Authority to provide clinical oversight and leadership to the entire system and all EMS providers.

The County, as the Authority, has responsibility for various functions that are central to the overall infrastructure of the system. These functions include:

- Provision of communications infrastructure through the Pinellas County Communications Center that includes among other items, the transfer of 911 data from the Center to the Ambulance Contractor, links the Contractor's Computer Aided Dispatch (CAD) and the Authority's Ambulance Billing System
- Contracting for Continuing Medical Education for paramedics and EMTs in the system to meet educational requirements for recertification

The Pinellas County EMS system is a sophisticated emergency medical service and "fire first" response model. This system, which has been in place for over two decades, represents one of the most effective

patient centric systems in the United States today. The system delivers advanced care life support to the citizens of Pinellas County through both the fire first responders and the ambulance transport company.

Through the years many questions surrounding funding and sustainability have been raised. As noted above, the County, through legislation, is responsible for providing emergency medical services to every citizen of the County. It has chosen to do so by using a mix of private ambulance transport with fire medical first response, and subsidizing fire departments for medical first response. The subsidy to fire departments is codified in a contract between the County and the 18 fire agencies. The amount of the subsidy has changed in recent years and is now based on a portion of the actual costs of fire agencies incur for paramedic level response. Subsidies to fire agencies are derived from the EMS millage tax levy. Ambulance transport fees support Sunstar ambulance operations and over the years have contributed to a "system" reserve fund.

DISPATCH

The Pinellas County Communications Center is the only 911 center in the County, making it the primary public safety answering point (PSAP). It provides three secondary PSAP functions. On ring-in, a call is first classified needing medical, fire, or police attention. The following pathways are then taken:

- Medical ring-ins are further queried to assign the primary determinant code. This assignment determines an ambulance or medical first response. MFR units are dispatched directly. Calls requiring only an ambulance response are electronically transferred to the EMS Communications Center operated by the ambulance contractor.
- Fire ring-ins are further queried. Fire apparatus is dispatch based a fire priority dispatch system.
- Police ring-ins are further queried to determine jurisdiction and exception triage. The call is transferred to that jurisdiction for police dispatch. Simultaneous dispatch of medical or fire resources occurs depending on the exception triage.

The flow of an emergency call ringing through this complex decision tree is supported by a Bell Atlantic Public Sector Systems computer aided dispatch system (CAD) which is completely supported by County staff. This CAD is unique to Pinellas County. Years ago, the County bought the source code for the computer aided dispatch system and hired specialized programmers to support the CAD system. Over the years, they have upgraded and embellished the CAD to be competitive with any new commercial CAD on the market today. The customized CAD is called CORE (CAD On Demand Reporting e-technology). The County has four information technology staff members dedicated to supporting operational technologies. Two of them are specifically dedicated to the CAD. The ability to modify the CAD and make those additions deemed valuable significantly contributes to the proper functioning of the dispatch center. It has been the experience of *FITCH* that the ability to customize a CAD using an in-house Information Technology (IT) staff is often more cost effective than purchasing an off-the-shelf CAD with system support.

Call Prioritization and MPDS

Current protocols at the Pinellas County Communications Center make limited use of the Medical Priority Dispatch System (MPDS) to assign determinants to calls. MDPS is a comprehensive best practices system supported by the International Academies of Emergency Dispatch. MPDS employs rigorously tested protocols for handling emergency calls to 911 and includes quality assurance and protocol compliance components. The use of MPDS is frequently described as a form of malpractice insurance.

Although the Pinellas Communications Centers assigns call determinants, this categorization does not translate to prioritization. The distribution of calls by ProQA determinants are shown is Figure 1, below. In current practice, this assignment of determinants (categorization) does not translate to a differentiation of resources assigned to the call. Almost every request for emergency medical service results in dispatch of an ambulance **and** a fire department MFR unit. Such actions do not conform to the recommendations made by the International Academies of Emergency Dispatch for the prioritization of calls.

Figure 1, below, shows the distribution of total calls by ProQA™ determinants. ProQA™ determinants were available only in the Fire CAD data set. Calls classified as "NA" include Fire calls with a missing or incomplete ProQA code plus ambulance calls with a Sunstar Priority 1 code.

Figure 1. Distribution of Total Calls by ProQA™ Determinants

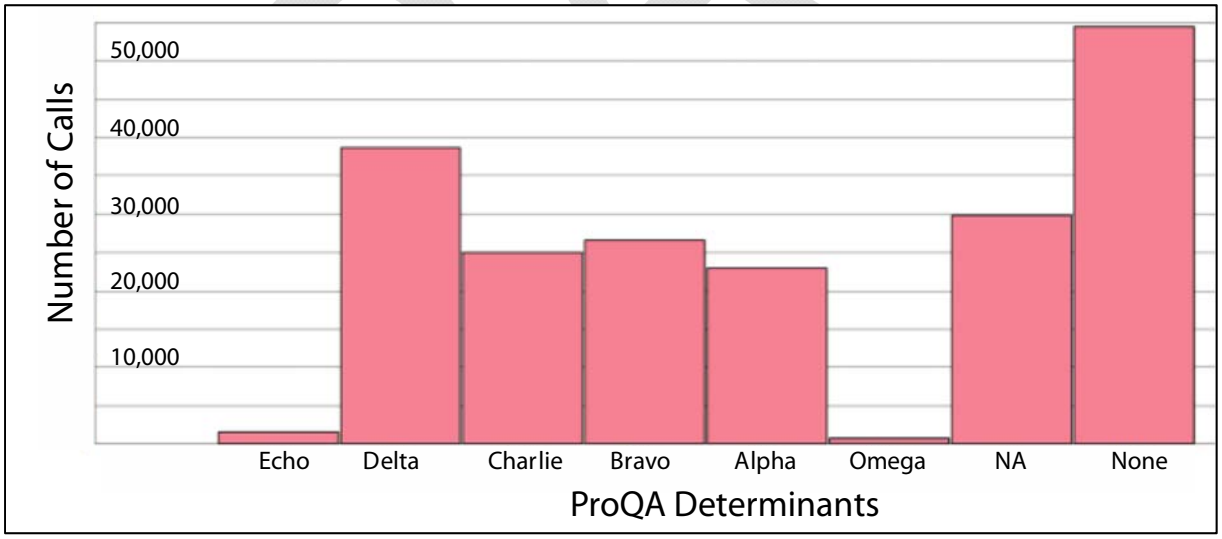


Figure 1 reflects the relative proportion of life threatening calls, Echo, Delta, & Charlie determinants, relative to total calls in the system. The Echo, Delta, & Charlie determinants warrant a lights and sirens response with simultaneous dispatch of an ambulance. The remainder of the determinants warrants normal speed responses. Many of them will not even require dispatch of an ambulance. ProQA classification associates with these determinants and their dispatch logic are detailed in the section on simulations of the Sanford-Millican Proposal.

The distinction between categorization and prioritization is perhaps the most misunderstood concept in EMS. The notion of applying a medical protocol to triage callers means that callers will be categorized according to symptomology. Categorization is a first step towards executing a priority according to the dispatch logic and business rules used by a particular system. Where in the queue does a call go? Is an advanced life support (ALS) or basic life support (BLS) unit assigned to the call? Does the unit drive hot (lights and sirens) or cold? While the International Academies of Emergency Dispatch dictates the assignment of determinants and the categorization process, it makes only recommendations on the priority and what resources should attend the priority.

The local system has complete discretion in decisions regarding priority. Three principal concepts are at play with the assignment of resources to a priority:

1. Need: in certain medical emergencies there is an improvement in clinical outcomes when resources arrive as quickly as possible to stabilize the patient.
2. Risk: emergency vehicles driving lights and sirens are significantly more at risk for an accident then vehicles not driving lights and sirens. Driving hot (lights and sirens) places the general population at risk. Ethically, this is an uninformed risk imposed on the general population that must be balanced against a real clinical benefit to the patient. Without a clinical benefit to the patient, there is no justification for imposing the risk.
3. Cost: there are costs incurred that yield improved clinical outcomes; there are other costs that yield no improvements.

Dispatch Accreditation

The EMS Communication Center, Sunstar's dispatch center, has been accredited and continues to be accredited to the standards of the International Academies of Emergency Dispatch (IAED). Approximately five years ago, the Sunstar EMS Communication Center stopped doing medical triage and handed that responsibility back to the Pinellas County Communications Center.

The County has expressed to the Consultant that it intends to make a transition to using dispatch logic based on ProQA™ and Medical Priority Dispatch System™ determinants. ProQA™ is an expert system software package for emergency medical dispatch. It is based on the Medical Priority Dispatch System™ (MPDS) and provides a standardized format for carrying out the practice of priority dispatching. It is an automated system which operates by evaluating incoming information about patient status and scene conditions according to logical rules built on expert medical knowledge.

FITCH recommends that if County Communications makes this transition, they should strive to become extremely proficient in the protocols as demonstrated by achieving accreditation from the IAED. The IAED sets minimum standards for emergency medical dispatcher (EMD) certification, as well as standards for dispatch center accreditation. IAED provides separate accreditation processes for medical, fire and police dispatching. Requirements for ACE Accreditation are comprehensive and reflect the

effort required to achieve and maintain accreditation. Even for the best dispatch centers, accreditation is typically a multi-year process.

Table 3 below presents twenty points of excellence that must be formally documented and verified as part of the IAED accreditation process.

Table 3. Requirements for IAED Dispatch Center Accreditation[2]

Formally describe and document the following.
1. All medical dispatch call-taking, dispatching and supervisory workstations.
2. Current Advanced Medical Priority Dispatch System (MPDS) licensing of each EMD position.
3. Current Academy certification of all EMD personnel.
4. How Academy certifications and case review will continue to be maintained.
5. Full activity of Quality Improvement (QI) committee processes.
6. EMD quality assurance and improvement methodology.
7. Case review at the Academy's recommended number and percentage of randomly reviewed cases.
8. EMD quality assurance and improvement database.
9. Consistent, cumulative MPDS case review at or above the following percentages: 95% - Case Entry protocol compliance; 95% - Chief Complaint selection accuracy; 90% - Key question protocol compliance; 90% - Post dispatch instruction protocol compliance; 95% Pre-arrival instruction protocol compliance; 90% - final code selection accuracy; 90% - cumulative overall score
10. Correct case review and QI procedures validated through independent Academy review.
11. How EMS field personnel were oriented to the proper use of the MPDS and feedback report.
12. Local policies and procedures for implementation and maintenance of the EMS program.
13. Current Continuing Dispatch Education (CDE) and EMD recertification program functions.
14. How police and fire dispatchers were oriented to the proper use of MPDS (S.E.N.D. protocol).
15. Properly established local configuration of all MPDS response assignments.
16. How MPDS response assignments will be regularly reviewed and recommended changes approved.
17. Incidence of all MPDS codes and levels.
18. Specific medical director oversight and involvement in EMD activities.
19. Sharing of non-confidential data with the Academy.
20. Support of the Academy's Code of Ethics and practice standards.

Accreditation requires top-notch systems, reporting and processes. Accreditation ultimately benefits patients and the community-at-large. While the Pinellas County Communications Center follows many of the accreditation standards policies and processes, it would be in the best interest of the County to pursue and achieve accreditation status. This is particularly important as a liability mitigation tool if the County wants to pursue proposals that rely on the medical priority dispatch system to choose to assign

[2] International Academies of Emergency Dispatch, Twenty Points of Accreditation Excellence, www.emergencydispatch.org.

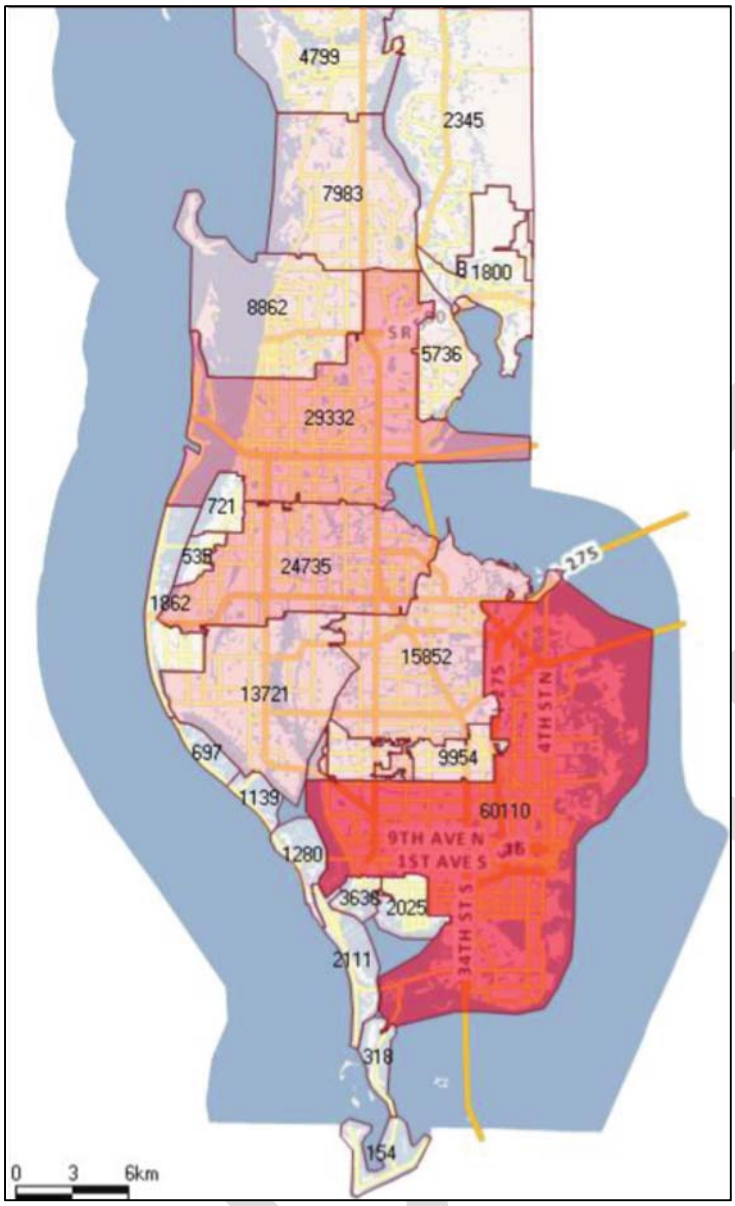
or not assign specific resources to calls. Achieving accreditation means that IAED, a third-party agency, has stated that the dispatch center has met and continues to meet the highest standards of triage protocols.

FITCH has reviewed the Pinellas County Communications Center's quality assurance protocol and is of the opinion that it is robust and prepares the Communications Center for accreditation by IAED in the future.

HISTORIC PERFORMANCE FROM CAD

According to data derived from the County's CAD system, Pinellas fire and ambulance agencies answered 199,717 calls of various types in FY10-11. Geographic call distribution is represented in the map in Figure 2 below.

Figure 2. All Calls by District FY2010 -2011



The map indicates all calls into the Pinellas County Communications Center over the period October 1, 2010 through September 30, 2011. A full series of high resolution maps were developed as part of the project and have been provided under separate cover to the County

Table 4, below, presents the distribution of emergency medical calls in the 24 districts in the CAD in order of decreasing call count. The significant observation is that St. Petersburg, Clearwater, Largo, and Pinellas Park account for two thirds of all emergency medical calls in Pinellas County. St. Petersburg, Clearwater, and Largo, by themselves, account for more than half of all emergency medical activity.

Table 4. Emergency Medical Calls by District for FY2010-11[3]

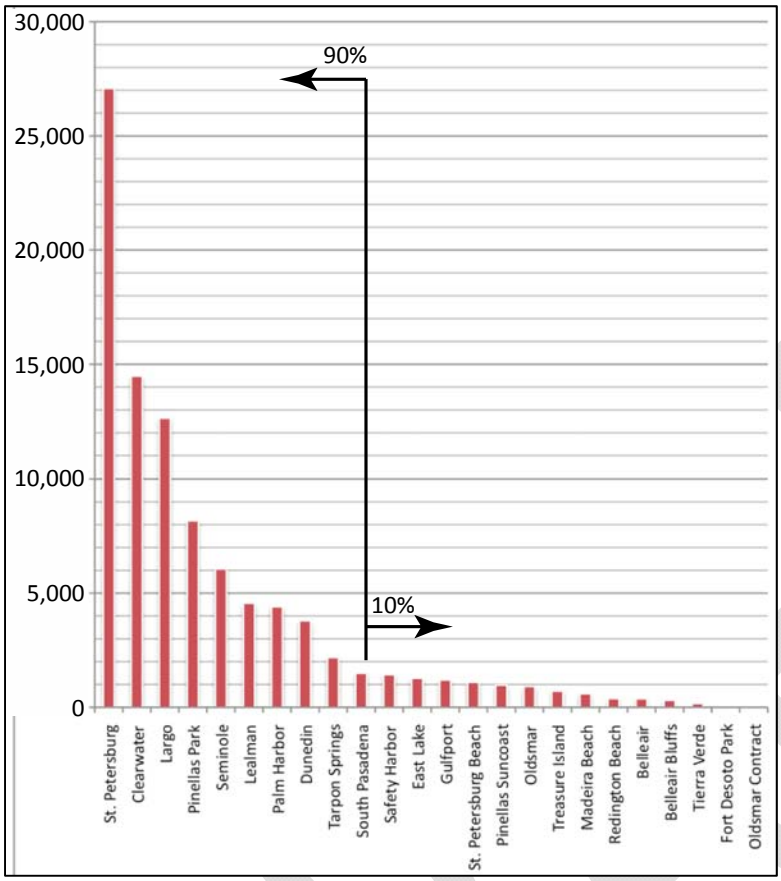
Fire District	Call Count	% of Total	Cumulative %
St. Petersburg	27,083	28.7%	28.7%
Clearwater	14,482	15.3%	44.0%
Largo	12,642	13.4%	57.4%
Pinellas Park	8,174	8.7%	***66.1%***
Seminole	6,062	6.4%	72.5%
Lealman	4,456	4.8%	77.3%
Palm Harbor	4,404	4.7%	82.0%
Dunedin	3,794	4.0%	86.0%
Tarpon Springs	2,183	2.3%	88.3%
South Pasadena	1,495	1.6%	***89.9%***
Safety Harbor	1,432	1.5%	91.4%
East Lake	1,278	1.4%	92.8%
Gulfport	1,200	1.3%	94.1%
St. Petersburg Beach	1,097	1.2%	95.2%
Pinellas Suncoast	977	1.0%	96.3%
Oldsmar	919	1.0%	97.2%
Treasure Island	712	0.8%	98.0%
Madeira Beach	598	0.6%	98.6%
Redington Beach	384	0.4%	99.0%
Belleair	376	0.4%	99.4%
Belleair Bluffs	306	0.3%	99.7%
Tierra Verde	168	0.2%	99.9%
Fort Desoto Park	68	0.1%	100.0%
Oldsmar Contract	4	0.0%	100.0%

A further observation of the data shown in Table 4 is that the fourteen smallest districts account for only 10% of all calls. Pinellas County is an ensemble of fire districts of very disparate sizes, and having very disparate demands for service.

Figure 3 is another representation of call distribution across the County's fire agencies and districts.

[3] These represent Echo, Delta, Charlie and NA calls into the system.

Figure 3. Emergency Medical Calls by District for FY2010-11



The figure above indicates that some 90% of emergency medical calls in Pinellas occur in 10 of the fire districts while the remaining 10% occur within the remaining districts.

A series of data tables are presented below that are based on calls data retrieved from the Historic CAD. The tables serve to create a data profile on Sunstar and the fire agencies in the County.

Sunstar responds to life-threatening emergency medical calls, as well as non-emergency calls for service such as transferring patients between medical facilities and/or home. Non-emergency constitutes scheduled or unscheduled service calls. For all call types, the contract between the County Authority and Paramedics Plus, the Sunstar contractor, provides response time targets. For the highest priority calls, those that are life-threatening, Sunstar is under a contractual obligation to arrive on 90% of the calls within 10:00 (10 minutes, zero seconds).[4]

Table 5 indicates the distribution of call types that Sunstar responded in according to the Historic CAD data.

[4] Response times defined in terms of a percentile confidence level are noted as fractile response time measures.

Table 5. Call Count by Sunstar from Historic CAD

Sunstar Call Priority	Priority Description	Call Count	%
P1	Emergency	85,078	47.56%
P2	Downgraded Emergency	61,880	34.59%
P3 (booked call)	Non-Emergency Scheduled	1,664	0.93%
P4 (booked call)	Non-Emergency Unscheduled	29,124	16.28%
P5 (booked call)	Out of Town Unscheduled	1,081	0.60%
P7 (booked call)	Out of Town Scheduled	46	0.03%
Total		**178,873**	

Table 6 below indicates Sunstar's response performance according to Historic CAD as downloaded by the consultants.

Table 6. Performance of Sunstar from Historic CAD Compared to Targets

Sunstar Transports		
Emergency 10:00 @ 90%	Downgraded Emergency 20:00 @ 90%	Inter-facility 60:00 @ 90%
89.84%	95.54%	96.41%

Table 6 indicates that in FY10-11, Sunstar bettered response targets for both downgraded emergency and inter-facility transports. A 0.16%-tile under performance on emergency calls is insignificant and without measurable clinical consequences. (Of special note is that this is the performance of Sunstar without any exceptions that are built into its contract, this is extremely high compliance. With exceptions built Sunstar would be 3 to 4 % higher in reported performance, this is further expanded below).

Medical first response is a key component of the Pinellas EMS system and fire agencies are to response to emergency calls within 7:30 minutes:second on 90% of calls. For all fire calls and all agencies, the response time in FY10-11 was 7:08 (minutes:seconds) at the 90th percentile. Fire agencies achieved the 7:30 (minute:seconds) target on 91.1% of calls. Table 7 below indicates responses to emergency medical calls for each fire district in the historic CAD.

Table 7. Fire Emergency Medical Performance by District from Historic CAD

District	Medical First Response Target 7:30 @ 90%		
	Count	[min:sec] @ 90%	%-tile @ 7:30
St. Petersburg	27,083	6:46	93.55%
Clearwater	14,482	7:11	89.62%
Largo	12,642	6:04	95.78%
Pinellas Park	8,174	6:33	94.43%
Seminole	6,062	6:40	93.90%
Lealman	4,456	5:42	97.19%
Palm Harbor	4,404	6:36	94.82%
Dunedin	3,794	7:02	91.14%
Tarpon Springs	2,183	7:44	86.90%
South Pasadena	1,495	5:11	96.99%
Safety Harbor	1,432	6:32	93.51%
East Lake	1,278	7:29	88.81%
Gulfport	1,200	7:02	90.00%
St. Petersburg Beach	1,097	6:23	93.53%
Pinellas Suncoast	977	6:59	92.73%
Oldsmar	919	6:13	94.99%
Treasure Island	712	7:24	88.76%
Madeira Beach	598	6:30	92.98%
Redington Beach	384	6:46	83.59%
Belleair	376	7:11	90.69%
Belleair Bluffs	306	6:04	96.73%
Tierra Verde	168	6:33	98.21%
Fort Desoto Park	68	6:40	63.24%
Oldsmar Contract	4	5:42	100.00%

Only one district, Tarpon Springs, had a longer response time that the target 7:30 (minutes:seconds) target for 90% of calls. This area is recognized as a hard to serve area because of its location on the extreme northern border of the county.

Table 8 below indicates response times by fire agencies to fire events against the 7:30 (minutes:seconds) target for 90% of calls. The Pinellas County fire agencies have a contractual fire response time objective in their respective response agreements with the County. For purposes of comparison and measured improvement and deterioration of the different models *FITCH* applied the same 7:30 response criteria to fire as for medical calls.

Table 8. Fire Emergency Performance by District from Historic CAD

District	Fire Emergency/Other Response Target 7:30 @ 90%			
	Count	Median	[min:sec] @ 90%	%-tile @ 7:30
St. Petersburg	7,619	4:24	6:48	93.62
Clearwater	3,919	4:42	7:05	91.78
Largo	2,493	4:19	6:23	95.35
Pinellas Park	2,314	4:33	6:47	93.82
Seminole	1,533	4:34	7:17	90.80
Lealman	884	4:06	6:38	93.55
Palm Harbor	1,051	4:39	6:50	92.39
Dunedin	785	4:55	7:30	89.55
Tarpon Springs	663	5:08	8:01	86.27
South Pasadena	229	4:07	6:40	94.76
Safety Harbor	375	4:31	7:03	92.27
East Lake	373	4:59	7:47	88.47
Gulfport	279	4:46	6:50	95.34
St. Petersburg Beach	405	4:16	6:50	93.33
Pinellas Suncoast	320	5:00	7:39	88.44
Oldsmar	312	4:23	6:24	95.51
Treasure Island	220	5:08	7:33	88.64
Madeira Beach	199	4:41	7:05	93.97
Redington Beach	111	5:59	8:29	75.68
Belleair	110	5:37	8:21	83.64
Belleair Bluffs	88	3:49	6:35	96.59
Tierra Verde	64	4:14	6:13	92.19
Fort Desoto Park	24	4:03	8:48	83.33
Oldsmar Contract	1	4:58	4:58	100.00

For fire-related calls several districts experience response times longer than 7:30 (minutes:seconds) at the 90th percentile. To reiterate above, performance related to fire calls is not a contractual item in the contracts between fire agencies and the County regarding medical first response.

Several key metrics are captured in the tables that follow. Dispatch count, vehicle mileage, scheduled work hours and the time to complete a task (a response that may or may not involve a patient transport) are key variables in a response system. A unit hour equates to one hour that a crew and its apparatus are available to respond or are responding to a call. Unit hours are the basis for much of the costing that will follow in this report. Utilization percentages speak to how busy a particular apparatus and crew are in a given time period – typically measured across a year's time. Below in Table 9 are key statistics in the Pinellas County system, most of which will be part of the further comparison components in this report.

Table 9. Fleet Statistics from Historic CAD

Vehicles	Dispatch Count	Mileage[1]	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs[2]	0	0	0	0	0.00%
Rescues	73,788	not available	215,430	31,511	14.63%
Engines	91,152	not available	446,760	36,625	8.20%
Trucks	7,437	not available	166,440	9,031	5.43%
Squads	15,353	not available	70,056	4,349	6.21%
Fire Fleet	187,730	not available	898,686	81,516	9.07%
Sunstar Fleet	218,369	not available	306,147	156,981	52.89%
Combined Fleets	406,099	not available	1,204,833	238,497	
Sunstar Transports	**134,790**				

[1]Mileage statistics are not available from historic CAD data.

[2]Peak Load Units are defined, for purposes of this report, as any apparatus not operating on a 24 hour schedule, regardless of apparatus type, and regardless of transport capability; Sunstar units are not reporting under the PLU category.

The statistics by vehicle type indicate how busy a particular type of apparatus is in the system. Rescues and Engines respond to the bulk of the calls in the fire system. The table points out that Sunstar units are about three and one-half times as busy as the busiest units (Rescues) in the fire system. This difference is two-fold, fire systems and medical transport systems have different missions and require different resources and Sunstar works on 12 and 8 hour shifts which allow for higher workloads than 24 hour shifts.

Unit hours measure the number of hours that a staffed vehicle is available for calls. Pinellas County fire agencies schedule units to work 24 hours a day, 7 days a week. In contrast, Sunstar operates its units in accord with call demand. A look at demand by time of day and day of week clearly shows periods of peak demand that matches, for example, rush hour traffic during weekdays. Sunstar continually updates unit schedules and placement to match demand.

Table 10 below indicates the unit hours for each fire district and Sunstar.

Table 10. Unit Hours by District and Sunstar from Historic CAD

District	Unit Hours
St. Petersburg	236,792
Clearwater	140,316
Largo	92,948
Pinellas Park	78,933
Seminole	52,626
Lealman	35,085
Palm Harbor	43,882
Dunedin	35,080
Tarpon Springs	26,307
South Pasadena	17,550
Safety Harbor	17,539
East Lake	26,300
Gulfport	8,767
St. Petersburg Beach	26,311
Pinellas Suncoast	17,533
Oldsmar	17,524
Treasure Island	8,769
Madeira Beach	8,774
Belleair Bluffs	8,770
Total Fire Fleet	**899,806**
Sunstar (scheduled)	296,806
Sunstar (overtime)	9,341
Total Sunstar Operation	**306,147**
Total System Unit Hours	**1,205,953**

The unit hours planned in the system along with the vehicle apparatus assigned to each district are the basis for the Historic Simulation process that follows. The Historic data from the CAD presented earlier is compared with the Historic Simulation data. The Optima Predict™ software was tuned until Historic Simulation sufficiently reflected Historic CAD.

RAW DATA COMPLIANCE AND "CONTRACT COMPLIANCE"

Differences between raw data calculations for extractions of response times from Historic CAD and the operational models and "contract compliance" are expected due to the complexities of "contract compliance" monitoring and reporting that the County does through its performance contracts with fire and ambulance agencies.5 No attempt was made to embed the "contract compliance" logic into the extraction of data from the Historic CAD or into the simulations of the proposals. None of the minor differences FITCH noted between historic CAD data and simulation data were statistically significant or material in nature. That said, an overview of contract compliance monitoring is provided in the following paragraphs.

The following are the policies affecting "contract compliance" monitoring:

Contract:

> **Response time to not less than ninety percent (90%) of all EMS Incidents which are (1) prioritized as an Emergency Response; (2) are within the Contractor's EMS District; and (3) for which Contractor's Unit is determined, in accordance with Section 409, to be the First Due Unit, shall be within seven (7) minutes and thirty (30) seconds or less.**

As compared to raw data – downgraded responses are excluded; responses by units outside of their district are excluded; responses by outside units coming into a district are excluded. The basic premise is to encourage strong and well-functioning "automatic aid" system in a multi-agency environment. The contract doesn't penalize agencies for responding to help their neighbor or for small agencies to miss a call if they are on a call outside of their district.

Resolution:

> **ALS First Responders shall arrive at the scene within 7 minutes and 30 seconds at least 90% of the time calculated for each district on an annual basis. This standard shall be determined on a district-wide basis if the district is served by one provider, or across all the response zones of that provider if the district is served by multiple providers. Those calls where a response is initially dispatched as an emergency call, but is subsequently downgraded to non-emergency shall not be included in the calculation of response times.**

This measure is calculated annually. It is set to ensure a small number of calls in small agencies, especially single station departments, would not cause them to be "out of compliance."

[5] Craig Hare, EMS Division Manager, Pinellas County Public Safety Services, Communication, May 8, 2013.

Ambulance

Countywide Response Time to Emergency Requests and Downgraded Emergency Requests combined shall be ten (10) minutes and zero (0) seconds or less, for Emergency Requests, and twenty (20) minutes and zero (0) seconds or less, for Downgraded Emergency Requests, ninety (90.00%) percent of the time or greater, except as otherwise provided herein.

Exclusions: Non-Transports except those described in Section (e) and Dedicated Standbys. ii. Responses which occur during periods of Uncontrollable Circumstances; provided that Contractor shall make efforts to mitigate the situation and document said conditions and mitigation efforts, the time period affected, and the affected Responses and shall apply for this exception as provided for in this subsection. Should Contractor experience an Uncontrollable Circumstance, Contractor shall, as a condition precedent to the right to claim an Uncontrollable Circumstance, notify the Executive Director in accordance with Section 418. iii. Responses, other than that of the first arriving Ambulance, where more than one Ambulance responds to a single incident involving multiple Patients. Such Responses shall not include simultaneously occurring but separate medical incidents at the same location. iv. Normal, non-Disaster related out-of-County mutual aid.

As compared to raw data the most important aspect is that Emergency (10:00) and Downgraded Emergencies (20:00) are COMBINED and reported as ONE Emergency Response Time Standard. Further, there are exclusions as listed above. The largest category is "cancelled calls." Ambulance Response time is only calculated on Transports, not Responses. There are a small number of exclusions for "Uncontrollable Circumstance" – i.e., bridge up, train at crossing, etc. There are no "weather" exclusions unless a disaster is declared. The second, or additional, "Ambulances to Multiple Patient Incidents" are excluded, as are a small number of out-of-county mutual aid calls.

HISTORIC SIMULATION (HIS-1)

Historic call information for Pinellas County was obtained as separate files from the fire agencies' CAD and from the Sunstar CAD. These two call information files were merged, based on the Fire Incident Number. In most cases, both organizations respond to an incident. Both CADs assign a call-received timestamps to the incident. Historically, a call did not enter both CADs at the same time. The Optima Predict™ software can accept only a single call-received timestamp. The determination was made to use the timestamp in the fire agencies' CAD as the primary timestamp in the simulations. Total response times for fire units is the interval from the call-received timestamp to first arrival.

Assigning a total response time to Sunstar units is more complicated. For the same fire incident, the call-received timestamp in the Sunstar CAD was usually close to the location-coded timestamp in the Fire Departments' CAD. For purposes of these simulations, total response times for Sunstar units is the interval from the location-coded timestamp to first Sunstar arrival. This protocol may be the source of slight differences between historic and simulated Sunstar response times.

The priority assigned to a call in Optima Predict™ is a combination of fire and Sunstar priorities. For example, a historic call with priority 'F1-S2' is a call recorded by fire CAD with priority 'F1 - Medical' and recorded in Sunstar CAD with priority 'P2 - Downgraded Emergency'.

Attachment A presents an inventory of apparatus for simulation HIS-1 present in each district, and distinguishes between advanced life support and basic life support equipment. It indicates the inventory of apparatus in each station house.

Once the Optima software was tuned sufficiently with input from various stakeholders, the Historic Simulation was run and provided data close to Historic CAD. Table 11 below indicates the fire performance on emergency medical calls by district in this simulation of Historic CAD.

Table 11. Fire Emergency Medical Performance by District for HIS-1

District	Medical First Response Target 7:30 @ 90%		
	Count	min:sec @ 90%	%-tile @ 7:30
St. Petersburg	27,083	6:59	93.42
Clearwater	14,482	7:23	90.81
Largo	12,642	6:46	94.75
Pinellas Park	8,174	7:04	92.72
Seminole	6,062	7:17	91.42
Lealman	4,456	6:43	94.73
Palm Harbor	4,404	7:16	91.58
Dunedin	3,794	7:44	88.06
Tarpon Springs	2,183	8:35	82.00
South Pasadena	1,495	6:27	96.19
Safety Harbor	1,432	8:13	82.26
East Lake	1,278	8:09	83.18
Gulfport	1,200	7:21	91.08
St. Petersburg Beach	1,097	6:57	92.89
Pinellas Suncoast	977	7:22	90.38
Oldsmar	919	7:13	92.06
Treasure Island	712	8:04	85.25
Madeira Beach	598	7:58	86.79
Redington Beach	384	9:01	71.88
Belleair	376	7:50	87.23
Belleair Bluffs	306	6:41	96.08
Tierra Verde	168	6:43	94.64
Fort Desoto Park	68	14:27	44.12
Oldsmar Contract	4	6:43	100.00

The comparison of Table 11 above with performance data from the Historic CAD shows minor differences that can be tolerated in the simulation process. Table 12 below indicates Historic Simulation of fire agency responses to fire and other calls by district.

Table 12. Fire Emergency Other Performance by District for HIS-1

District	Fire Emergency Other Response Target 7:30 @ 90%			
	Count	Median min:sec	min:sec @ 90%	%-tile @ 7:30
St. Petersburg	7,619	4:13	6:37	94.59
Clearwater	3,919	4:30	6:43	95.00
Largo	2,493	4:14	6:25	96.31
Pinellas Park	2,314	4:26	6:47	94.17
Seminole	1,533	4:24	7:06	92.17
Lealman	884	4:20	6:20	96.38
Palm Harbor	1,051	4:28	6:49	94.10
Dunedin	785	4:38	7:11	91.46
Tarpon Springs	663	4:50	7:38	88.99
South Pasadena	229	3:39	5:56	97.38
Safety Harbor	375	4:56	7:46	85.60
East Lake	373	4:50	8:01	83.91
Gulfport	279	4:56	7:16	91.04
St. Petersburg Beach	405	4:04	6:41	94.32
Pinellas Suncoast	320	5:09	7:37	88.75
Oldsmar	312	4:02	6:59	92.95
Treasure Island	220	4:44	8:10	85.45
Madeira Beach	199	4:58	6:59	93.47
Redington Beach	111	6:35	9:01	71.17
Belleair	110	6:48	9:18	65.45
Belleair Bluffs	88	4:32	6:28	97.73
Tierra Verde	64	4:10	7:10	92.19
Fort Desoto Park	24	8:11	14:49	37.50
Oldsmar Contract	1	5:30	5:30	100.00

Again, comparison of Historic CAD performance data for fire responses with that of Historic Simulation data indicate that the software is tuned adequately.

Table 13 and Table 14 on Fleet Statistics and Sunstar Performance further indicate that the differences in the Historic CAD and Historic Simulation are tolerable.

Table 13. Fleet Statistics for Simulation HIS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	191,329	215,430	31,241	14.46%
Engines	91,152	267,780	446,760	38,989	8.70%
Trucks	7,437	51,507	166,440	6,529	3.91%
Squads	15,353	25,828	70,080	3,099	4.42%
Fire Fleet	187,730	536,444	902,280	79,858	8.85%
Sunstar Fleet	218,369	2,431,272	296,806	168,194	54.80%
Combined Fleets	406,099	2,967,716	1,199,086	248,052	
Sunstar Transports	**134,790**				

Table 14. Sunstar Performance in Simulation HIS-1 Compared to Targets

Transports		
Emergency 10:00 @ 90%	Downgraded Emergency 20:00 @ 90%	Inter-facility 60:00 @ 90%
88.07%	89.18%	94.25%

Table 15. Performance of Sunstar from Historic CAD Compared to Targets

Sunstar Transports		
Emergency 10:00 @ 90%	Downgraded Emergency 20:00 @ 90%	Inter-facility 60:00 @ 90%
89.84%	95.54%	96.41%

The correspondence between Sunstar's performance in the Historic CAD and the Historic Simulation data indicate that the software is tuned adequately for the purposes of these simulations. These simulations focus on medical first response and fire suppression response rather than Sunstar's response.

Table 16 provides an output comparison of Historic Simulation (HIS-1) to Historic CAD data.

Table 16. Comparison of Response Times for Fire Emergency Medical Calls between HIS-1 and Historic CAD

District	Count	Fire Emergency Medical	
		HIS-1	Historic CAD
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	27,083	6:15	6:46
Clearwater	14,482	6:44	7:11
Largo	12,642	6:15	6:04
Pinellas Park	8,174	6:29	6:33
Seminole	6,062	6:29	6:40
Lealman	4,456	5:58	5:42
Palm Harbor	4,404	6:36	6:36
Dunedin	3,794	6:51	7:02
Tarpon Springs	2,183	7:37	7:44
South Pasadena	1,495	7:07	5:11
Safety Harbor	1,432	6:53	6:32
East Lake	1,278	7:41	7:29
Gulfport	1,200	6:52	7:02
St. Petersburg Beach	1,097	8:00	6:23
Pinellas Suncoast	977	6:53	6:59
Oldsmar	919	6:49	6:13
Treasure Island	712	7:46	7:24
Madeira Beach	598	7:04	6:30
Redington Beach	384	7:47	6:46
Belleair	376	7:20	7:11
Belleair Bluffs	306	6:08	6:04
Tierra Verde	168	6:40	6:33
Fort Desoto Park	68	12:24	6:40
Oldsmar Contract	4	5:48	5:42

Table 16, above compares response times for Fire Emergency Medical, MFR, calls by district between the Historic CAD and the Optima tuned Historic Simulation, HIS-1. The fidelity of the simulation is very good in all of the large districts. The fidelity of the simulation is also very good for eleven of the fourteen smallest districts. Response times in St. Petersburg Beach, Redington Beach, and Fort Desoto Park are unaccountably long. These districts represent a small call count and have a negligible effect on countywide statistics.

Table 17, below, shows a comparison of response times for Fire Emergency Other calls by district between the Historic CAD and the Optima tuned Historic Simulation, HIS-1. The fidelity of the simulation is very good in all of the large districts. The fidelity of the simulation is also very good for ten of the fourteen smallest districts. In this comparison, response times in Treasure Island, Redington Beach, Belleair, and Fort Desoto Park are long. Again, these districts represent a small call count and have a negligible effect on countywide statistics. As stated in other sections of the report, the most important fact is that simulations are compared to historic simulation and the changes in performance are compared with the built in bias so that the changes will be true irrespective of the difference in the starting point.

Table 17. Comparison of Response Times for Fire Emergency Other Calls between HIS-1 and Historic CAD

District	Count	Fire Emergency Other	
		HIS-1	Historic CAD
		min:sec @90%	min:sec @90%
St. Petersburg	7,619	6:37	6:48
Clearwater	3,919	6:43	7:05
Largo	2,493	6:25	6:23
Pinellas Park	2,314	6:47	6:47
Seminole	1,533	7:06	7:17
Lealman	884	6:20	6:38
Palm Harbor	1,051	6:49	6:50
Dunedin	785	7:11	7:30
Tarpon Springs	663	7:38	8:01
South Pasadena	229	5:56	6:40
Safety Harbor	375	7:46	7:03
East Lake	373	8:01	7:47
Gulfport	279	7:16	6:50
St. Petersburg Beach	405	6:41	6:50
Pinellas Suncoast	320	7:37	7:39
Oldsmar	312	6:59	6:24
Treasure Island	220	8:10	7:33
Madeira Beach	199	6:59	7:05
Redington Beach	111	9:01	8:29
Belleair	110	9:18	8:21
Belleair Bluffs	88	6:28	6:35
Tierra Verde	64	7:10	6:13
Fort Desoto Park	24	14:49	8:48
Oldsmar Contract	1	5:30	4:58

SIMULATION OF IPS PROPOSAL (IPS-1)

The distinguishing points of the Integrated Performance Solutions Proposal are to remove all 25 Rescue apparatus from the system, and then to upgrade 13 of the 19 non-Rescue capable apparatus (e.g. Engines and Companies) in the system to a Rescue capability.

Which 13 apparatus to upgrade was determined by applying the following common sense rules:

- Upgrade apparatus in the regions that lost Rescue apparatus.
- Upgrade at least six apparatus in the St. Petersburg district
- If there is no non-Rescue capable apparatus available in a district that lost its Rescue apparatus, then upgrade an apparatus in a station closest to this district.

Optima Predict™ Post Plan Builder uses optimizing algorithms to test various multiple combinations of the 13 apparatus upgraded to rescue-capability. Each upgraded apparatus remained at its original station. These apparatus and stations are presented in Table 18, below.

Table 18 below indicates changes in unit status from BLS staffed and equipped to ALS or paramedic staffed and equipped.

Table 18. Apparatus Upgraded from BLS to ALS

Station Name	Vehicle Code	Vehicle Type
St. Petersburg Station 1	T1	Truck
St. Petersburg Station 4	E1	Engine
St. Petersburg Station 5	E5	Engine
St. Petersburg Station 8	E8	Engine
St. Petersburg Station 9	E9	Engine
St. Petersburg Station 9	T9	Truck
St. Petersburg Station 10	E10	Engine
South Pasadena Station 20	T20	Truck
St. Petersburg Beach Station 23	T23	Truck
Largo Station 41	S41	Squad
Clearwater Station 45	T45	Truck
Clearwater Station 48	T48	Truck
Dunedin Station 60	T60	Truck

Optima Predict™ Post Plan Builder was further employed to explore the effect of moving these upgraded apparatus to other stations, but always within their original districts.

No improvement in response time compliance could be achieved by making these moves. Upgraded apparatus remained at their original stations in the simulations of IPS-1.

Table 19, below, presents the changes in inventory of apparatus for each district.

Table 19. Changes in Apparatus Capability by District for Simulation IPS-1

District	Rescues Removed	Rescue Capability Added
St. Petersburg	10	7
Clearwater	5	2
Largo	3	1
Pinellas Park	3	
Seminole		
Lealman	1	
Palm Harbor		
Dunedin		1
Tarpon Springs	1	
South Pasadena		1
Safety Harbor		
East Lake	1	
Gulfport		
St. Petersburg Beach	1	1
Pinellas Suncoast		
Oldsmar		
Treasure Island		
Madeira Beach		
Redington Beach		
Belleair		
Belleair Bluffs		
Tierra Verde		
Fort Desoto Park		
Oldsmar Contract		

A summary of apparatus for IPS-1 is provided below in Table 20 and a consolidated and detailed apparatus inventory by district is provided in Attachment B.

Table 20. Summary Apparatus for IPS-1 Simulation

Apparatus Type	Totals
Rescues	0
Rescue PLUs	0
Engines ALS	51
Engines BLS	0
Trucks ALS	15
Trucks BLS	4
Squads ALS	6
Squads BLS	2
Total Units	**78**

The countywide changes in compliance on Fire Emergency Medical and Fire Emergency Other calls in simulations HIS-1 and IPS-1 are presented in Table 21 below.

Table 21. Changes in Response Time Compliance between IPS-1 and HIS-1

Call Type	Call Count	Simulation	
		IPS-1	HIS-1
		%-tile @ 7:30	%-tile @ 7:30
Fire Emergency Medical	94,294	90.75%	91.92%
Fire Emergency Other	24,371	92.37%	93.63%

The 1.2% decreased compliance between IPS-1 and HIS-1 seen for Fire Emergency Medical calls is statistically significant and real. The 1.26% decrease in compliance between IPS-1 and HIS-1 seen for Fire Emergency Other is also statistically significant and real. Regardless, IPS-1 exhibits response times that are in compliance with targets.

Table 22, below, presents a comparison of response times for Fire Emergency Medical calls by district between simulation IPS-1 and simulation HIS-1.

Table 22. Comparison of Performance between IPS-1 and HIS-1 for Fire Emergency Medical Calls by District

District	Count	Fire Emergency Medical	
		IPS-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	27,083	7:17	6:59
Clearwater	14,482	7:35	7:23
Largo	12,642	6:59	6:46
Pinellas Park	8,174	7:23	7:04
Seminole	6,062	7:22	7:17
Lealman	4,456	7:01	6:43
Palm Harbor	4,404	7:22	7:16
Dunedin	3,794	7:24	7:44
Tarpon Springs	2,183	8:25	8:35
South Pasadena	1,495	6:19	6:27
Safety Harbor	1,432	8:09	8:13
East Lake	1,278	8:06	8:09
Gulfport	1,200	7:32	7:21
St. Petersburg Beach	1,097	7:04	6:57
Pinellas Suncoast	977	7:26	7:22
Oldsmar	919	8:02	7:13
Treasure Island	712	7:56	8:04
Madeira Beach	598	7:26	7:58
Redington Beach	384	8:37	9:01
Belleair	376	8:31	7:50
Belleair Bluffs	306	6:44	6:41
Tierra Verde	168	6:35	6:43
Fort Desoto Park	68	12:51	14:27
Oldsmar Contract	4	5:06	6:43

The response times in simulation IPS-1 are as good as, or even better than, the performance seen in the simulation HIS-1 on Fire Emergency Medical calls, except in Belleair and Treasure Island. There are a number of districts in which IPS-1 does not meet the 7:30 target response time, but neither does the simulation of HIS-1. In other words, although IPS-1 has deficiencies, they are no more serious than the deficiencies that already exist in simulation HIS-1.

Table 23, below, presents a comparison of response times for Fire Emergency Other calls by district between simulation IPS-1 and simulation HIS-1.

Table 23. Comparison of Performance between IPS-1 and HIS-1 for Fire Emergency Other Calls by District

District	Count	Fire Emergency Other	
		IPS-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	7,619	7:02	6:37
Clearwater	3,919	7:02	6:43
Largo	2,493	6:37	6:25
Pinellas Park	2,314	7:02	6:47
Seminole	1,533	7:13	7:06
Lealman	884	6:38	6:20
Palm Harbor	1,051	6:47	6:49
Dunedin	785	7:19	7:11
Tarpon Springs	663	7:52	7:38
South Pasadena	229	6:24	5:56
Safety Harbor	375	7:55	7:46
East Lake	373	7:52	8:01
Gulfport	279	7:17	7:16
St. Petersburg Beach	405	7:06	6:41
Pinellas Suncoast	320	7:28	7:37
Oldsmar	312	7:35	6:59
Treasure Island	220	7:55	8:10
Madeira Beach	199	7:14	6:59
Redington Beach	111	9:05	9:01
Belleair	110	9:20	9:18
Belleair Bluffs	88	7:14	6:28
Tierra Verde	64	6:48	7:10
Fort Desoto Park	24	13:48	14:49
Oldsmar Contract	1	4:31	5:30

Considering response times for Fire Emergency Other calls in the ten largest districts (90% of all calls), IPS-1 does better than the 7:30 minutes:seconds target, except in Tarpon Springs. However, the Historic Simulation, HIS-1, also shows a response time exceeding 7:30 minutes:seconds in Tarpon Springs. Considering response times for fire emergency other calls in the fourteen smallest districts (10% of all calls) IPS-1 does as well as HIS-1. Some of these districts have a slightly faster time than the response times in HIS-1; some of these districts are slightly slower than the response times in HIS-1.

Fleet statistics for simulation IPS-1 are presented in Table 24, below.

Table 24. Fleet Statistics for Simulation IPS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	0	0	0	0	0.00%
Engines	143,944	439,336	446,760	60,450	13.53%
Trucks	33,017	103,578	166,440	14,556	8.75%
Squads	10,786	37,642	70,080	4,775	6.81%
Fire Fleet	187,747	580,556	683,280	79,781	11.71%
Sunstar Fleet	218,369	2,437,293	296,806	168,577	56.80%
Combined Fleets	406,099	3,017,849	980,086	248,358	
Sunstar Transports	**134,790**				

To make comparisons easier, fleet statistics for simulation HIS-1 are presented in Table 25, which is repeated from a previous section.

Table 25. Fleet Statistics for Simulation HIS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	191,329	215,430	31,241	14.46%
Engines	91,152	267,780	446,760	38,989	8.70%
Trucks	7,437	51,507	166,440	6,529	3.91%
Squads	15,353	25,828	70,080	3,099	4.42%
Fire Fleet	187,730	536,444	902,280	79,858	8.85%
Sunstar Fleet	218,369	2,431,272	296,806	168,194	54.80%
Combined Fleets	406,099	2,967,716	1,199,086	248,052	
Sunstar Transports	**134,790**				

The same dispatch logic applies to both simulation HIS-1 and simulation IPS-1. Significantly, the utilization of the fire fleet increases by 2.82% from 8.86% to 11.68%. Additionally, the mileage of the fire fleet increases by 44,112 miles in IPS-1. This is expected because there are fewer apparatus in the system and the simulation shows that they will drive farther to respond to incidents. The Time-on-Task is essentially identical between IPS-1 and HIS-1.

A major concern in the IPS proposal is that it decommissions the less expensive Rescues and replaces their function with Engines and Trucks that are more expensive to operate and have a significantly higher replacement cost.

A multi-year study by the Tualatin Valley Fire & Rescue in Oregon, reports the costs per mile for three apparatus types: SUVs, Engines, and Trucks. While Tualatin does not specifically report costs per mile for Rescues, these costs were estimated as follows:

Rescue Purchase	= 3 X SUV = $5.28 / mile
Rescue Operation	= 2 X SUV = $1.86 / mile
Rescue Maintenance	= 2 X SUV = $1.46 / mile

The result of these calculations is the total cost per mile reported in Table 26, below.

Table 26. Cost Per Mile of Rescues, Engines, and Trucks

Vehicle	Cost per Mile			
	Purchase	Operate	Maintain	Total
Rescue	$5.28	$1.86	$1.46	$8.60
Engine	$15.83	$6.53	$5.85	$28.22
Truck	$18.11	$7.83	$7.11	$33.05

Table 27 below estimates the cost of additional mileage that will be experienced in the Pinellas County fire engine and truck fleet under the Simulation IPS Proposal.

Table 27. Cost of Additional Mileage on Engines and Trucks in Simulation IPS

Vehicle	Mileage			Cost per Mile	Cost
	HIS-1	IPS	Change		
Rescues	191,329	0	<191,329>	$8.60	-$1,645,429
Engines	267,780	439,336	171,556	$28.22	$4,841,310
Trucks	51,507	103,578	52,071	$33.05	$1,720,946
				IPS Mileage Addn'l Cost	**$4,916,827**

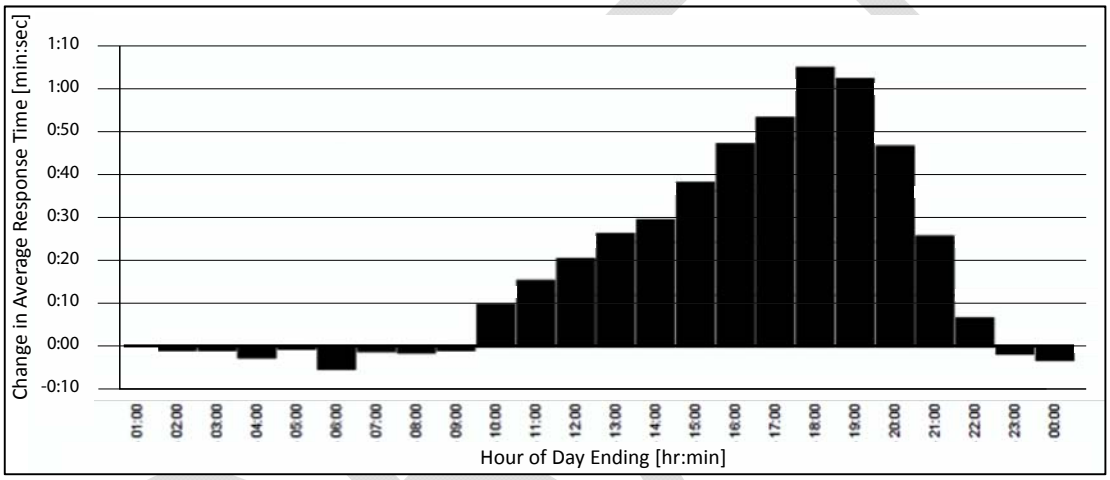
The Simulation IPS shows that the mileage on the heavier and more expensive Engines and Trucks increases substantially. As calculated in Table 27, above, this mileage compared to the Historic Simulation results in additional costs of $4.9 million. IPS decreases personnel costs, but increases the cost of fleet operations. The net result of IPS remains an overall decrease in costs compared to Historic Simulation.

SIMULATIONS OF SANFORD-MILLICAN PROPOSAL

The Sanford-Millican Proposal specifies 16 Peak Load Units, or PLUs, to operate only during times of "high demand." The Proposal presented so specification as to what constituted "high demand" or what time intervals were affected. In order to determine a starting point for when the peak load units would be required, simulations of the Sanford-Millican Proposal were conducted in which no peak load units were included. This will be referred to as Simulation SM-0.

Average response times on Echo-Delta calls (life-threatening calls) in SM-0 were compared to those in the Historic Simulation, HIS-1. Changes in this average response time by hour of day are presented in Figure 4, below.

Figure 4. Changes in Average Response Time in SM-0 and HIS-1 by Hour of Day



There is no significant difference in response times between SM-0 and HIS-1 during the interval 22:00 – 09:00 hours. However, the average response time increases in the interval 09:00 – 22:00 hours. Thus, the 16 peak load units specified in the Sanford-Millican Proposal were scheduled for the time interval 09:00 – 21:00 hours.

SIMULATION OF SANFORD-MILLICAN-1 (SM-1)

The Sanford-Millican Proposal removes all 78 Sunstar vehicles from the system. Responsibility for patient transports transfers to the fire agencies. Two current Rescues working on 24-hour schedules are converted into PLUs, working on 12-hour schedules; 14 additional transport capable apparatus are converted into PLUs; six engines are upgraded to rescue capability; and new Rescue vehicles are purchased for the system.

The inventory of apparatus by district for Simulation SM-1 of the initial Sanford-Millican Proposal is detailed in Attachment C. A summary of apparatus for all fire agencies is provided below in Table 28.

Table 28. Summary of Apparatus for SM-1

Apparatus Type	Totals
Rescues	25
Rescue PLUs	0
Engines ALS	46
Engines BLS	5
Trucks ALS	8
Trucks BLS	11
Squads ALS	4
Squads BLS	4
Total Units	**103**

The Sanford-Millican Proposal also specifies that the dispatch logic applied to calls ringing into the Pinellas County Communications Center conform to MPDS protocols with the use of ProQA determinants. Table 29, below, describes the medical component of the new dispatch logic. The fire component of dispatch does not change.

Table 29. ProQA Determinants and Dispatch Logic Used in SM-1

ProQA Determinants	Fire Medical Dispatch
Fire CAD calls with ProQA Determinant:	
Echo, Delta, Charlie	closest Rescue capable vehicle L&S and Rescue or PLU L&S
Bravo ProQA	closest Rescue capable vehicle L&S If the first is not Rescue or PLU, then closest Rescue or PLU L&S
Alpha or Omega ProQA	closest Rescue or PLU if ProQA is in Alpha Calls, then Normal speed, otherwise L&S
Fire CAD calls without a ProQA code:	
Fire priority 'F1 - Medical' (marked with ProQA attribute 'NA')	same as Echo calls
Other Fire priorities with historic response from Sunstar (marked with ProQA attribute 'NA')	same as Echo calls
Other Fire priorities without historic response from Sunstar	-
Sunstar CAD calls (without Fire response):	
Sunstar P1 calls (marked with ProQA attribute 'NA')	same as Echo calls
Sunstar only CAD P2 calls	closest Rescue or PLU Normal speed
Sunstar only CAD booked calls	closest PLU Normal speed if there is no PLU within response time, then closest Rescue Normal speed

Note: L&S means responding hot with lights and sirens.

For the Historic Simulation, HIS-1, dispatch logic is based on fire and Sunstar call priorities. The new ProQA-based logic requires that different vehicles be sent with different travel priorities, which means that the historic fire or Sunstar performance measures are not applicable to the fire Proposal scenario.

New ProQA-based performance measures are introduced. 'Echo calls' is the most important group of medical calls. It consists of all fire calls with the ProQA determinant Echo, Charlie or Delta, all calls recorded in Sunstar CAD only with Sunstar priority P1, all calls with Fire priority 'F1 - Medical' with unknown ProQA code and all calls with other Fire Priorities and historic response from Sunstar. This group of calls is referred to as 'Echo calls'. Response target compliance for this group is used as the main performance measure throughout the Sanford-Millican Proposal scenarios analysis.

When simulation of the Sanford-Millican Proposal is run (SM-1) the output provides performance data for comparison to Historic Simulation, HIS-1, performance data. The comparison data is provided in Table 30 below.

Table 30. Changes in Response Times by Medical Call Type between HIS-1 and SM-1

Call Type	Call Count	Simulation	
		HIS-1	SM-1
		%-tile @ 7:30	%-tile @ 7:30
Echo, Delta, Charlie, NA	94,364	94.84%	95.74%
Bravo	26,499	94.65%	94.91%
Alpha, Omega	23,624	99.96%	94.16%
Any ProQA	144,487	94.56%	89.28%
Sunstar P1	84,379	95.73%	94.28%
Sunstar P2	61,707	87.51%	78.30%
Sunstar P1 and P2 no ProQA	6,692	37.01%	53.97%

As Table 30 above indicates, this scenario results in a performance increase (better), as measured by the response time compliance for calls requiring a medical response for Echo calls of nearly 1%, and across most districts. A performance decrease in the 'Any ProQA', 'Sunstar P2', and 'Alpha, Omega' is expected as some of the calls with these priorities are now dispatched at normal speeds rather than urgently with lights and sirens. A performance decrease in South Pasadena, St. Petersburg Beach and Tierra Verde occurs. However, these areas have low call levels and all apart from St. Petersburg Beach still achieve over 90% compliance.

Table 31, below, shows a comparison of response times by district for Fire Emergency Medical calls in the simulations HIS-1 and SM-1.

Table 31. Comparison of Performance between SM-1 and HIS-1 for Fire Emergency Medical Calls

District	Count	Fire Emergency Medical	
		SM-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	27,083	6:15	6:59
Clearwater	14,482	6:44	7:23
Largo	12,642	6:15	6:46
Pinellas Park	8,174	6:29	7:04
Seminole	6,062	6:29	7:17
Lealman	4,456	5:58	6:43
Palm Harbor	4,404	6:36	7:16
Dunedin	3,794	6:51	7:44
Tarpon Springs	2,183	7:37	8:35
South Pasadena	1,495	7:07	6:27
Safety Harbor	1,432	6:53	8:13
East Lake	1,278	7:41	8:09
Gulfport	1,200	6:52	7:21
St. Petersburg Beach	1,097	8:00	6:57
Pinellas Suncoast	977	6:53	7:22
Oldsmar	919	6:49	7:13
Treasure Island	712	7:46	8:04
Madeira Beach	598	7:04	7:58
Redington Beach	384	7:47	9:01
Belleair	376	7:20	7:50
Belleair Bluffs	306	6:08	6:41
Tierra Verde	168	6:40	6:43
Fort Desoto Park	68	12:24	14:27
Oldsmar Contract	4	5:48	6:43

In all districts the response times on Fire Emergency Medical calls simulated in SM-1 are faster than those in HIS-1 except for St. Petersburg Beach.

Table 32, below shows a comparison of response times by district for Fire Emergency Other calls in the simulations HIS-1 and SM-1.

Table 32. Comparison of Performance between SM-1 and HIS-1 for Fire Emergency Other

District	Count	Fire Emergency Other	
		SM-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	7,619	6:35	6:37
Clearwater	3,919	6:48	6:43
Largo	2,493	6:24	6:25
Pinellas Park	2,314	6:41	6:47
Seminole	1,533	6:55	7:06
Lealman	884	6:07	6:20
Palm Harbor	1,051	6:40	6:49
Dunedin	785	7:17	7:11
Tarpon Springs	663	7:37	7:38
South Pasadena	229	6:22	5:56
Safety Harbor	375	7:26	7:46
East Lake	373	8:19	8:01
Gulfport	279	6:56	7:16
St. Petersburg Beach	405	6:31	6:41
Pinellas Suncoast	320	7:05	7:37
Oldsmar	312	7:10	6:59
Treasure Island	220	7:20	8:10
Madeira Beach	199	7:25	6:59
Redington Beach	111	8:52	9:01
Belleair	110	8:59	9:18
Belleair Bluffs	88	6:08	6:28
Tierra Verde	64	5:53	7:10
Fort Desoto Park	24	14:56	14:49
Oldsmar Contract	1	5:29	5:30

In all districts, the response times on Fire Emergency Other calls simulated in SM-1 are faster than those in HIS-1 except for East Lake and Fort Desoto Park.

The countywide changes in compliance on Fire Emergency Medical and Fire Emergency Other calls in simulations HIS-1 and SM-1 are presented in Table 33, below.

Table 33. Countywide Changes in Response Times on Fire Calls between Simulations HIS-1 and SM-1

Call Type	Call Count	Simulation	
		HIS-1	SM-1
		%-tile @ 7:30	%-tile @ 7:30
Fire Emergency Medical	94,294	91.92%	95.73%
Fire Emergency Other	24,371	93.63%	93.84%

The 3.8% increased compliance between HIS-1 and SM-1 seen for Fire Emergency Medical calls is statistically significant and real. The 0.2% increase in compliance between HIS-1 and SM-1 seen for Fire Emergency Other is statistically insignificant and should be disregarded.

The simulation SM-1 of the Sanford-Millican Proposal, as initially presented, shows that performance standards of response times for Fire Emergency Medical calls with their associated transports and for Fire Emergency Other calls are successfully met.

Fleet statistics for simulation SM-1 are presented in Table 34, below.

Table 34. Fleet Statistics for Simulation SM-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	41,231	631,567	70,080	44,864	62.18%
Rescues	166,234	1,523,845	311,790	128,832	41.21%
Engines	110,775	308,068	446,760	37,803	8.44%
Trucks	16,613	53,453	166,440	5,958	3.57
Squads	7,150	24,458	70,056	2,501	3.56%
Fire Fleet	342,003	2,541,390	1,065,126	219,958	20.56%
Sunstar Fleet	0	0	0	0	0
Combined Fleets	342,003	2,541,390	1,065,126	219,958	
Rescue Transports	101,972				
PLU Transports	32,818				
Total Transports	**134,790**				

To make comparisons easier, fleet statistics for simulation HIS-1 are presented in Table 35, which is repeated from a previous section.

Table 35. Fleet Statistics for Simulation HIS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	191,329	215,430	31,241	14.46%
Engines	91,152	267,780	446,760	38,989	8.70%
Trucks	7,437	51,507	166,440	6,529	3.91%
Squads	15,353	25,828	70,080	3,099	4.42%
Fire Fleet	187,730	536,444	902,280	79,858	8.85%
Sunstar Fleet	218,369	2,431,272	296,806	168,194	54.80%
Combined Fleets	406,099	2,967,716	1,199,086	248,052	
Sunstar Transports	**134,790**				

The first point of comparison between SM-1 and HIS-1 has already been made. Both simulations meet targets for response times. Simulation SM-1 results in a reduction of 130,366 scheduled units hours compared to HIS-1 (1,195,492 – 1,065,126 unit hours). Simulation SM-1 also results in a reduction of 426,326 fleet mileage (2,967,716 – 2,541,326 miles). Simulation SM-1 shows a decrease in total distance travelled by 14% compared to Simulation HIS-1. Both of these changes are in positive directions. The main factor contributing to these reductions in scheduled unit hours and fleet mileage is the application of ProQA and MPDS dispatch logic in SM-1.

However, there are aspects of the simulation which are not positive. Engines have a small increase in their total mileage. Rescue vehicles have a 3.5X increase in their total mileage. The most serious negative aspect of Simulation SM-1 is the utilization of Rescues and PLUs. Between HIS-1 and SM-1, the utilization of Rescues increases from 14.46% to 41.21%. In SM-1, the utilization of PLUs is 62.18%. These utilizations are far in excess of the maximum utilization recommended by the Pinellas County Fire Chiefs.

For purposes of this report, vehicle utilization and crew utilization are essentially equivalent. Crew utilization is defined as the number of hours a vehicle and its crew are rolling on task divided by the number of hours in the crew's shift. Crew utilization is a key metric for judging activity in emergency services. High performance, private, and profitable EMS systems exhibit very high crew utilizations. In Sunstar fleet statistics reported for Simulation HIS-1, utilization is 54.80%. Sunstar crews in EMS systems typically work on 8 and 12 hour shifts. In contrast, crews in Pinellas County fire agencies typically work on 24-hour shifts.

Consider a fire department crew working a 24-hour shift on a Rescue in Simulation SM-1. Assume a one hour time-on-task. A 41% utilization means this crew is rolling for 60 minutes, has 86 minutes downtime between calls, and the pace continues for the whole 24 hours. Fatigue sets in and judgment gets clouded. Pinellas County Fire Chiefs have recommended that crew utilization not exceed 30%. A 30% utilization means this crew would be rolling for 60 minutes and then have 140 minutes downtime between calls.

The 24-hour shift length for fire crews precludes fire crews from getting to the crew utilization levels seen for crews working 8- and 12-hour shifts. For purposes of illustration, assume a one hour time on task. A 55% crew utilization means there is only 1 hour of down time between calls. An EMS crew on an 8-hour shift can keep up this pace of activity for 8 hours. A fire crew will have difficulty keeping up a pace of one hour rolling and one hour down for the whole 24- hour shift

The 30% utilization is not an arbitrary metric, but is supported by realistic studies. In 2007 the International Association of Fire Chiefs commissioned a study, "The Effects of Sleep Deprivation on Fire Fighters and EMS Responders." This study specifically addressed the notion of 24-hour shifts and shift work in general. Below are key findings of this study that apply to this situation:

- Adequate restorative sleep is needed to perform optimally and to be healthy. An individual's circadian rhythm also affects functional abilities and the quality of sleep obtained. Most adults require six to eight hours of sleep each day, with episodes of sufficient duration to achieve all stages of sleep
- Alertness decreases with sustained wakefulness, so that being awake for 24 hours produces impairment equivalent to a blood alcohol level of 0.10
- Long work hours (shifts lasting more than 10 to 18 hours) have been clearly linked to time dependent errors in tasks requiring vigilance and focused alertness, as evidenced by an increase in motor vehicle crashes, errors among health care providers and work related injuries and accidents

- Chronic sleep loss results in decreased ability to think clearly and handle complex tasks, a depressed mood and feelings of stress and irritability. Those effects are not reliably predicted by how sleepy an individual feels, as chronically sleep deprived people do not perceive their lack of sleep as the problem
- Chronic sleep deprivation and long work hours are linked to a general increase in health complaints, obesity, obstructive sleep apnea, and possibly, a heightened risk for cardiovascular disease. Potential associations also have been made with digestive disorders, increased risk of infections and greater likelihood of malignancies.

There are two key points to be gained from this study regarding a 24-hour shift:

1. Sleep should occur in patterns that exceed 3 hours and must combine to give 6 to 8 hours, and
2. Consecutive work time should not exceed 10 hours.

The consultant also requested the System Medical Director express an opinion related to shift patterns and utilization rates. The following paragraph outlines those views.

> "It is well recognized that fatigue is a strong contributing factor in medical errors. Recent years have seen significant changes in hospital staffing patterns including most notably the implementation of graduate medical education work hour restrictions. Excellent research over the last several years has shown that increased level of fatigue increases medical errors, adverse events, provider injury, and self-reported unsafe behaviors among EMS providers.[6] While there is not yet sufficient literature to conclusively state the optimal shift length and unit hour utilization level for EMS providers, it stands to reason that the combination of long shift durations and excessively high unit hour utilization would result these same detrimental outcomes. [7]

Concerns about high crew utilization in Sanford-Millican-1 led to development of a second plan that would lower utilization and still achieve performance for the system.

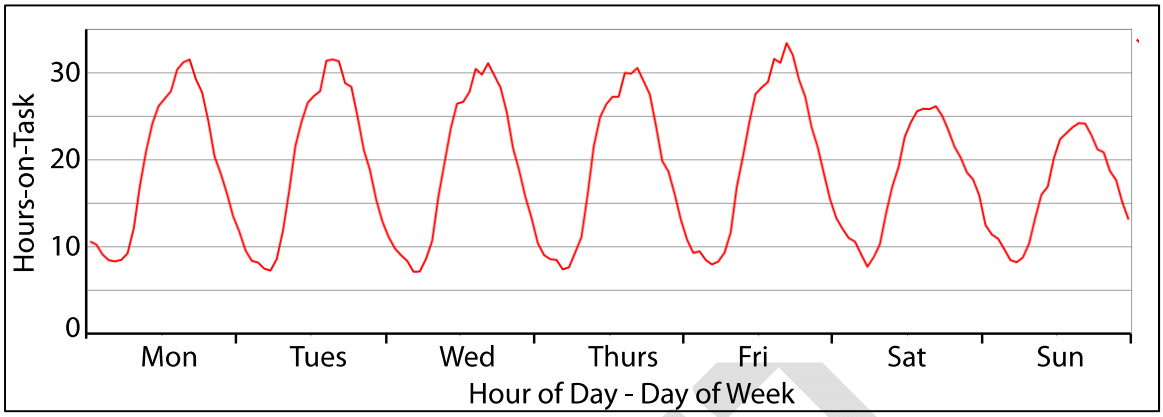
SIMULATION OF SANFORD MILLICAN-2 (SM-2)

The problem with utilization seen in simulation SM-1 was resolved in simulation SM-2 by adding Rescue units and Peak Load Units to the system. The optimization required to bring the Simulation SM-1 into conformity with a maximum utilization of 30% for Rescues and a maximum utilization of 55% for PLUs was conducted in several stages. First, a test simulation was conducted in which the system was "saturated" with Rescues. This condition was achieved with four Rescues assigned to each of the 64 station for a total of 256 Rescues. This simulation was run to determine how the historic demand for emergency medical services translated to hours of time-on-task, busy hours, by hour of day. These results are presented in Figure 5, below.

[6] Bigham BL, Buick JE, Brooks SC et al. Patient Safety in Emergency Medical Services: A Systematic Review of the Literature. Prehosp Emerg Care, 2012: 16: 20-35

[7] Patterson PD, Weaver MD, Frank RC, et al. Association between poor sleep, fatigue, and safety outcomes in emergency medical services providers. Prehosp Emerg Care. 2012;16:86–97.

Figure 5. Countywide Hours-on-Task By Hour of Day and Day of Week



This utilization curve shows that the maximum of busy unit hours is 33.44 on Friday in the interval 16:00 – 17:00 hours, and the minimum busy unit hours are 7.14 on Wednesday in the interval 04:00 – 06:00 hours. A new inventory of apparatus in the system was constructed. A sufficient number of Rescues was included to cover low demand (through the troughs in Figure 5) at a utilization of less than 30%. A sufficient number of PLUs was then added to cover high demand (over the peaks in the figure) at a utilization of less than 55%. A further constraint was imposed that sufficient resources had to be present in a district such that a call originating in a district would be responded to from within the same district. A last constraint was imposed that PLUs have utilizations greater than 20%.

A configuration of Rescues and Peak Load Units that meet all of the above constraints requires 43 Rescues operating on 24-hour shifts and 48 PLUs operating of 12-hour shifts in the interval 09:00 – 21:00 hours. The number of Rescues, PLUs and their utilizations are presented by district in Table 36.

Table 36. Rescues, PLUs, and Utilizations by District and by Station

Fire District	Station	Rescue Units	Peak Load Units	Rescue Utilization	Peak Load Unit Utilization
Belleair Bluffs	43	1	1	20%	43%
Clearwater	45	2	1	26%	49%
	47	2		23%	
	48	2		28%	
	49	2		25%	
	50		1		36%
	51		1		33%
Dunedin	60	1	3	24%	31%
	62		1		35%
East Lake	56	1		25%	
Gulfport	17	1	1	18%	27%
Largo	38	2		27%	
	39		2		34%
	40		1		33%
	41	2	1	27%	50%
	42	1	1	31%	42%
Lealman	18	2	1	25%	43%
	19		3		36%
Madeira Beach	25	1	1	15%	26%
Oldsmar	54	1		16%	
Palm Harbor	65	2		30%	
	66		1		28%
	67		1		24%
Pinellas Park	16		1		32%
	33	2	1	24%	43%
	34	1	1	23%	34%
	35		2		26%
Pinellas Suncoast	27	1		13%	
Safety Harbor	52		1		31%
	53	1	2	19%	35%
Seminole	29	1	1	26%	33%
	30	1	2	25%	33%
	31		1		23%
	32		1		34%
South Pasadena	20	1	2	27%	26%
St. Petersburg	1	2	2	26%	45%
	3	2		27%	
	4		1		46%
	5		2		45%
	6		1		33%
	7	2		32%	
	8	1	1	22%	37%
	9		1		32%
	10	1		28%	
	11	1	1	23%	35%
	13		1		31%
St. Petersburg Beach	23	1		20%	
Tarpon Springs	69	1	1	20%	37%
	70		1		20%
Treasure Island	24	1		15%	

The summary inventory of PLUs, Rescues, Engines, Trucks, and Squads by district, as presented in Table 37, below, was used as inputs to the Simulation SM-2. Attachment D provides a consolidated, detailed apparatus inventory by station for SM-2

Table 37. Summary Inventory of Apparatus for SM-2

Apparatus Type	Inventory
Rescues	36
Rescue PLUs	16
Engines ALS	51
Engines BLS	0
Trucks ALS	8
Trucks BLS	11
Squads ALS	5
Squads BLS	3
Total # Units	**130**

Table 38 below indicates response time compliance by call type for SM-2 compared to SM-1.

Table 38. Response Time Compliance by Medical Call Type in Simulation SM-2 Compared to HIS-1

Call Type	Call Count	Simulation	
		HIS-1	SM-2
		%-tile @ 7:30	%-tile @ 7:30
Echo, Delta, Charlie, NA	94,364	94.84%	97.15%
Bravo	26,499	94.65%	96.61%
Alpha, Omega	23,624	93.30%	98.62%
Any ProQA	144,487	94.56%	92.91%
Sunstar P1	84,379	95.73%	96.17%
Sunstar P2	61,707	87.51%	86.11%
Sunstar P1 and P2 no ProQA	6,692	37.01%	71.24%

Simulation SM-2 exceeds its compliance targets on all call types except in the last two categories, "Sunstar P2" and "Sunstar P1 and P2 no ProQA." The Historic Simulation, HIS-1, also fails to meet its compliance targets in these categories.

The countywide changes in compliance on Fire Emergency Medical and Fire Emergency Other calls in Simulations HIS-1 and SM-2 are presented in Table 39, below.

Table 39. Countywide Changes in Response Times on Fire Calls Between Simulations HIS-1 and SM-2

Call Type	Call Count	Simulation	
		HIS-1	SM-2
		%-tile @ 7:30	%-tile @ 7:30
Fire Emergency Medical	94,294	91.92%	97.13%
Fire Emergency Other	24,371	93.63%	94.50%

The 5.2% increased compliance between HIS-1 and SM-2 seen for Fire Emergency Medical calls is statistically significant and real. The 0.87% increase in compliance between HIS-1 and SM2 seen for Fire Emergency Other may be a real difference statistically, but actually makes little difference.

A comparison of response times by district for Fire Emergency Medical calls in the Simulations HIS-1 and SM-2 is provided in Table 40 below.

Table 40. Comparison of Performance Between SM-2 and HIS-1 For Fire Emergency Medical Calls

District	Count	Fire Emergency Medical	
		SM-2	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	27,083	6:03	6:59
Clearwater	14,482	6:23	7:23
Largo	12,642	5:50	6:46
Pinellas Park	8,174	6:10	7:04
Seminole	6,062	6:09	7:17
Lealman	4,456	5:42	6:43
Palm Harbor	4,404	6:26	7:16
Dunedin	3,794	6:43	7:44
Tarpon Springs	2,183	7:29	8:35
South Pasadena	1,495	6:05	6:27
Safety Harbor	1,432	6:55	8:13
East Lake	1,278	7:16	8:09
Gulfport	1,200	6:22	7:21
St. Petersburg Beach	1,097	7:20	6:57
Pinellas Suncoast	977	6:29	7:22
Oldsmar	919	6:25	7:13
Treasure Island	712	6:47	8:04
Madeira Beach	598	6:13	7:58
Redington Beach	384	7:22	9:01
Belleair	376	7:08	7:50
Belleair Bluffs	306	5:35	6:41
Tierra Verde	168	6:35	6:43
Fort Desoto Park	68	13:26	14:27
Oldsmar Contract	4	5:28	6:43

In all districts, the response times on Fire Emergency Medical calls in simulation SM-2 are faster than the response times in Simulation HIS-1.

Table 41, below, shows a comparison of response times by district for Fire Emergency Other calls in the Simulations HIS-1 and SM-2.

Table 41. Comparison of Performance Between SM-2 and HIS-1 For Fire Emergency Other

District	Count	Fire Emergency Other	
		SM-2	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	7,619	6:37	6:37
Clearwater	3,919	6:31	6:43
Largo	2,493	6:08	6:25
Pinellas Park	2,314	6:37	6:47
Seminole	1,533	6:46	7:06
Lealman	884	5:59	6:20
Palm Harbor	1,051	6:17	6:49
Dunedin	785	7:00	7:11
Tarpon Springs	663	7:14	7:38
South Pasadena	229	5:28	5:56
Safety Harbor	375	7:27	7:46
East Lake	373	7:56	8:01
Gulfport	279	7:05	7:16
St. Petersburg Beach	405	6:01	6:41
Pinellas Suncoast	320	6:43	7:37
Oldsmar	312	7:13	6:59
Treasure Island	220	7:45	8:10
Madeira Beach	199	6:41	6:59
Redington Beach	111	8:17	9:01
Belleair	110	8:39	9:18
Belleair Bluffs	88	5:38	6:28
Tierra Verde	64	7:57	7:10
Fort Desoto Park	24	12:52	14:49
Oldsmar Contract	1	4:30	5:30

As with emergency medical calls, in all districts, the response times on Fire Emergency Other calls in Simulation SM-2 are faster than the response times in Simulation HIS-1.

Fleet statistics for Simulation SM-2 are presented in Table 43, below.

Table 42. Fleet Statistics for Simulation SM-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	41,231	631,567	70,080	44,864	62.18%
Rescues	166,234	1,523,845	311,790	128,832	41.21%
Engines	110,775	308,068	446,760	37,803	8.44%
Trucks	16,613	53,453	166,440	5,958	3.57
Squads	7,150	24,458	70,056	2,501	3.56%
Fire Fleet	342,003	2,541,390	1,065,126	219,958	20.56%
Sunstar Fleet	0	0	0	0	0
Combined Fleets	342,003	2,541,390	1,065,126	219,958	
Rescue Transports	101,972				
PLU Transports	32,818				
Total Transports	**134,790**				

To make comparisons easier, fleet statistics for Simulation SM-1 are presented in Table 42, which is repeated from a previous section.

Table 43. Fleet Statistics for Simulation SM-2

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	90,016	850,339	210,240	75,742	36.00%
Rescues	112,622	951,997	376,680	90,302	24.00%
Engines	114,553	297,282	446,760	33,786	7.56%
Trucks	17,632	53,003	166,440	5,125	3.08%
Squads	7,436	23,328	70,080	2,027	2.89%
Fire Fleet	139,621	2,175,949	1,270,200	206,982	16.30%
Sunstar Fleet	0	0	0	0	0.00%
Combined Fleet	139,621	2,175,949	1,270,200	206,982	
Rescue Transports	75631				
PLU Transports	64,159				
Total Transports	**134,790**				

Fleet mileage in SM-2 is 365,441 miles less than fleet mileage in SM-1. Scheduled unit hours in SM-2 are 207,686 hours greater than in SM-1. Utilization of PLUs and Rescues in SM-1 is 62.18% & 41.21% respectively, and significantly exceeds the fire department recommendation of 30%. Utilization of PLUs and Rescues in SM-2 has been brought into conformity with fire department recommendations.

SIMULATION OF THE OPTIMIZED PLAN (CARES-1)

In developing a plan to optimize and create efficiencies in the current Pinellas EMS system, analysis focused on temporal changes in call volume. This methodology allows for matching of resources (response units) with predictions of calls based on historical data. In Pinellas, the call volume of Fire Emergency- Medical calls and of Fire Emergency-Other calls is much lower at night. Stations that require multiple apparatus for coverage during daylight hours may require fewer apparatus for coverage during night-time hours. Stations that meet these criteria were identified across Pinellas County. Conceptually, apparatus in these stations were decommissioned as 24-hour units and reactivated as 14-hour peak load units, PLUs, operating over the interval 08:00 – 22:00 hours. In the Sanford-Millican Plan and the two simulations, peak load units were exclusively Rescue apparatus. PLUs in the CARES plan may be both Rescues and Squads, and even includes one Truck. Table 44, below, lists the apparatus and station locations of these peak load units for CARES-1.

Table 44. Apparatus Converted to Service as 14-Hour PLUs

Apparatus	Station	
R3	St. Petersburg	Station 3
R4	St. Petersburg	Station 4
R6	St. Petersburg	Station 6
R7	St. Petersburg	Station 7
R11	St. Petersburg	Station 11
R46	Clearwater	Station 46
R47	Clearwater	Station 47
R48	Clearwater	Station 48
R49	Clearwater	Station 49
S38	Largo	Station 38
R41	Largo	Station 41
R42	Largo	Station 42
R33	Pinellas Park	Station 33
S33	Pinellas Park	Station 33
R34	Pinellas Park	Station 34
R19	Lealman	Station 19
S65	Palm Harbor	Station 65
S29	Seminole	Station 29
T69	Tarpon Springs	Station 69

Table 45. Summary Inventory of Apparatus for CARES-1

Apparatus Type	Inventory
Rescues	11
Rescue PLUs	19
Engines ALS	46
Engines BLS	5
Trucks ALS	7
Trucks BLS	11
Squads ALS	2
Squads BLS	3
Total # Units	**104**

A consolidated inventory of all apparatus by district for simulation CARES-1 is presented in Attachment E.

A comparison of Sunstar's compliance with its response targets can be obtained from Table 46 and Table 47 below.

Table 46. Performance of Sunstar in Simulation CARES-1 Compared to Targets

Transports[8]		
Emergency 10:00 @ 90%	Downgraded Emergency 20:00 @ 90%	Inter-facility[9] 60:00 @ 90%
88.25%	89.14%	94.06%

Table 47. Sunstar Performance in Simulation HIS-1 Compared to Targets

Transports		
Emergency 10:00 @ 90%	Downgraded Emergency 20:00 @ 90%	Inter-facility 60:00 @ 90%
88.07%	89.18%	94.25%

The compliance of Sunstar against its performance targets in the CARES-1 simulation and in the historic Simulation HIS-1 is indistinguishable.

[8] All Sunstar runs are included even if no transport was needed

[9] Sunstar Response Targets for non-emergency calls: P4 – 93% within 60 min, P3 – 93% within 15 min, P5 – 93% within 30 min, P7 – 93% within 15 min.

Table 48. Comparison of Performance between CARES-1 and HIS-1 for Fire Emergency Medical Calls by District

District	Count	Fire Emergency Medical	
		CARES-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	27,083	7:02	6:59
Clearwater	14,482	7:25	7:23
Largo	12,642	6:52	6:46
Pinellas Park	8,174	7:08	7:04
Seminole	6,062	7:20	7:17
Lealman	4,456	6:53	6:43
Palm Harbor	4,404	7:28	7:16
Dunedin	3,794	7:46	7:44
Tarpon Springs	2,183	8:40	8:35
South Pasadena	1,495	6:19	6:27
Safety Harbor	1,432	8:10	8:13
East Lake	1,278	7:55	8:09
Gulfport	1,200	7:23	7:21
St. Petersburg Beach	1,097	7:06	6:57
Pinellas Suncoast	977	7:32	7:22
Oldsmar	919	7:19	7:13
Treasure Island	712	7:56	8:04
Madeira Beach	598	7:32	7:58
Redington Beach	384	8:35	9:01
Belleair	376	8:16	7:50
Belleair Bluffs	306	6:49	6:41
Tierra Verde	168	6:25	6:43
Fort Desoto Park	68	13:01	14:27
Oldsmar Contract	4	5:32	6:43

Table 49. Comparison of Performance between CARES-1 and HIS-1 for Fire Emergency Other Calls by District

District	Count	Fire Emergency Other	
		CARES-1	HIS-1
		[min:sec] @ 90%	[min:sec] @ 90%
St. Petersburg	7,619	6:38	6:37
Clearwater	3,919	6:46	6:43
Largo	2,493	6:34	6:25
Pinellas Park	2,314	6:56	6:47
Seminole	1,533	7:04	7:06
Lealman	884	6:22	6:20
Palm Harbor	1,051	6:52	6:49
Dunedin	785	7:26	7:11
Tarpon Springs	663	7:44	7:38
South Pasadena	229	5:38	5:56
Safety Harbor	375	7:59	7:46
East Lake	373	8:07	8:01
Gulfport	279	7:10	7:16
St. Petersburg Beach	405	6:43	6:41
Pinellas Suncoast	320	7:26	7:37
Oldsmar	312	7:12	6:59
Treasure Island	220	7:40	8:10
Madeira Beach	199	7:06	6:59
Redington Beach	111	8:23	9:01
Belleair	110	9:40	9:18
Belleair Bluffs	88	6:28	6:28
Tierra Verde	64	6:56	7:10
Fort Desoto Park	24	13:10	14:49
Oldsmar Contract	1	5:08	5:30

Table 50. Fleet Statistics for Simulation CARES

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	37,228	103,352	97,076	16,019	16.39%
Rescues	28,803	71,815	92,790	12,122	13.03%
Engines	101,857	302,511	446,760	43,629	9.74%
Trucks	16,631	56,045	157,680	7,063	4.47%
Squads	3,242	12,796	35,040	1,019	2.90%
Fire Fleet	187,721	546,520	829,346	79,853	9.60%
Sunstar Fleet	218,352	2,431,396	296,806	168,375	54.85%
Combined Fleets	406,073	2,977,916	1,126,152	248,228	
Sunstar Transports	**134,790**				

Table 51. Fleet Statistics for Simulation HIS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	191,329	215,430	31,241	14.46%
Engines	91,152	267,780	446,760	38,989	8.70%
Trucks	7,437	51,507	166,440	6,529	3.91%
Squads	15,353	25,828	70,080	3,099	4.42%
Fire Fleet	187,730	536,444	902,280	79,858	8.85%
Sunstar Fleet	218,369	2,431,272	296,806	168,194	54.80%
Combined Fleets	406,099	2,967,716	1,199,086	248,052	
Sunstar Transports	**134,790**				

The above four tables compare the CARES-1 and HIS-1 simulations. The differences between response time performance of CARES-1 compared to HIS-1 for Fire Emergency Medical and Fire Emergency Other calls are insignificant. One works as well as the other. The CARES-1 simulation shows that scheduled unit hours in the fire fleet decrease by 72,934 compared to the Historic Simulation, HIS-1. This will translate into reduced personnel costs for this proposal. Meanwhile, mileage in the fire fleet increases marginally by 10,076 miles. This will have a negligible effect on operational costs.

Comparing the CARES simulation to the Historic Simulation shows slight differences in response time patterns, which are insignificant at the 90th percentile. It represented less than a few seconds and on average only a couple of seconds in any district.

MPDS DISPATCH LOGIC IN HIS-1, IPS-1, & CARES-1

The actual simulation implementing MPDS dispatch logic was run for CARES-1. The following discussion of outcomes applies to simulations HIS-1, IPS-1, and CARES-1.

Two models were tested for implementing MPDS dispatch logic using ProQA determinants:

- Dispatching only ambulances on calls with alpha, bravo, and omega determinants.
- Dispatching only fire department MFR's on calls with alpha and omega determinants.

The first case involves dispatching only ambulances on calls with alpha, bravo, and omega determinants. This logic has two effects. The utilization of fire department MFR apparatus decreases, but the total unit hours for fire department MFR's does not change because the need for coverage remains unchanged. Fire department crew costs remain unchanged. Response times to the patient will increase on the low acuity calls from the 7:30 minutes:seconds of the fire department MFR towards the 10:00 minutes:seconds of an ambulance response. Since these changes in dispatch apply to low acuity calls, the clinical outcome of these changes in response time will probably be insignificant.

In the current system, there are 24,000 alpha calls that get both a fire department MFR and an ambulance response. The presence of an ambulance on-site encourages patients to request transport.

The second case involves dispatching only fire department MFR's on calls with alpha and omega determinants. This logic has two effects. Utilization of Sunstar ambulances will decrease. Transport revenues will decrease, at least over the short term.

Absent the presence of the ambulance on site, *FITCH* estimates there will be 8,000 fewer transports compared to the current system. At present these transports are reimbursed and generate revenue. In the near future, this may not be true. Insurers are changing policy to restrict reimbursements for transports on low acuity calls.

Emergency vehicles driving lights and sirens are significantly more at risk for a traffic accident than vehicles driving at normal road speeds. Driving hot (lights and sirens) places the general population at risk. Ethically, this is an uninformed risk imposed on the general population that must be balanced against a real clinical benefit to the patient. Without a clinical benefit to the patient, there is no justification for imposing any additional risk. MPDS dispatch logic is a tested method for assessing the clinical benefit to the patient.

In summary, utilization and mileage of medical first response apparatus will decrease under MPDS resulting in a slight decrease in operational costs. Personnel costs in the fire departments will remain unchanged because the unit hour needed for coverage remain unchanged. Utilization, mileage, and expenses may change enough in the Sunstar fleet to warrant a renegotiation of the fees paid to Sunstar.

The CARES model recognizes four points related to MPDS:

1. If fire first response was not sent to any alpha (low acuity) calls the reduction does not translate into cost savings since the volume and clustering of the alpha calls do not allow for the removal of apparatus.
2. Alpha calls are a community responsibility in many cases and not a transport responsibility making it better suited to the fire mission.
3. The utilization of fire first response on Alpha calls in Pinellas is appropriate as fire fighters are ALS trained paramedics that have the same skill set as the transport provider.
4. This use of fire fighters sets the county up well in the future for implementation of community paramedic programs, accountable care and alternate medicine pathways.

The use of fire personnel as the primary responder for low acuity calls is not necessarily a cost saving exercise but rather:

1. Who's mission best suits these types of calls
2. Which workload can best tolerate accepting these types of calls
3. In the future, who is best suited for community based paramedicine and accountable healthcare requirements.

CONSOLIDATED TABLES OF FLEET STATISTICS

The following tables provide consolidate fleet statistics from the simulation of fleet statistics from the simulations. These tables are repeated from prior text to make it more convenient for the reader to compare results between proposals. A consolidated inventory of apparatus by type and district for all proposals can be found in Attachment F.

Table 52. Fleet Statistics from Historic CAD

Vehicles	Dispatch Count	Mileage*	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	not available	215,430	31,511	14.63%
Engines	91,152	not available	446,760	36,625	8.20%
Trucks	7,437	not available	166,440	9,031	5.43%
Squads	15,353	not available	70,056	4,349	6.21%
Fire Fleet	187,730	not available	898,686	81,516	9.07%
Sunstar Fleet	218,369	not available	296,806	156,981	54.80%
Combined Fleets	406,099	not available	1,195,492	238,497	
Sunstar Transports	**134,790**				

*Mileage statistics are not available from historic CAD data.

Table 53. Fleet Statistics for Simulation Historic Simulation (HIS-1)

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	73,788	191,329	215,430	31,241	14.46%
Engines	91,152	267,780	446,760	38,989	8.70%
Trucks	7,437	51,507	166,440	6,529	3.91%
Squads	15,353	25,828	70,080	3,099	4.42%
Fire Fleet	187,730	536,444	902,280	79,858	8.85%
Sunstar Fleet	218,369	2,431,272	296,806	168,194	54.80%
Combined Fleets	406,099	2,967,716	1,199,086	248,052	
Sunstar Transports	**134,790**				

Table 54. Fleet Statistics for Simulation IPS-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	0	0	0	0	0.00%
Rescues	0	0	0	0	0.00%
Engines	143,944	439,336	446,760	60,450	13.53%
Trucks	33,017	103,578	166,440	14,556	8.75%
Squads	10,786	37,642	70,080	4,775	6.81%
Fire Fleet	187,747	580,556	683,280	79,781	11.71%
Sunstar Fleet	218,369	2,437,293	296,806	168,577	56.80%
Combined Fleets	406,099	3,017,849	980,086	248,358	
Sunstar Transports	**134,790**				

Table 55. Fleet Statistics for Simulation Sanford-Millican-1 (SM-1)

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	41,231	631,567	70,080	44,864	62.18%
Rescues	166,234	1,523,845	315,360	128,832	40.84%
Engines	110,775	308,068	446,760	37,803	8.44%
Trucks	16,613	53,453	166,440	5,958	3.57%
Squads	7,150	24,458	70,080	2,501	3.57%
Fire Fleet	342,003	2,541,390	1,068,720	219,958	20.58%
Sunstar Fleet	0	0	0	0	0
Combined Fleets	342,003	2,541,390	1,068,720	219,958	
Rescue Transports	101,972				
PLU Transports	32,818				
Total Transports	**134,790**				

Table 56. Fleet Statistics for Simulation Sanford-Millican-2 (SM-2)

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	90,016	850,339	210,240	75,742	36.00%
Rescues	112,622	951,997	376,680	90,302	24.00%
Engines	114,553	297,282	446,760	33,786	7.56%
Trucks	17,632	53,003	166,440	5,125	3.08%
Squads	7,436	23,328	70,080	2,027	2.89%
Fire Fleet	342,259	2,175,949	1,270,200	206,982	16.30%
Sunstar Fleet	0	0	0	0	0.00%
Combined Fleet	342,259	2,175,949	1,270,200	206,982	
Rescue Transports	75,631				
PLU Transports	64,159				
Total Transports	**134,790**				

Table 57. Fleet Statistics for Simulation CARES-1

Vehicles	Dispatch Count	Mileage	Scheduled Unit Hours	Time-on-Task (Hours)	Utilization
PLUs	37,228	103,352	97,076	16,019	16.39%
Rescues	28,803	71,815	92,790	12,122	13.03%
Engines	101,857	302,511	446,760	43,629	9.74%
Trucks	16,631	56,045	157,680	7,063	4.47%
Squads	3,242	12,796	35,040	1,019	2.90%
Fire Fleet	187,721	546,520	829,346	79,853	9.60%
Sunstar Fleet	218,352	2,431,396	296,806	168,375	54.85%
Combined Fleets	406,073	2,977,916	1,126,152	248.228	
Sunstar Transports	**134,790**				

Table 58. Comparison of Dispatch Counts by Simulation

Dispatch Counts	Simulations				
	HIS-1	SM-1[1]	SM-2[1]	IPS-1	CARES-1
PLUs	0	41,231	90,016	0	37,288
Rescues	73,788	166,234	112,622	0	28,703
Engines	91,152	110,775	114,553	143,944	101,857
Trucks	7,437	16,613	17,632	33,017	16,631
Squads	15,353	7,150	7,436	10,786	3,242
Fire Fleet	187,730	342,003	342,259	187,747	187,721
Sunstar Fleet	218,369	0	0	218,369	218,352
Combined Fleets	406,099	342,003	342,259	406,099	406,073

Table 59. Comparison of Mileage by Simulation

Mileage	Simulations				
	HIS-1	SM-1	SM-2	IPS-1	CARES
PLUs	0	631,567	850,339	0	103,352
Rescues	191,329	1,523,845	951,997	0	71,815
Engines	267,780	308,068	297,282	439,336	302,511
Trucks	51,507	53,453	53,003	103,578	56,045
Squads	25,828	24,458	23,328	37,642	12,796
Fire Fleet	536,444	2,541,390	2,175,949	580,556	546,520
Sunstar Fleet	2,431,272	0	0	2,437,293	2,431,396
Combined Fleets	2,967,716	2,541,390	2,175,949	3,017,849	2,977,916

Table 60. Comparison of Scheduled Unit Hours by Simulation

Scheduled Unit Hours	Simulations				
	HIS-1	SM-1	SM-2	IPS-1	CARES
PLUs	0	70,080	220,565	0	97,076
Rescues	215,430	311,790	367,081	0	92,790
Engines	446,760	446,760	448,090	446,760	446,760
Trucks	166,440	166,440	166,938	166,440	157,680
Squads	70,056	70,056	70,138	70,056	35,040
Fire Fleet	898,686	1,065,126	1,272,812	683,256	829,346
Sunstar Fleet	296,806	0	0	296,806	296,806
Combined Fleets	1,195,492	1,065,126	1,272,812	980,062	1,126,152

Table 61. Comparison of Time-on-Task by Simulation

Time-on-Task	Simulations				
	HIS-1	SM-1	SM-2	IPS-1	CARES
PLUs	0	44,864	75,742	0	16,019
Rescues	31,241	128,832	90,302	0	12,122
Engines	38,989	37,803	33,786	60,450	43,629
Trucks	6,529	5,958	5,125	14,556	7,063
Squads	3,099	2,501	2,027	4,775	1,019
Fire Fleet	79,858	219,958	206,982	79,781	79,853
Sunstar Fleet	168,194	0	0	168,577	168,375
Combined Fleets	248,052	219,958	206,982	248,358	248,228

Table 62. Comparison of Utilizations by Simulation

Utilization	Simulations				
	HIS-1	SM-1	SM-2	IPS-1	CARES
PLUs	0.00%	62.18%	34.34%	0.00%	16.39%
Rescues	14.46%	41.21%	24.60%	0.00%	13.03%
Engines	8.70%	8.44%	7.54%	13.53%	9.74%
Trucks	3.91%	3.57%	3.07%	8.75%	4.47%
Squads	4.41%	3.56%	2.89%	6.82%	2.90%
Fire Fleet	8.86%	20.56%	16.26%	11.68%	9.60%
Sunstar Fleet	54.80%	0%	0.00%	56.80%	54.85%
Combined Fleets					

CREW COSTS OF PROPOSALS

APPROACH TO COSTING COMPARISONS

One purpose of this report is to compare the costs the IPS and Sanford-Millican Proposals along with a newly developed CARES model for Pinellas County fire and EMS services. During simulation processes, Sanford-Millican was amended to two separate deployment models so that there are now four models to be compared for costing purposes.

A typical approach to comparing proposals is based on the concepts of cost-performance analysis. In such comparisons, a change in performance is designed into the system, which results in a change in the cost of the system. In applying this method, rational comparisons between proposals are based on changes to the cost-performance ratios.

Comparing cost-performance ratios sounds straightforward on paper. In reality, these comparisons become very subjective and non-quantitative. Cost is easily quantified: the metric being dollars. Performance values are subjective and not easily quantified. When seven seconds are shaved off a 7:30 minutes:seconds response time, how many dollars should go towards buying this increased performance? This question does not lend itself to an easy quantitative answer.

In keeping with the County's directives to the Consultants to design comparisons, *FITCH* constructed the proposal comparison framework to show that resources allocated to each proposal are adjusted to provide the ***same*** level of emergency medical and fire service performance in each case. Approaching the comparisons in this way results in the powerful virtue of avoiding subjective judgments regarding the dollar value of specific changes in performance. A change in resources between proposals results in a quantifiable change in cost, **but results in no change in performance**. Proposals can then be compared based solely on **differences** in cost.

Focusing on **differences** allows the calculation to be simplified. To get an answer when looking at differences in costs, it is not necessary to calculate all the cost items of a proposal. It is only necessary to calculate those cost items that *change*.

If a cost item is common to two proposals, that cost item becomes neutral when the costs of the two proposals are subtracted from each other. This in no way denigrates the importance of the common functions, but rather holds constant the costs of those functions that are deemed common in the four models. The implication of this point is that common cost items add nothing to the validity of the comparison between the proposals. The same logic applies to transport revenues. Transport fees are common among all proposals and confer no special benefit on any single proposal.

It is implicit that different organizations will provide some of the administrative practices differently. But at this point, any function that cannot be affirmatively substantiated by all stakeholders as different from one model to the other is not considered in this exercise.

Therefore, the costs associated with functions of governance, accountability and logistics as described in a later section of this report were assumed not to vary from one model to the other.

There remain real challenges specifically for implementation of the Sanford-Millican models. Some would argue that these models will require significant additional administrative and coordination costs. These costs cannot be accurately quantified; they are dependent upon decisions which are not made by the county and will vary based on the specific manner each of the 18 independent agencies elect to organize administrative services. That said, costing for comparison purposes focused on the single dominant cost in EMS and fire organizations — that of the cost to staff response units.

DEVELOPING CREW COSTS

Each year, as part of the EMS funding process, fire agencies submit budget documents to the County detailing salaries, benefits and other EMS costs items. The budget forms include salary information for individual firefighter/paramedics (regular salary and special pay) and benefit costs specific to individuals: FICA, retirement contributions, group life insurance, group health insurance, weekly income benefits, worker compensation insurance, and unemployment compensation fund.

To determine crew costs, the salaries, benefits and relief staffing multiplier specific to each fire agency were combined and then an average number was derived per firefighter/paramedic. The costs were based on FY10-11 budget submittals and later confirmed or amended, based on input directly from individual fire agency Fire Chiefs. Benefits and the staffing multiplier differ from agency to agency. Table 63 below is an example of calculation for one of the agencies.

Table 63. Sample Calculation of Annual Crew Cost for One Position or Seat

Firefighter/Paramedic		Values	Calculations
Average Annual Salary/Employee[10]	A	$72,205	
Benefit Percentage	B	50.78%	
Benefit Cost	C	$36,666	C= A x B
Annual Cost/Employee	**D**	**$108,871**	D = A + C
Staffing Multiplier	E	3.45	
Annual Cost per Position or *Seat*	***F***	**$375,604**	F = D x E
Rescue Unit Staffing (FF/Medics)	G	2	
Annual Cost To Staff Fire Rescue Unit	**H**	**$751,208**	H = F x G
Annual hours: 24 hr x 365 days	J	8,760	
Crew Cost per Staffed Unit Hour	**K**	**$85.75**	K = H / J

Salaries, benefit percentages and staffing multipliers are specific to each fire agency in Pinellas County. Table 64 below depicts crew costs per hour for a staffed fire rescue unit in the Pinellas system that are staffed with two firefighter/paramedics.

[10] Average salaries were taken from each fire agency's FY10-11 Budget Submittal and confirmed or modified based on information from agency Fire Chiefs.

Table 64 below reflects the annual crew cost to staff a fire rescue unit by fire agency and the crew.

Table 64. Crew Cost for One Rescue Apparatus by District

District	Crew Cost for One Rescue Apparatus	
	Per Year	Per Hour
St. Petersburg	$1,088,090	$124.21
Clearwater	$646,958	$73.85
Largo	$789,252	$90.10
Pinellas Park	$661,204	$75.48
Seminole	$705,486	$80.53
Lealman	$751,208	$85.75
Palm Harbor	$780,130	$89.06
Dunedin	$671,372	$76.64
Tarpon Springs	$725,502	$82.82
South Pasadena	$615,920	$70.31
Safety Harbor	$753,892	$86.06
East Lake	$671,786	$76.69
Gulfport	$583,146	$66.57
St. Petersburg Beach	$675,334	$77.09
Pinellas Suncoast	$875,094	$99.90
Oldsmar	$646,114	$73.76
Treasure Island	$632,441	$72.20
Madeira Beach	$598,484	$68.32

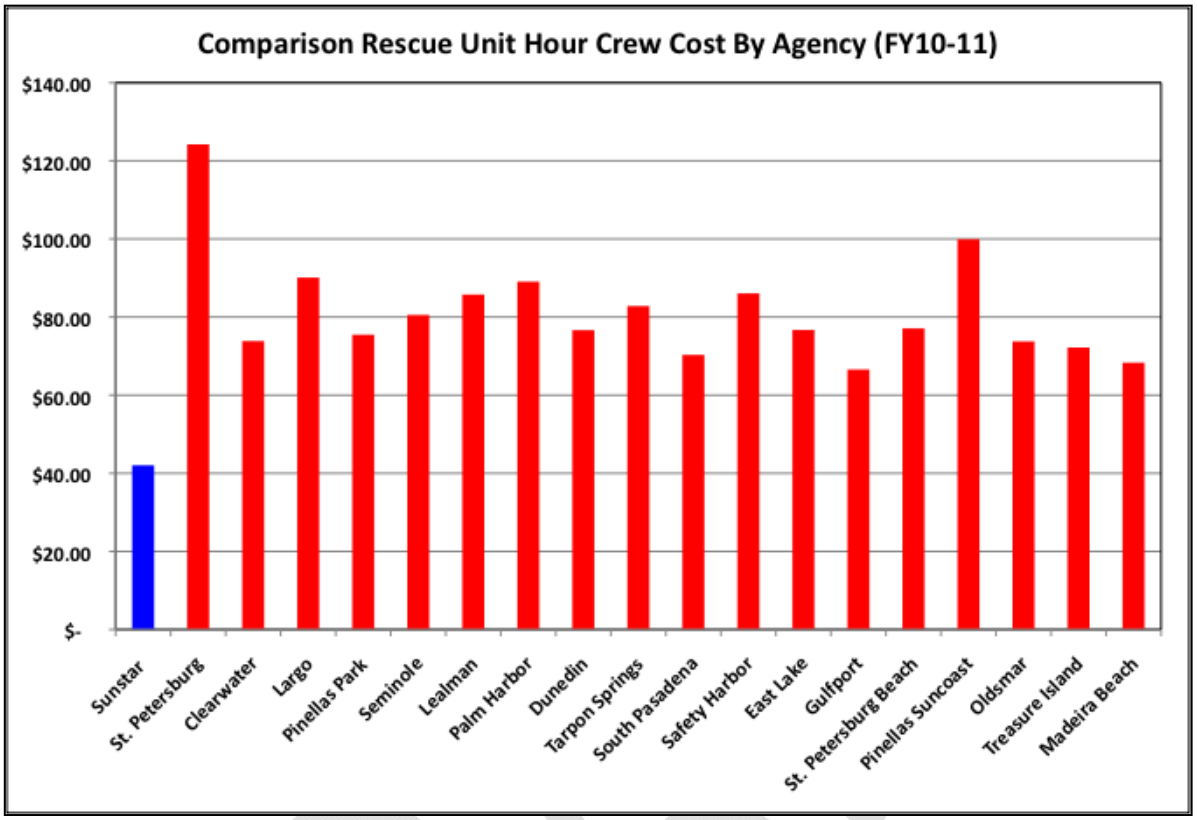
Sunstar's contractor, Paramedics Plus, staffs its ambulances with one paramedic and one emergency medical technician (EMT). The staffing relief multiplier is 4.00 and benefit costs are substantially lower than those in fire agencies. Sunstar's annual crew costs and unit hour crew cost are below in Table 65.

Table 65. Sunstar Crew Cost – One Ambulance

Sunstar – Crew Cost for One Ambulance			
Paramedic Position	EMT Position	Crew Cost per Year	Crew Cost per Hour
$210,299	$157,955	$368,254	$42.04

For comparison purposes, Figure 6 below reflects the crew cost by District to staff one rescue for one hour and for Sunstar to staff ambulance for one hour. The unit hour cost includes only the cost of the positions to staff the unit and does not include any operational costs.

Figure 6. Comparison of Rescue/Ambulance Unit Hour Crew Costs



Note: Hourly rates reflect fire rescue staffing of 2 FF/paramedics and Sunstar staffing of 1 paramedic and 1 EMT.

Development of full costing required that an equipment inventory be available for Historic Simulation, IPS-1, Sanford-Millican-1 and Sanford-Millican-2 and the Pinellas Optimized Proposal (CARES-1). Typical staffing of units is indicated in Table 66 below. These staffing patterns were used in calculations of crew costs for each agency and each model.

Table 66. Apparatus Staffing for Unit Costing

Personnel	Firefighter					Non-Firefighter
	Engine		Truck		Rescue	Sunstar Ambulance
	ALS	BLS	ALS	BLS		
Paramedic	1	0	1	0	2	1
EMT	2	3	2	3	0	1

Squads are not included in the above table as there is no consistent staffing pattern for these units. The actual staffing of squads for each agency was included in the costing calculation, based on feedback from the agency's Fire Chief.

Peak Load (non-24-hour) rescues staffing consist in all models of one paramedic and one EMT as follows:

- For SM-1: non-firefighter paramedics and EMTs (single patch)
- For SM-2: non-firefighter paramedics and EMTs (single patch)
- For CARES-1: firefighter/paramedics and firefighter/EMTs (double patch)

In each model, staffing and calculations were matched to the equipment inventories used in the simulations and staffing for each apparatus matched its ALS or BLS designation.

Spreadsheets were developed to replicate staffing of units as noted above and applied crew costs as appropriate. Peak load unit crew costs for Sanford-Millican were costed at 12 hours a day and for the Pinellas Optimized Proposal at 14 hours a day.

Total unit hours per model were cross-checked to assure that simulations and equipment inventories matched.

Table 67 below summarizes the equipment inventory for each model.

Table 67. Apparatus Inventory for All Proposals

Apparatus Count 24-Hour Units	Historic Simulation	IPS	SM-1	SM-2	CARES
Engines	51	51	51	51	51
Trucks	19	19	19	19	18
Squads	8	8	8	8	5
Rescues	25	0	36	43	11
Totals	**103**	**78**	**114**	**121**	**85**
Peak Load Units	**0**	**0**	**16 12-hour PLU's**	**48 12-hour PLU's**	**19 14-hour PLU's**

Attachments A through E detail the equipment inventory and indicate which units are ALS vs. BLS for staffing and costing purposes for each model.

Table 68 below indicates crew costs for each model and the corresponding unit hours.

Table 68. Comparison of Crew Costs of Proposals

System Crew Costs	Historic Simulation	IPS	SM-1 *(Single Patch)*	SM-2 *(Single Patch)*	CARES-1 *(Double Patch)*
Fire Crew	$99,141,354	$77,904,729	$110,771,946	$120,933,696	$92,855,663
Sunstar Crews	$12,869,837	$12,869,837	$-	$-	$12,869,837
Total	**$112,011,191**	**$90,774,566**	**$110,771,946**	**$120,933,696**	**$105,725,500**
Diff from Historic		*$(21,236,625)*	*$(1,239,245)*	*$8,922,506*	*$(6,285,691)*
Unit Hours					
Fire	902,280	683,280	1,068,720	1,270,200	841,690
Sunstar	306,147	306,147	-	$-	$306,147
Total	**1,208,427**	**989,427**	**1,068,720**	**1,270,200**	**1,147,837**
Diff from Historic		*(219,000)*	*(139,707)*	*61,773*	*(60,590)*

Note 1: SM-1 and SM-2 crew costs do not include firefighter premium/incentive pay for transport responsibilities. Fire labor groups are on record that they would likely negotiate for premium/incentive pay of between 3% to %5.
Note 2: The Executive Summary Comparison Table includes the significant cost of Fleet Operations in the IPS Proposal.

Single patch personnel are non-firefighters assumed to be hired from the Sunstar pool of employees. Double patch personnel are firefighters most of whom are already in the Pinellas system.

RESERVE CAPACITY

IPS PROPOSAL

The IPS Proposal decommissions 25 Rescues (24-hour apparatus) in a fleet of 103 apparatus, decreases unit hours by 24%, and, based on the simulation IPS-1, the system still achieves its performance targets. This finding serves as an operational definition of reserve capacity in the system. This finding is the most important single lesson to be learned from the IPS proposal.

SANFORD-MILLICAN PROPOSAL

The Sanford-Millican Proposal points to the presence of reserve capacity in the current system in two ways.

First, the personnel costs of SM-1 are almost equal to the personnel costs of the current system. This is a most curious outcome. In the current system, all of the positions on transport units are filled by lower cost Sunstar employees. In the SM-1 model, more than half of the positions on transport units are filled by higher cost fire department employees. Yet, the personnel cost of SM-1 is slightly less than in the current system. Reserve capacity already existing within the fire departments serves to internally subsidize the increased costs of using firefighters to staff medical transport units.

Second, the Sanford-Millican Proposal decommissions the Sunstar fleet and transfers responsibilities for patient transports requiring 296,806 unit hours to the fire fleet. Yet, the fire fleet adds only 162,846 unit hours of capacity to the current system. Based on simulation SM-1, the system still achieves its performance targets. The shortfall of 133,960 unit hours must have already been available within the current system as "reserve capacity." See Table 69 below. These unit hours are equivalent to approximately 15 24-hour apparatus.

Table 69. Changes in Fleet Unit Hours Between Simulations HIS-1 and SM-!

Fleet	Scheduled Unit Hours		Difference
	SM-1	HIS-1	
Sunstar Fleet	0	296,806	296,806
Fire Fleet	1,065,126	902,280	162,846
		Reserve Capacity	133,960

The IPS and Sanford-Millican Proposals take radically different approaches to modifying the current system. It is significant that Proposals as disparate as IPS and Sanford-Millican teach the same lesson regarding the existence of reserve capacity in the current system and teach almost the same lesson on the amount of reserve capacity present. Some reserve capacity must exist in the system as Pinellas county lives in a zone of natural disasters and major incidents. This means that any system design cannot remove all the reserve capacity or Pinellas will no longer be self-reliant.

IMPLEMENTATION PLANS/ORGANIZATION CHARTS

The IPS Proposal and the CARES plan utilize the current system structure, and its implementation is much simpler than that of Sanford-Millican. In contrast, the Sanford-Millican Proposal potentially changes oversight and transfers all functional elements required to accomplish patient transport to the 18 independent fire agencies and Cities/Districts. Below are operational and human resources implementation plans for all three models.

IPS PROPOSAL IMPLEMENTATION

Implementation of the IPS Proposal requires no change in Sunstar operations, current system oversight or infrastructure. The plan below assumes that the cities and fire district elected bodies adopt the IPS Proposal in its entirety. The other assumption, based on the number of firefighter/paramedics currently in the Pinellas system, is that there would be enough ALS personnel in each fire agency to upgrade the appropriate number of non-rescue vehicles. The fact that current Rescue apparatus are decommissioned should result in an excess of firefighter/paramedics.

With these key assumptions, the proposal moves to implementation. Tasks are listed below that are needed to effect the change. Each task is coupled with a comment regarding entities that are to participate in accomplishing the task along with and a complexity rating of 1 to 3 with 1 being the least complex and time consuming and 3 being the most complex and time consuming.

Table 70. IPS Operational and Human Resources Implementation Plan

Operational Plan Tasks	Entities Involved	Complexity Rating
Inventory current non-rescue fleet and determine the number that need to be upgraded from BLS to ALS	Fire Agencies	1
Inventory equipment on rescues to determine what can be transferred to non-rescues that will be upgraded	Fire Agencies	1
Review non-rescue fleet licenses with State and apply for upgrades as needed; decommission current rescue licenses	Fire Agencies and State	1
Review reserve non-rescue fleet management plans (operating and capital) and adjust (increase) budgets to compensate for additional mileage anticipated	Fire Agencies	2
Advise dispatch of the unit changes	Fire Agencies, Dispatch	1
Human Resources Tasks	**Entities Involved**	**Complexity Rating**
Inventory current firefighter to determine number of personnel (paramedics and non-paramedics) needed to staff fewer vehicles	Fire Agencies	1
Develop attrition and/or layoff plan for excess fire personnel and adjust budgets as needed	Fire Agencies, Labor, City/District Human Resources	3

Most all of the tasks for IPS implementation would move forward simultaneously.

The organizational chart for the IPS Proposal exactly reflects the organization chart of the current system. The current system structure remains intact, Sunstar remains intact and fire agencies do not change. Inclusion of the County's existing organizational chart makes no material contribution to this report.

SANFORD-MILLICAN PROPOSAL IMPLEMENTATION

The operating and human resources plans below describe the significant tasks to implement Sanford-Millican. Many of the functions will need to occur simultaneously. As in the IPS Implementation Plan, a complexity rating of 1 to 3 is assigned with 1 being a less complex task and 3 require extraordinary coordination generally of several organizations.

Implementation of Sanford-Millican will require that at least one individual be tasked with coordinating 18 fire agencies and their respective elected bodies, liaison with legal counsel, hospital and healthcare facilities, and handle contracting and intergovernmental agreements as necessary. This person will be deemed the Transition Manager and will be involved in all of the tasks below.

Operational decisions are intertwined with Human Resources issues. Both are covered in the task list below with *Human Resources Tasks* noted in the "Entities Involved" column.

Table 71. Sanford-Millican Operational/Human Resources Tasks

Operational and Human Resources Tasks	Entities Involved	Complexity Rating
Form a Transition Committee of Fire Agency representatives to guide and make decisions during transition period; membership should include representative of fire agencies, County, legal counsel, and labor, and Sunstar/Paramedics Plus	Fire Agencies, County, Legal, Labor, Sunstar Human Resources	2
Determine whether the current EMS Authority structure will remain in place and determine if the County will continue in this role; if not, determine the corporate structure of the new oversight body	Board of County Commissioners and Legal Counsel	2
Determine any changes needed to the EMS Ordinance and/or EMS Millage district legislation	Legal Counsel	2
Repeal or amend current EMS legislation as needed	State, County, Legal	3
Obtain approval resolutions from 18 city and fire district elected bodies to support Proposal implementation	Cities/District Elected Bodies	2
Determine course of action should any of the 18 cities or districts not approve of Proposal implementation; legal counsel may be needed	Transition Committee, Legal	3

Operational and Human Resources Tasks	Entities Involved	Complexity Rating
Determine how to handle support functions currently provided by Sunstar personnel: what entity hires the employees; which functions are centralized or decentralized; what are reporting relationships; what is employee compensation. Functions include: dispatch, fleet maintenance and planning, finance, accounting, budgeting, purchasing, warehouse and supply management and distribution, field clinical supervision, EPCR training, field and clinical training, hospital liaison, non-emergency transport liaison, billing and collection services, customer and patient business services, safety-risk issues, technology support (operations and information), personnel scheduling	Transition Committee, Fire Agencies, Medical Director, City/District Human Resources, Labor *Human Resources Tasks*	3
Determine how to handle operational functions provided by Sunstar operations: non-emergency transport to hospitals and healthcare facilities, critical care transports, mental health transports, All Children's Hospital Transport Team, Tactical EMS Services.	Transition Committee, Fire Agencies, Medical Director, Labor, Hospitals, Healthcare facilities	2
Develop intergovernmental agreements for approval by the18 cities/districts: agreements to address methodology for funding allocations, voting rights of 18 entities, rectifying non-compliance with response times or tasks that impact revenue generation (PCRs and billable patient reports)	Legal, Cities/districts, Transition Committee, County	3
Inventory Sunstar assets and determine purchase availability, purchase funds/method. Essential items include: • Ambulance CAD • Patient Care Reporting software • Warehouse and supply software and equipment • On-hand supplies and equipment • Vehicles (all apparatus) • Computer and technology equipment including mobile • Non-proprietary records and software such as: o Ambulance personnel scheduling software o Clinical analysis software o Fleet maintenance equipment o Performance/system status management software o Employee tracking/HR software	Sunstar, Cities/Districts, County	3
Assess fire stations and need for modifications to accommodate additional apparatus and crew space; set timelines for accomplishment, fund and complete prior to hiring	Fire agencies, Cities/Districts	3
Appoint liaisons to Medical Control Board and develop method for all fire agencies/districts to interact with Medical Director	Medical Director, Medical Control Board and Fire Agencies	2
Determine interactions between Medical Director and Labor regarding and/or disciplinary actions for firefighter/paramedics	Medical Director, Fire Agencies, Labor *Human Resources Tasks*	3

Operational and Human Resources Tasks	Entities Involved	Complexity Rating
Address with Medicare and Medicaid issues regarding billing under one entity versus 18 entities to include compliance requirements for HIPAA regulations	Medicare, Medicaid, State, Legal, Fire Agencies, Transition Committee, County	3
Work with County Dispatch expand functions to include ambulance dispatch and to align dispatch functions with new response equipment; hire additional dispatchers as needed	County Communications, Fire Agencies *Human Resources Tasks*	3
Hire Additional Single and/or Double Patch personnel as needed. Consider the following: • New job descriptions, hiring criteria and compensation plans to be developed and adopted by cities/districts to include retirement categories (high risk or not for single patch) • Initiate all hiring processes unique to each jurisdiction • Initiate familiarization and training and academies • Access field supervision and adjust as needed for patient transport functions • Negotiate change in working conditions with fire personnel on transport units	Cities/districts, Tasks, Labor, Legal, *Human Resources Tasks*	3
Determine transition period and notify Sunstar/Paramedics Plus; may require extension of existing contract through transition period and renegotiation of contract; this may need to occur early in the process; legal advice needed	Transition Committee, County, Sunstar / Paramedics Plus, Legal, Cities/Districts	3

The organizational chart for implementation of Sanford-Millican will address all functions now handled by Sunstar. Functions would transfer over from Sunstar to either individual fire agencies or whatever oversight entity is created. A determination needs to be made concerning centralization versus decentralization of various functions as described above. Fundamentally, the current system works and all functions are present. No functions will disappear under Sanford-Millican but which entity will perform the functions is to be determined by the Transition Committee, the County and the fire agencies cities and district governing bodies.

If the decision is made in favor of centralization, the organizational chart will exactly reflect Sunstars' existing structure. Inclusion of the Sunstar's existing organizational chart makes no material contribution to this report.

If the decision is made in favor of decentralization, the number of possible variations in the structure become so numerous that it is not possible to draw a meaningful organizational chart.

CARES PLAN IMPLEMENTATION

The CARES model identifies specific fire agency Rescues and based on demand, reduces their scheduled hours from 24-hours a day to 14-hours a day. Five apparatus (a combination of Rescues, one Trucks and Squads) move to peak load, 14-hour schedules. There is no new apparatus called for in the model.

The implementation plan for CARES assumes that fire agencies will adopt the plan in its entirety. The CARES model does not change the current system in a significant manner. The County's role, that of Sunstar and fire agencies remain the same as the current system. Table 72 below reflects the steps needed to implement the CARES operations and indicates specific tasks in the Human Resources area.

The CARES model identifies the specific apparatus by station number that are to change to a 14-hour schedule. While the total number of unit hours are reduced CARES does not contemplate personnel layoffs. More than likely, attrition will take care of the reduction in unit hours in the model.

Table 72. CARES Operational and Human Resources Implementation Plan

Operational Plan Tasks	Entities Involved	Complexity Rating
Align the CARES model designated units and their hours of operation in 911 Communications and Sunstar Dispatch	Fire Agencies	1
Human Resources Tasks	**Entities Involved**	**Complexity Rating**
Develop personnel scheduling programs to accommodate the 14 hour shift pattern on 19 designated units.	Fire Agencies, Human Resources	1
Review mutual aid agreements to determine any impact of the scheduling change.	Fire Agencies	1
Review current collective bargaining agreements regarding shift patterns allowed.	Fire Agencies, Human Resources	2
Negotiate with Labor and city/district Human Resources Department regarding any shift pattern or other contractual issues.	Fire Agencies, Labor, City/District Human Resources	3
Determine the number of positions (and personnel) needed in each agency under the CARES model.	Fire Agencies, Human Resources	3
Develop an attrition or layoff plan to accommodate the changes.	Fire Agencies, Human Resources	3
Re-bid current positions within each fire agency offering the 14-hour shift pattern on specific apparatus.	Fire Agencies, Labor	2

SUNSTAR AND PINELLAS EMS EXCELLENCE

One of the *FITCH's* tasks was to benchmark the performance of the Pinellas system to other similar systems in North America.

The Pinellas County EMS system is one of the most highly regarded EMS systems in the US. In 2010, the Pinellas System and Sunstar as the key patient transport provider, were included in an exhaustive benchmarking study among the top twenty well-regarded EMS systems across North America.[11] Study results regarding combined with current performance reporting from the County are summarized below.

Sunstar and the Pinellas County system were measured on 74 metrics across 13 categories. The average number of indicators possessed by the systems measured was 47 and the lowest was 12. Sunstar/Pinellas possessed 54 of the metrics. Only one other system in the survey possessed more attributes than Sunstar/Pinellas.

Table 73 below indicates the broad categories against which Sunstar/Pinellas was measured.

Table 73. Benchmarking

Category	Criteria Possessed
Accreditation	4 of 4
Public Education	1 of 1
Communications	4 of 4
Response Time Reliability	10 of 10
Medical First Response	1 of 3
Clinical Care	9 of 12
Customer Focus	3 of 4
Safety	8 of 8
Workforce Focus	5 of 9
Leadership	4 of 4
Operations	2 of 2
Fleet	3 of 4

Only one other system in the survey possessed more attributes than Sunstar/Pinellas. Sunstar and the Pinellas EMS system functions as a high performance system.

The Pinellas County EMS system reflects fair market value for the EMS services provided. A competitive bid process is periodically completed and since inception of the system, has drawn competitive bids from multiple ambulance providers. The ambulance contractor operates under a detailed performance contract and transport rates are set by the Authority. Profit margins are capped for the contractor. Based on FY10-11 information, Paramedics Plus, operating as a for-profit entity in Pinellas County,

[11] Benchmarking Report, Regional Emergency Medical Services Authority (REMSA), Reno, NV, Fitch & Associates Consultant Report, May 13, 2010.

experienced a unit hour cost of $109.26 per unit hour. If one includes all the ancillary costs of medical supplies that are paid for by the county, the total unit hour cost is $118.36 per unit hour. The unit hour cost includes the cost of operations, dispatch, infrastructure, management and taxes and compares favorably with unit hour costs for other high performance systems.

ISO RATINGS AND POTENTIAL IMPACT

FIRE INSURANCE RATING

Within their Public Protection Classification (PPC) brochure, the Insurance Services Office, Inc. (ISO) offers the following general statement:

The Community's Public Protection Classification Depends on:

- **Fire Alarm and Communications Systems (10%)**, including telephone systems, telephone lines, staffing, and dispatching systems
- **Water Supply System (40%)**, including condition and maintenance of hydrants, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires. ISO's PPC program evaluates communities according to a uniform set of criteria, incorporating nationally recognized standards developed by the National Fire Protection Association and the American Water Works Association.
- **Fire Department (50%)**, including equipment, staffing, training, and geographic distribution of fire companies.

While the grading schedule is necessarily complex in its complete design and application, the foundation includes the three major components listed above. The first two components have no changes in any of the proposals and will have no impact to any jurisdiction's ISO rating. The third component, Fire Department (50%), does change under all of the proposals. More specifically, equipment and staffing change in all proposals while training and geographic distribution remain stable.

STAFFING AND RESPONSE

For grading within the Class 1 – Class 8 segment, the ISO Schedule stipulates that engine companies are ideally located no more than 1½ road miles from the incident. The deployed companies should contain a minimum of four firefighters responding on the initial alarm; one of the four may be a chief officer. In calculating station staffing, ISO states:

> *"To evaluate the total number of firefighters on duty with companies at the station, take an average over the entire year, considering vacations, holidays, sick leave and other absences."*
>
> *And further...*
>
> *"Credit fire department personnel staffing ambulances or fire department apparatus responding on medical calls if those personnel participate in fighting structure fires. Prorate the credit to reflect the extent to which those personnel are available, respond on the initial alarm to all reported structure fires and perform company duties."*

CLASSIFICATIONS AND POINT VALUES

The ISO grading schedule is based upon a 0 – 100 point schedule. The more points accumulated, the better the ISO rating, as shown in Table 74, below.

Table 74. Relationship of ISO Ratings to PPC Points

ISO	PPC Points
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0.00 to 9.99

A Class 1 rating reflects optimal protection while a Class 10 applies to jurisdictions with less than minimum protection.

For each Public Protection Classification (Class) there is a range of points. Therefore, a Class 3 jurisdiction that holds a current score of 78 points, in theory could lose 6 – 7 points and yet remain a Class 3. Conversely, a Class 3 jurisdiction that holds a current score of 71 points, in the same scenario, in theory would slip to a Class 4.

CONCLUSIONS

Because of the design of the ISO rating system, it is impractical to accurately assess the absolute impacts of changes without a comprehensive re-rate by an ISO engineer. This said, it is possible to comment on the direction that changes in staffing and apparatus will push the ISO ratings as reflected in Table 75 below.

Table 75. Expected Directionality of ISO Ratings Caused by the Proposals

Element	Proposal			
	IPS	SM-1	SM-2	CARES
Equipment	negative	uncertain	neutral	neutral
Staffing	negative	uncertain	neutral	neutral

IPS decommissions all Rescues and their crews from the system. The directionality of these changes will be negative, but ameliorated by response times insignificantly different from current.

SM-1 adds new 24-hour Rescues and firefighter crews to the system, but the utilization of all the 24-hour Rescues may be so high that there may still be negative effect on the ISO ratings. Addition of the

PLUs in SM-1 staffed with non-firefighter crews will add no benefit. The net effect of SM-1 on ISO ratings will be uncertain, shading towards negative, but ameliorated by response times insignificantly different from current.

SM-2 adds new 24-hour Rescues and firefighter crews to the system, and the utilization on all of the 24-hour Rescues becomes low enough that there may be a positive effect on ISO ratings. The addition of non-firefighter crews on peak load units will add no benefit. The net effect of SM-2 on ISO rating will be uncertain, shading towards positive, and reinforced by response times that are insignificantly different from current.

CARES decommissions Rescues and Squads and their crews during periods of low demand during the night. All Engines and all Trucks but one remain fully available. The directionality of these changes is neutral, shading towards negative, but ameliorated by response times insignificantly different from current.

GOVERNANCE, ACCOUNTABILITY AND LOGISTICS

As outlined by the Sanford-Millican Proposal, a shift from system administration and management by Pinellas County Department of Public Safety Services (single-agency) to a multi-agency structure coordinated under a single interlocal provider agreement introduces several system management challenges. These challenges affect three critical functions:

- Governance and Policy
- Operational Accountability
- Logistical Support

In this section, the nature and scope of certain system functions for which the Proposal must account are characterized. *FITCH* notes that the Sanford-Millican Proposal does not adequately give attention to either the manner or the means to perform these critical functions.

In general, during *FITCH's* research on these proposals, advocates for the Sanford-Millican model suggested that critical functions would be accomplished through an "other duties as assigned" approach. Further, the Proposal's budget did not adequately account for many of the costs associated with performing and supporting these functions.

So significant is the number of variables affecting these functions, that we could not reasonably assign costs to them. *FITCH* therefore focused on identifying essential administrative and management functions in the current configuration that are not clearly addressed by the Sanford/Millican Proposal.

To adequately address these essential functions, any interagency system design must include at least one system Administrator, along with associated support staff resources. While *FITCH* strongly recommends the selection of an independent Administrator, the referenced support staff resources could potentially be provided either as (1) employees of the system, (2) contracted service providers or (3) personnel resources loaned from system agencies dependent upon the decisions of the participating agencies. Regardless of the method used to secure the personnel, each resource assigned must clearly and cleanly report to a single Administrator.

GOVERNANCE AND POLICY

This system area includes the following component functions:

- Legislative System Oversight: an interagency body or council comprised of elected officials from the governing bodies of all participating jurisdictions.
- Interagency Agreement(s): develop, negotiate and reach agreement upon any and all necessary interagency agreements (contracts) to define roles, ensure funding and foster accountability and fairness. This includes the functions associated with the management of all contracts.
- Medical Control: a plan or design to effect required medical supervision and control from either a single health care professional (HCP) or a network of HCPs. *FITCH* conjectures that the logistics

associated with medical control across 18 independent jurisdictions are sufficiently complex and labor intensive that the prospect of securing a single HCP for medical control is remote.

- Operational Coordination: an interagency body, board or committee of fire officials from the participating jurisdictions who have decision-making authority for operational policies, budget recommendations (including funding allocations), communications (call receipt and dispatch), dispute resolution and authority to handle non-compliant agencies in a number of areas.
- Budget and Finance: a financial system and management to appropriate, plan for, manage and account for system expenses and revenues. This includes the ability to collect revenue and expend cash, including the billing and collection of system fees and charges, to provide policy recommendations for financial and reserve policies and work with internal and external auditors.

OPERATIONAL ACCOUNTABILITY

This system area includes the following component functions.

- Staffing, Field Supervision and Coordination: plans, organizes and coordinates field operations to ensure consistent operations across jurisdictional lines and interagency operations. This function ensures consistent staffing practices and the ability to rapidly fill vacancies so as to not downgrade service delivery.
- The Sanford/Millican Proposal provides only cursory attention to "staffing" and states, "How these units are staffed is a local decision and should be left as such." Further, "Each City and Special District would be responsible for employing the appropriate number of personnel to meet the staffing demands." This language opens the door to multiple staffing practices, which, if accepted without further review and cost analysis, potentially fail to ensure cost savings touted by the Proposal.
- While not specifically stated, this Proposal infers that peak hour staffing would be accomplished by "call out" or "as typically done for any fire unit." This suggests that peak hour units staffing will be compensated at overtime pay rates; but the actual cost impact of this strategy – pro or con – is left unaddressed. In that peak hour units are key component to cost savings, it is important that this expense be clearly documented.
- The Sanford/Millican Proposal addresses the matter of "supervision" (again in cursory fashion), but fails to address ongoing field coordination. With regard to supervision, the Proposal states, "Specific roles and functions will have to be explored and developed as part of the transition process." This statement leads *FITCH* to conclude that these major system functions remain incomplete in the Proposal. In the course interviews and research with fire agency officials, the Consultant was repeatedly informed regarding the stresses facing their operations due to reductions in administrative support, which lead to the transfer of workload to line managers and supervisors. Yet, the Sanford/Millican Proposal proposes to add further duties and workload to these field personnel without citing any impact.
- The Proposal assigns "supervision" to an existing corps of "unit supervisors or company officers, shift commanders in a district (known as district chiefs) and rescue lieutenants..." Without the benefit of any workload or job function analysis, the Proposal postulates that "...additional supervisory needs...can easily be rolled into the responsibilities of existing personnel." The

concluding Proposal statement on this matter states, "With the use of the funding in this model and the existing fire department supervisory resources, the component of supervision can be effectively and efficiently accomplished." *FITCH* concludes "the funding in this model" to mean the $20,000 annual "EMS Administration" expense set forth in the Proposal. Nowhere does the Proposal compare/contrast this proposed funding support with actual cost and/or current funding in a manner where an informed comparison, conclusion and decision can be reached.

- *FITCH* concludes that the assumptions and generalized conclusions lack the analysis needed to clearly substantiate the conclusions and assumptions, especially as they are related to cost. The budget exhibits attached to the Proposal offer no insight or reference as to such costs; it appears that the Proposal assumes that these functions can be added/maintained either at a reduced or at current funding levels.
- This Supervision and Coordination function must also ensure planning and readiness for tactical and disaster scenarios. This function also monitors impacts on fire protection readiness and response capability to avert avoidable loss of response capacity.
- Training: ensures current and consistent knowledge and skill levels among agency personnel and supervisors.
- The Sanford/Millican Proposal generally does not address the training of personnel to be fully capable and functional within the restructured system. *FITCH* concludes that the Proposal assumption is that what currently exists for training is sufficient. While there may be suitable EMS training currently occurring within all fire agencies (if so, it is undocumented), there is no provision for regular needs or skills assessment, planning and coordination of this function across the 18 agencies. This opens the door to inconsistency, duplication of effort and increased cost.
- The only training exception within the Proposal is for Electronic Patient Care Reporting (EPCR). The Proposal calls for the purchase, training and implementation of this system within a three-month window. *FITCH* notes that a program shift of this magnitude across literally hundreds of caregivers is a major effort. It is certain to produce bow waves of follow-up training needs, quality control, remediation and ongoing system operational management. There appears to be no costs assigned to training function in general or to the shift to EPCR administration (one time and/or ongoing).
- Safety: investigates incidents, accidents and near-miss events to ascertain risk. This program also serves to educate responders, promote safe operations, inform policy decisions, apparatus/equipment design and purchasing decisions.
- Apparatus and Equipment: ensures consistent design and configuration to enable interagency functionality and a functional reserve fleet.
- Quality Assurance and Quality Improvement (QA/QI): ensures regular review of randomly selected patient outcomes, responder skills, safety investigations and equipment performance to inform policy, training and design criteria. This program also explores industry best practices and recommends such practice changes as become appropriate to serve the community's needs.
- Patient Business Services: ensures a consistent methodology for patient/citizen system contact for inquiries, records retrieval and problem resolution.
- Performance Review (agency/unit/responder): ensures an impartial review, assessment and reporting of operational performance (time and expense metrics) at agency and unit levels; also

incorporates a systematic review of responder performance and behavior that considers medical skills, teamwork and compliance with system policy and rules.

- Complaint Receipt and Resolution Process: ensures accurate and thorough documentation of patient/citizen input, thorough investigation of any complaint or concern or matter and timely resolution and response.

LOGISTICAL SUPPORT

This system area includes the following component functions.

- Apparatus (vehicle) Program: identifies appropriate chassis, ensures consistent and regular maintenance and repair, ensures response-ready apparatus 24/7/365 for all agencies regardless of location. This program effort must also account for a suitable reserve fleet and for fleet resources necessary to accommodate reasonably expected system demand surge.
- Equipment Program: facilitates development of a standardized equipment inventory, procures required equipment, ensures operational readiness and repair of required equipment 24 hours a day, 365 days a year for all agencies (regardless of location). This program effort must also account for equipping a suitable reserve fleet and resources necessary to accommodate reasonably expected system demand surge.
- Communications: ensures functional and clear voice and data transmission capabilities along with associated required/recommended operational practices.
- Information Technology: ensures a common and functional information technology (IT) platform and operating system(s). This includes accurate and current GIS data.
- Supplies Program: ensures a readily accessible store of medical supplies and pharmaceuticals that provide timely restock of any system unit, 24 hours a day, 365 days a year for all agencies (regardless of location). This program effort must also account for supplies and resources necessary to accommodate reasonably expected system demand surge.
- The Sanford/Millican Proposal proposes for the County to "maintain" this component but does not offer any detail regarding cost/funding. The Proposal suggests for the County to hire incumbent Sunstar personnel; it doesn't address the matter of facilities and required functional space to operate the program. Further, the present system operates on the premise of field units traveling to a centralized location for supplies and restock. There are undefined costs associated with travel and out of service time for the field units.

Notwithstanding the lack of information in the Sanford-Millican Proposal discussed above, for purposes of comparison of models *FITCH* assumed the functions associated with Governance and Policy, Operational Accountability, and Logistical Support can be executed successfully in the Sanford-Millican Proposal. Furthermore, *FITCH* chose to assume that these functions could be executed at the same cost as experienced in the current system.

The purpose in making these assumptions is first, to give the Sanford-Millican Proposal the benefit of the doubt, and second, to simplify the process of making comparisons between proposals. Again, the number of variables affecting the Governance, Accountability and Logistic functions is so significant that

their consideration would quickly degenerate into irresolvable conflicts, and contribute nothing to distinguishing between proposals.

FITCH advocates a detailed look at **changes** in the costs of frontline responders among the various Proposals. This should be sufficient to distinguish between them to the satisfaction of the stakeholders.

MULTI-JURISDICTIONAL FIRE-BASED EMS TRANSPORT SYSTEMS

The system design proposed under Sanford-Millican is not a common model. It could best be characterized as "a single administrative unit (formed through an intergovernmental agreement) with multiple independent fire transport agencies that operate using common operational and clinical protocols to perform all emergency and non emergency transport services under a performance based agreement for the contracting entity/jurisdiction."

FITCH conducts the survey of the 200 largest cities in America that is published annually by the *Journal of Emergency Medical Services* and has done so for many years. In 2013, the communities represented in this data set range in size from New York City, NY (#1) population 8,244,910 to Hartford, CT (#200) population 124,867. None of these cities or their respective counties operate a system design such as proposed under Sanford-Millican.

MID/LONGER-TERM REGIONAL SERVICE/ENHANCEMENT OPPORTUNITIES

As efficiencies are implemented in the Pinellas EMS system, there are likely opportunities to redirect some level of funding to projects and programs that benefit the system from a more regional perspective as a longer term-system goal. Items that could be considered as the EMS stakeholders move forward might include the following:

- Community Paramedicine: Explore community paramedic to improve community outreach, public education, injury prevention, etc. with an eye to incorporating coming changes in the healthcare delivery models. This may include the use of "advanced practice paramedics as part of the clinical rank structure of response personnel who could also strengthen field clinical supervision of fire service based paramedics.
- Support for Special Response Efforts: There are several special response team efforts throughout the County that would benefit from additional support either for personnel, vehicles or equipment. These include the functions of HazMat/CBRNE response, technical rescue (high angle, structure collapse, below grade rescue), water rescue, tactical/SWAT medic, and support for a regional Mobile Command Post and other vehicles such as bus ambulances and to assist in mass casualty incidents and heavy rescue apparatus.
- Service Improvement to Remote/Hard to Serve Areas: There are several hard to serve areas that require responses to wildland fires and responses within waterway areas with little access. A review of historical incidents and risk factors may point to the need for additional brush fire response units and possibly the positioning or re-positioning of marine or water rescue response units.

ATTACHMENT A

Inventory of Apparatus by District and Station Used in Simulation HS-1

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Attachment A
Inventory of Apparatus by District and Station Used in Simulation HIS-1 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Belleair Bluffs (Largo)	**43**	E43				
Clearwater	**44**	E44				
	45	E45	**T45**		R45	
	46	E46			R46	
	47	E47			R47	
	48	E48	**T48**		R48	
	49	E49			R49	
	50	E50				
	51	E51		**S51**		
Dunedin	**60**	E60	**T60**			
	61	E61				
	62	E62				
East Lake	**56**	E56				
	57			S57		
	58	E58				
Gulfport	**17**	E17				
Largo	**38**	E38		S38		
	39	E39			R39	
	40	E40				
	41	E41	**T41**	**S41**	R41	
	42		T42		R42	
Lealman	**18**	E18				
	19	E19			R19	
Madeira Beach	**25**	E25				
Oldsmar	**54**		T54		R54	
Palm Harbor	**65**	E65		S65		
	66	E66				
	67		T67			
	68	E68				
Pinellas Park[3]	**16**	E16				
	33		T33	S33*	R33	
	34	E34			R34	
	35		T35	S35*		
	36	E36				
	37				R37	
Pinellas Suncoast	**27**	E27				
	28		T28			
Safety Harbor	**52**	E52				
	53		T53			

Attachment A
Inventory of Apparatus by District and Station Used in Simulation HIS-1 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Seminole	**29**	E29	**T29**	S29		
	30	E30				
	31	E31				
	32	E32				
South Pasadena	**20**		**T20**		R20	
St. Petersburg	**1**		**T1**	**S1**	R1	
	3	E3			R3	
	4	**E1** E4			R4	
	5	**E5**			R5	
	6	E6			R6	
	7	E7			R7	
	8	**E8**			R8	
	9	**E9**	**T9**		R9	
	10	**E10**			R10	
	11	E11	**T11**		R11	
	12	E12				
	13	E13	**T13**			
St. Petersburg Beach	**22**	E22				
	23		**T23**		R23	
Tarpon Springs	**69**	E69	T69			
	70	E70				
Tierra Verde (Lealman)	**21**	E21				
Treasure Island	**24**	E24				
Apparatus Totals		**51**	**19**	**8**	**25**	**0**
System Total		**103**				

[1] Apparatus (rescue capable) are entered using regular font.

[2] Apparatus (non-rescue capable) are entered using bold font.

* S35 and S33 tally as one (1) unit. The apparatus was moved from station 35 to station 33 at the end of March.

ATTACHMENT B

Inventory of Apparatus by District and Station Used in Simulation IPS

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Attachment B
Inventory of Apparatus by District and Station Used in Simulation IPS [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Belleair Bluffs (Largo)	**43**	E43				
Clearwater	**44**	E44				
	45	E45	T45			
	46	E46				
	47	E47				
	48	E48	T48			
	49	E49				
	50	E50				
	51	E51		**S51**		
Dunedin	**60**	E60	T60			
	61	E61				
	62	E62				
East Lake	**56**	E56				
	57			S57		
	58	E58				
Gulfport	**17**	E17				
Largo	**38**	E38		S38		
	39	E39				
	40	E40				
	41	E41	**T41**	S41		
	42		T42			
Lealman	**18**	E18				
	19	E19				
Madeira Beach	**25**	E25				
Oldsmar	**54**		T54			
Palm Harbor	**65**	E65		S65		
	66	E66				
	67		T67			
	68	E68				
Pinellas Park	**16**	E16				
	33		T33	S33		
	34	E34				
	35		T35	S35		
	36	E36				
	37					
Pinellas Suncoast	**27**	E27				
	28		T28			
Safety Harbor	**52**	E52				
	53		T53			

Attachment B
Inventory of Apparatus by District and Station Used in Simulation IPS [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Seminole	**29**	E29	**T29**	S29		
	30	E30				
	31	E31				
	32	E32				
South Pasadena	**20**		T20			
St. Petersburg	**1**		T1	**S1**		
	3	E3				
	4	E1 E4				
	5	E5				
	6	E6				
	7	E7				
	8	E8				
	9	E9	T9			
	10	E10				
	11	E11	**T11**			
	12	E12				
	13	E13	**T13**			
St. Petersburg Beach	**22**	E22				
	23		T23			
Tarpon Springs	**69**	E69	T69			
	70	E70				
Tierra Verde (Lealman)	**21**	E21				
Treasure Island	**24**	E24				
Apparatus Totals		**51**	**19**	**8**	**0**	**0**
System Total		**78**				

[1] Apparatus (rescue capable) are entered using regular font.

[2] Apparatus (non-rescue capable) are entered using bold font.

[3] S35 and S33 tally as one (1) unit. The apparatus was moved from station 35 to station 33 at the end of March.

ATTACHMENT C

Inventory of Apparatus by District and Station Used in Simulation SM-1

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Attachment C
Inventory of Apparatus by District and Station Used in Simulation SM-1 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Belleair Bluffs (Largo)	**43**	E43				R43A
Clearwater	**44**	E44				
	45	E45	**T45**		R45	
	46	E46				R46 R46A
	47	E47			R47	
	48	E48	**T48**		R48	R48A
	49	E49			R49	
	50	E50			R50	
	51	E51		**S51**		R51A
Dunedin	**60**	E60	**T60**		R60	
	61	E61			R61	
	62	E62				
East Lake	**56**	E56			R56	
	57			S57		
	58	E58				
Gulfport	**17**	E17				
Largo	**38**	E38		S38	R38	
	39	E39			R39	
	40	E40				
	41	E41	**T41**	**S41**	R41	R41A
	42		T42		R42	
Lealman	**18**	E18			R18	
	19	E19			R19	R19A
Madeira Beach	**25**	E25				
Oldsmar	**54**		T54			R54
Palm Harbor	**65**	E65		S65	R65	
	66	E66				
	67		T67			R67A
	68	E68			R68	
Pinellas Park	**16**	E16				
	33		T33	S33*	R33	
	34	E34			R34	
	35		T35	S35*		
	36	E36				
	37				R37	
Pinellas Suncoast	**26**				R26	
	27	E27				
	28		T28			

Attachment C
Inventory of Apparatus by District and Station Used in Simulation SM-1 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Safety Harbor	**52**	E52			R52	
	53		T53			
Seminole	**29**	E29	**T29**	S29	R29	
	30	E30			R30	R30A
	31	E31				
	32	E32				
South Pasadena	**20**		**T20**		R20	
St. Petersburg	**1**		**T1**	**S1**	R1	R1A
	3	E3			R3	R3A
	4	E1 E4			R4	R4A
	5	E5			R5	
	6	E6			R6	R6A
	7	E7			R7	
	8	E8			R8	R8A
	9	E9	**T9**		R9	
	10	E10			R10	
	11	E11	**T11**		R11	
	12	E12				
	13	E13	**T13**			R13A
St. Petersburg Beach	**22**	E22				
	23		**T23**		R23	
Tarpon Springs	**69**	E69	T69		R69	
	70	E70				
Tierra Verde (Lealman)	**21**	E21				
Treasure Island	**24**	E24				
Apparatus Totals		**51**	**19**	**8**	**36**	**16**
System Total		**130**				

[1] Apparatus (rescue capable) are entered using regular font.

[2] Apparatus (non-rescue capable) are entered using bold font.

* S35 and S33 tally as one (1) unit. The apparatus was moved from station 35 to station 33 at the end of March.

ATTACHMENT D

Inventory of Apparatus by District and Station Used in Simulation SM-2

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Attachment D
Inventory of Apparatus by District and Station Used in Simulation SM-2 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Belleair Bluffs (Largo)	**43**	E43			R43	R43A
Clearwater	**44**	E44				
	45	E45	**T45**		R45 R45A	R45B
	46	E46				
	47	E47			R47 R47A	
	48	E48	**T48**		R48 R48A	
	49	E49			R49 R49A	
	50	E50				R50
	51	E51		**S51**		R51A
Dunedin	**60**	E60	**T60**		R60	R60A R60B R60C
	61	E61				
	62	E62				R62
East Lake	**56**	E56			R56	
	57			S57		
	58	E58				
Gulfport	**17**	E17			R17	R17A
Largo	**38**	E38		S38	R38 R38A	
	39	E39				R39 R39A
	40	E40				R40
	41	E41	**T41**	**S41**	R41 R41A	R41B
	42		T42		R42	R42A
Lealman	**18**	E18			R18 R18A	R18B
	19	E19				R19 R19A R19B
Madeira Beach	**25**	E25			R25	R25A
Oldsmar	**54**		T54		R54	
Palm Harbor	**65**	E65		S65	R65 R65A	
	66	E66				R66
	67		T67			R67
	68	E68				
Pinellas Park	**16**	E16				R16
	33		T33	S33*	R33 R33A	R33B
	34	E34			R34	R34B
	35		T35	S35*		R35 R35B
	36	E36				
	37					

Attachment D
Inventory of Apparatus by District and Station Used in Simulation SM-2 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Pinellas Suncoast	**26**					
	27	E27			R27	
	28		T28			
Safety Harbor	**52**	E52				R52
	53		T53		R53	R53A R53B
Seminole	**29**	E29	**T29**	S29	R29	R29A
	30	E30			R30	R30A R30B
	31	E31				R31
	32	E32				R32
South Pasadena	**20**		**T20**		R20	R20A R20B
St. Petersburg	**1**		**T1**	**S1**	R1 R1A	R1B R1C
	3	E3			R3 R3A	
	4	E1 E4				R4
	5	E5				R5 R5A
	6	E6				R6
	7	E7			R7 R7A	
	8	E8			R8	R8A
	9	E9	**T9**			R9
	10	E10			R10	
	11	E11	**T11**		R11	R11A
	12	E12				
	13	E13	**T13**			R13A
St. Petersburg Beach	**22**	E22				
	23		**T23**		R23	
Tarpon Springs	**69**	E69	T69		R69	R69A
	70	E70				R70
Tierra Verde (Lealman)	**21**	E21				
Treasure Island	**24**	E24			R24	
Apparatus Totals		**51**	**19**	**8**	**43**	**48**
System Total				**169**		

[1] Apparatus (rescue capable) are entered using regular font.

[2] Apparatus (non-rescue capable) are entered using bold font.

* S35 and S33 tally as one (1) unit. The apparatus was moved from station 35 to station 33 at the end of March.

ATTACHMENT E

Inventory of Apparatus by District and Station Used in Simulation CARES-1

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Attachment E
Inventory of Apparatus by District and Station Used in Simulation CARES-1 [1,2]

Note - Squad 27 was activated in this model and reflected in this Attachment

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
Belleair Bluffs (Largo)	**43**	E43				
Clearwater	**44**	E44				
	45	E45	**T45**		R45	
	46	E46				R46
	47	E47				R47
	48	E48	**T48**			R48
	49	E49				R49
	50	E50				
	51	E51		**S51**		
Dunedin	**60**	E60	**T60**			
	61	E61				
	62	E62				
East Lake	**56**	E56				
	57			S57		
	58	E58				
Gulfport	**17**	E17				
Largo	**38**	E38				S38
	39	E39		**S41**	R39	
	40	E40				
	41	E41	**T41**			R41
	42		T42			R42
Lealman	**18**	E18				
	19	E19				R19
Madeira Beach	**25**	E25				
Oldsmar	**54**		T54		R54	
Palm Harbor	**65**	E65				S65
	66	E66				
	67		T67			
	68	E68				
Pinellas Park	**16**	E16				
	33		T33			S33* R33
	34	E34				R34
	35		T35			S35*
	36	E36				
	37				R37	
Pinellas Suncoast	**27**	E27		S27		
	28		T28			
Safety Harbor	**52**	E52				
	53		T53			
Seminole	**29**	E29	**T29**			S29
	30	E30				
	31	E31				
	32	E32				
South Pasadena	**20**		**T20**		R20	

Attachment E
Inventory of Apparatus by District and Station Used in Simulation CARES-1 [1,2]

Fire District	Station	Engine	Truck	Squad	Rescue	PLU
St. Petersburg	**1**		**T1**	**S1**	R1	
	3	E3				R3
	4	**E1** E4				R4
	5	**E5**			R5	
	6	E6				R6
	7	E7				R7
	8	**E8**			R8	
	9	**E9**	**T9**		R9	
	10	**E10**			R10	
	11	E11	**T11**			R11
	12	E12				
	13	E13	**T13**			
St. Petersburg Beach	**22**	E22				
	23		**T23**		R23	
Tarpon Springs	**69**	E69				T69
	70	E70				
Tierra Verde (Lealman)	**21**	E21				
Treasure Island	**24**	E24				
Apparatus Totals		**51**	**18**	**5**	**11**	**19**
System Total		**104**				

[1] Apparatus (rescue capable) are entered using regular font.

[2] Apparatus (non-rescue capable) are entered using bold font.

* S35 and S33 tally as one (1) unit. The apparatus was moved from station 35 to station 33 at the end of March.

ATTACHMENT F

Consolidated Inventory of Apparatus by Type and District

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Attachment F
Consolidated Inventory of Apparatus by Type and District

	HIS-1	IPS-1	SM-1	SM-2	CARES-1
St Petersburg					
# Rescues	10	0	10	9	5
# Rescue PLU	0	0	6	10	5
# Engines ALS	7	12	12	12	7
# Engines BLS	5	0	0	0	5
#Trucks ALS	0	2	0	0	0
# Trucks BLS	4	2	4	4	4
#Squads ALS	0	0	0	0	0
# Squads BLS	1	1	1	1	1
Total # Units	**27**	**17**	**33**	**36**	**27**
Clearwater					
# Rescues	5	0	5	8	1
# Rescue PLU	0	0	4	3	4
# Engines ALS	8	8	8	8	8
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	2	0	0	0
# Trucks BLS	2	0	2	2	2
#Squads ALS	0	0	0	0	0
# Squads BLS	1	1	1	1	1
Total # Units	**16**	**11**	**20**	**22**	**16**
Largo + Belleair					
# Rescues	3	0	4	6	1
# Rescue PLU	0	0	2	6	3
# Engines ALS	5	5	5	5	5
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	1
# Trucks BLS	1	1	1	1	1
#Squads ALS	1	2	1	1	0
# Squads BLS	1	0	1	1	1
Total # Units	**12**	**9**	**15**	**21**	**12**
Pinellas Park					
# Rescues	3	0	3	3	1
# Rescue PLU	0	0	0	5	3
# Engines ALS	3	3	3	3	3
# Engines BLS	0	0	0	0	0
#Trucks ALS	2	2	2	2	2
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	1	1	1	0
# Squads BLS	1	0	0	0	0
Total # Units	**9**	**6**	**9**	**14**	**9**

Attachment F
Consolidated Inventory of Apparatus by Type and District

	HIS-1	IPS-1	SM-1	SM-2	CARES-1
Seminole					
# Rescues	0	0	2	2	0
# Rescue PLU	0	0	1	5	1
# Engines ALS	4	4	4	4	4
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	1	1	1	1	1
#Squads ALS	1	1	1	1	0
# Squads BLS	0	0	0	0	0
Total # Units	**6**	**6**	**9**	**13**	**6**
Lealman + Tierra					
# Rescues	1	0	2	2	0
# Rescue PLU	0	0	1	4	1
# Engines ALS	3	3	3	3	3
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**4**	**3**	**6**	**9**	**4**
Palm Harbor					
# Rescues	0	0	2	2	0
# Rescue PLU	0	0	1	2	1
# Engines ALS	3	3	3	3	3
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	1
# Trucks BLS	0	0	0	0	0
#Squads ALS	1	1	1	1	0
# Squads BLS	0	0	0	0	0
Total # Units	**5**	**5**	**8**	**9**	**5**
Dunedin					
# Rescues	0	0	2	1	0
# Rescue PLU	0	0	0	4	0
# Engines ALS	3	3	3	3	3
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	1	0	0	0
# Trucks BLS	1	0	1	1	1
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**4**	**4**	**6**	**9**	**4**

Attachment F
Consolidated Inventory of Apparatus by Type and District

	HIS-1	IPS-1	SM-1	SM-2	CARES-1
Tarpon Springs					
# Rescues	0	0	1	1	0
# Rescue PLU	0	0	0	2	1
# Engines ALS	2	2	2	2	2
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**3**	**3**	**4**	**6**	**3**
South Pasadena					
# Rescues	1	0	1	1	1
# Rescue PLU	0	0	0	2	0
# Engines ALS	0	0	0	0	0
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	1	0	0	0
# Trucks BLS	1	0	1	1	1
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**2**	**1**	**2**	**4**	**2**
Safety Harbor					
# Rescues	0	0	1	1	0
# Rescue PLU	0	0	0	3	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	1
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**2**	**2**	**3**	**6**	**2**
East lake					
# Rescues	0	0	1	1	0
# Rescue PLU	0	0	0	0	0
# Engines ALS	2	2	2	2	2
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	1	1	1	1	1
# Squads BLS	0	0	0	0	0
Total # Units	**3**	**3**	**4**	**4**	**3**

Attachment F
Consolidated Inventory of Apparatus by Type and District

	HIS-1	IPS-1	SM-1	SM-2	CARES-1
Gulfport					
# Rescues	0	0	0	1	0
# Rescue PLU	0	0	0	1	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**1**	**1**	**1**	**3**	**1**
St. Petersburg Beach					
# Rescues	1	0	1	1	1
# Rescue PLU	0	0	0	0	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	1	0	0	0
# Trucks BLS	1	0	1	1	1
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**3**	**2**	**3**	**3**	**3**
Pinellas Suncoast					
# Rescues	0	0	1	1	0
# Rescue PLU	0	0	0	0	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	1
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	1
# Squads BLS	0	0	0	0	0
Total # Units	**2**	**2**	**3**	**3**	**3**
Oldsmar					
# Rescues	1	0	0	1	1
# Rescue PLU	0	0	1	0	0
# Engines ALS	0	0	0	0	0
# Engines BLS	0	0	0	0	0
#Trucks ALS	1	1	1	1	1
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**2**	**1**	**2**	**2**	**2**

Attachment F
Consolidated Inventory of Apparatus by Type and District

	HIS-1	IPS-1	SM-1	SM-2	CARES-1
Treasure Island					
# Rescues	0	0	0	1	0
# Rescue PLU	0	0	0	0	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**1**	**1**	**1**	**2**	**1**
Madiera Beach					
# Rescues	0	0	0	1	0
# Rescue PLU	0	0	0	1	0
# Engines ALS	1	1	1	1	1
# Engines BLS	0	0	0	0	0
#Trucks ALS	0	0	0	0	0
# Trucks BLS	0	0	0	0	0
#Squads ALS	0	0	0	0	0
# Squads BLS	0	0	0	0	0
Total # Units	**1**	**1**	**1**	**3**	**1**
	HIS-1	**IPS-1**	**SM-1**	**SM-2**	**CARES-1**
Apparatus Totals					
# Rescues	25	0	36	43	11
# Rescue PLU	0	0	16	48	19
# Engines ALS	46	51	51	51	46
# Engines BLS	5	0	0	0	5
#Trucks ALS	8	15	8	8	7
# Trucks BLS	11	4	11	11	11
#Squads ALS	4	6	5	5	2
# Squads BLS	4	2	3	3	3
Total # Units	**103**	**78**	**130**	**169**	**104**

ATTACHMENT G

Representative List of Documents Reviewed by Consultants

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& ASSOCIATES

Attachment G
Representative List of Documents Reviewed by Consultants

- Ambulance Service Agreement and Appendices
- Ambulance Service Agreement Amendments
- ALS First Responder Agreements
- ALS First Responder Master Agreement
- Pinellas County EMS Coordinators List
- Pinellas county Fire Chiefs List
- Pinellas County EMS Study Final IPS Report
- Sanford-Millican Proposal
- Staff Analysis of the Sanford/Millican Fire Transport Proposal 9/6/11
- Collective Bargaining Agreements for Districts as made available
- Resolutions, Ordinances and State Legislation pertinent to the project
- Pinellas County EMS and St. Petersburg Joint Collaborative and Appendics
- ALS First Responder Funding Revenue and Budget Summary for FY10-11 for all Districts
- EMS Historical Financial Data (10 year data from 1998 to 2011)
- Summary Financial Reports on EMS Actual Revenue & Expenditures FY08-09, FY09-10, FY10-11
- Ambulance Billing Revenue & Cost of Collections
- Pinellas County 2011 ALS First Responder Unit Summary
- Sunstar Performance Reports
- IAFC Sleep Deprivation Report

ATTACHMENT H

Sunstar Capital Equipment

Attachment H
Sunstar Capital Equipment

Vehicle Replacement Plan
2011 to 2015

Existing	Maintain or Replace
Ambulances	
Nine (9) 2004 Ford/AEV Type III Ambulances	Remount to maintain Nine (9) 2012 Chevrolet C-4500/AEV Type III Ambulances (Remount)
Forty Three (43) 2009/2010/2011 Chevrolet C-4500/AEV Type III Ambulances	Maintain Forty Three (43) 2009/2010/2011 Chevrolet C-4500/AEV Type III Ambulances. Four (4) of these remounts will be completed in FY11-12,
Ten (10) 2009 Type II Van Ambulances. Units will primarily be utilized for "High Performance Non Emergency" and Long Distance Transfers. They may be used for 911 Transports on a secondary basis.	Maintain Six (6) 2009 Type II Ford Van Ambulances. Demobilize Four (4) 2009 Type II Ford Van Ambulances at Contractor's discretion. Note: Authority did not compensate Contractor for these units and the Fleet Size Standard was not adjusted.
One (1) 2008 Ford/AEV Type III Ambulance	Maintain One (1) 2008 Ford/AEV Type III Ambulance
Eleven (11) 2006 Ford/AEV Type III Ambulances	Maintain Seven (7) 2006 Ford/AEV Type III Ambulances. Demobilize Four (4) 2006 Ford Type III Ambulances at Contractor's discretion. Note: Engines were replaced in 2008 making longer Safe Useful Life possible.
Critical Care Unit	
One (1) 2004 Sterling/AEV Type III Ambulance Note: Backup Critical Care is standard Ambulance	Not Replaced
Supervisor Units	
Two (2) 2009 Ford Expedition Supervisor Units Two (2) 2010 Ford Expedition Supervisor Units	Not Replaced
Mental Health Transport Units	
One (1) 2011 Ford Transit Van for MHT	Not Replaced
Medical Supply Unit	
One (1) 2010 Ford Van - Medical Supply Unit	Not Replaced
Tactical EMS Unit	
One (1) 2004 Ford Expedition - Tactical EMS Unit	Not Replaced
Fleet Maintenance Unit	
One (1) 2004 Ford Pickup Truck	Replacement not Required

ATTACHMENT I

Cross Reference RFP Scope to Report Contents

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& ASSOCIATES

Attachment I
Cross Reference RFP Scope to Report Contents

Cross Reference Scope of Work with Table of Contents

In many instances, the RFP makes multiple references at multiple clauses to a single task. The tables below capture these multiple references for sake of completeness. Each reference to a task will lead to the same line item in the table of contents. For purposes of referrals between the scope of work and the table of contents, the table of contents of this report is reproduced in this section using a decimal list format.

Table of Contents

Attachment I
Cross Reference RFP Scope to Report Contents

7.0 Simulation of IPS Proposal (IPS -1)

8.0 Simulations of Sanford-Millican Proposal
- 8.1 Simulation of Sanford-Millican-1 (SM-1)
- 8.2 Simulation of Sanford-Millican-2 (SM-2)

9.0 Simulation of The Optimized Plan (CARES-1)

10.0 MPDS Dispatch Logic in HIS-1, IPS-1, & CARES-1

11.0 Consolidated Tables of Fleet Statistics

12.0 Crew Costs of Proposals
- 12.1 Approach to Costing Comparisons
- 12.2 Developing Crew Costs

13.0 Reserve Capacity
- 13.1 IPS Proposal
- 13.2 Sanford-Millican Proposal

14.0 Implementation Plans / Organization Charts
- 14.1 IPS Proposal Implementation
- 14.2 Sanford-Millican Implementation

15.0 Sunstar and Pinellas EMS Excellence

16.0 ISO Ratings
- 16.1 Fire Insurance Ratings
- 16.2 Staffing and Response
- 16.3 Classification and Point Values
- 16.4 Conclusions

17.0 Governance, Accountability and Logistics
- 17.1 Governance and Policy
- 17.2 Operational Accountability
- 17.3 Logistical Support
- 17.4 Multi-Jurisdictional Fire Based EMS Transport Systems

18.0 Regional Service / Enhancement Opportunities

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RFP References

The following tables excerpt the RFP paragraph by paragraph, identify the tasks required, and reference the Table of Contents through the decimal list provided above.

Table 1. Section C 1

Section C ¶1 Scope of Work Prior to conducting a study, the consultant will review documentation provided by the County as it pertains to the current operational performance and the cost of the existing EMS system, the Sanford/Millican Plan, and the IPS Study. All support materials will be provided on a Resource CD-ROM. Consultant is to utilize Fiscal Year 2010- 2011 financial and operational data.		
	Task	**TOC Entry**
01	Support Materials Received List?	Atmt "G"
Comments:		

Table 2. Section C ¶ 2

Section C ¶ 2 1- The Contractor will review the current fire and EMS resources in Pinellas County and Resolutions pertaining to EMS system FY2010-2011 dispatch and geographic information system (GIS) data will be provided.		
	Task	**TOC Entry**
01	Inventory historic apparatus 2010-2011 by district.	Atmt "A"
Comments:		

Table 3. Section C ¶ 3

Section C ¶ 3 Following the current system performance analysis, the Contractor will then provide an analysis based on the ALS Engine model recommendations from the IPS Study, as provided, and determine the optimal deployment model(s}. This analysis will also consider and document the impact that medical first responder deployment has on countywide tire protection and the impact countywide fire protection may have on medical first response			
	Task		**TOC Entry**
01	Tabulate historic performance from CAD Report MFR response by district. Report Fire response by district	HIS-1	6.0
02	Simulate IPS as proposed with ALS apparatus in original locations Report MFR response by district. Report Fire response by district	IPS	7.0
03	Simulate IPS with ALS apparatus moved to optimum locations Report MFR response by district. Report Fire response by district	IPS-1	7.0
Comments:			

Attachment I
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Table 4. Section C ¶ 4

Section C ¶ 4 **The contractor will work with multiple stakeholders by facilitating a process to refine a deployment plan for fire department ALS First Responder units to meet: (a) a 7:30 response interval target with at least 90% reliability for each Fire/EMS District (as applicable), and (b) a response interval target that is equal to the current response time performance for each Fire/EMS District. The plan will need to factor in any limitations or restrictions on tire apparatus placement (e.g., a second fire vehicle is needed for ALS First Responder at a station that only has room for one vehicle; ladder truck that might be used at another station for ALS First Responder should not be moved away from stations that are closest to the high rise structures, etc.) and any other factors that may impact deployment and ALS First Responder unit placement.**		
	Task	**TOC Entry**
01	Simulate IPS with ALS apparatus moved to optimum locations IPS-1 Report MFR response by district. Report Fire response by district	7.0
02	Compare IPS-1 with HIS-1	7.0
03	Simulate enough multi-alarm fires in IPS-1 to provide statistics on response times	See below
Comments: Multi-alarm fires are rare in Pinellas. Those that appeared in the historic record are included in the simulation of IPS-1 and had no discernable effect on compliance.		

Table 5. Section C ¶ 5

Section C ¶ 5 **2 – The Contractor will analyze the Sanford/Miilican Plan, as provided, to fully develop an organization chart, human resources plan, deployment plan capable of meeting response time and workload standards, a capital plan and an operational budget. Such components will be assessed to maintain all currently provided services and functions at the respective current service delivery levels to ensure an "apples to apples" comparison of the existing EMS System to the Sanford/Millican proposal.**		
	Task	**TOC Entry**
01	Simulate SM-1 SM-1 Report MFR response by district. Report Fire response by district	8.1
02	Compare SM-1 with HIS-1	8.1
03	Develop org chart for SM-1	14.2
04	Develop human resources plan for SM-1	14.2
05	Fix SM-1 to meet MFR & Fire response times in HIS-1 and to comply with UhU	8.2
06	Simulate SM-2 SM-2	8.2
07	Compare SM-2 with HIS-1 based on MFR & Fire response times	8.2
Comments:		

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Table 6. Section C ¶ 6

Section C ¶ 6 Such components shall include, but is not limited to, governance structure, administration/management, field supervision and coordination, all support services such as dispatch, patient business services, training/education, safety risk, information technology management and support, materials management, scheduling, fleet management, etc. All services including ALS First Responder Services and ALS Emergency and Non-Emergency Transport, Critical Care Transport, Mental Health Transport, All Children's Hospital Transport Team, and Tactical EMS Services.		
	Task	**TOC Entry**
01	Compare SM-2 with HIS-1 based on:	14.0 & 17.0
02	Governance structure	14.0 & 17.0
03	Administration & management	14.0 & 17.0
04	Field supervision and coordination	14.0 & 17.0
05	Dispatch	14.0 & 17.0
06	Patient business services	14.0 & 17.0
07	Training & education	14.0 & 17.0
08	Safety-risk	14.0 & 17.0
09	IT management & support	14.0 & 17.0
10	Materials management	14.0 & 17.0
11	Scheduling	14.0 & 17.0
12	Fleet management	14.0 & 17.0
13	Etc.	
14	ALS First Responder Services	8.2
15	ALS emergency transport	8.2
16	Non-emergency transport	8.2
17	Critical care transport	14.0
18	Mental Health transport	14.0
19	All Children's Hospital Transport Team	14.0
20	Tactical EMS Services	14.0
Comments:		

Table 7. Section D ¶ 1

Section D ¶ 1 DELIVERABLES Note: For all deiiverables listed below, Contractor shall provide an executive summary for each section of the Contractor's draft and final reports. Contractor shall fully vet both altematives from an operational perspective that would allow for the full costing of each alternative to be compared with the existing EMS System's operational performance and cost.		
	Task	**TOC Entry**
01	Executive summary for each section of draft and final report	17.0 & 3.2
02	Calculate full cost of HIS-1	17.0 & 3.2
03	Calculate full cost of IPS-1	17.0 & 3.2
04	Calculate full cost of SM-2	17.0 & 3.2
05	Compare full cost of IPS-1 with HIS-1	17.0 & 3.2
06	Compare full cost of SM-2 with HIS-1	17.0 & 3.2
07	Compare performance of IPS-1 with HIS-1	7.0
08	Compare performance of SM-2 with HIS-1	8.2
Comments:		

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Table 8. Section D1 ¶ 1

Section D1 ¶ 1 IPS Study Review **I. Utilize commercially available Fire/EMS Deployment Analysis software to conduct the deployment analyses.**		
	Task	**TOC Entry**
01	Use commercially available Fire/EMS Deployment Analysis software	1.1
Comments:		

Table 9. Section D1 ¶ 2

Section D1 ¶ 2 IPS Study Review **2. Evaluate and document the current level of Pineilas County's EMS readiness and performance including the number and types of units assigned to each station and prepare percentile response time reports for FY 10-11, within each of the Fire/EMS Districts.**		
	Task	**TOC Entry**
01	Inventory historic apparatus 2010-2011 by district.	Atmnt "E"
02	Tabulate historic performance from CAD HIS-1 Report MFR response by district. Report Fire response by district. Use %-tiles. Also report min:sec @ 90%	6.0
Comments:		

Table 9. Section D1 ¶ 3

Section D1 ¶ 3 IPS Study Review **3. Evaluate and document the current level of Pinellas County's fire protection readiness and performance including the number and types of units assigned to each station. include a countyvnde analysis of a four minute response time for a first-due engine or truck company to a structure fire and an eight minute response time for a structure fire initial alarm assignment (15 or more responders on multiple pieces of apparatus). Evaluate and document the potential positive or negative impact on each Fire/EMS District's insurance Services Office (ISO) rating.**		
	Task	**TOC Entry**
01	Inventory apparatus by district. IPS-1	Atmnt "B"
02	Simulate enough multi-alarm fires in IPS-2 to provide statistics on response times. Report: Response time for first due apparatus (target 4:00 @ 50%) Response time for initial alarm assignment (target 8:00 @ 50%)	See below
03	Evaluate impact of ISO ratings by district	14.4
Comments: Multi-alarm fires are rare in Pinellas. Those that appeared in the historic record are included in the simulation of IPS-1 and had no discernable effect on compliance.		

Table 10. Section D1 ¶ 4

Section D1 ¶4 IPS Study Review **4. Include in the study a recommendation on implementing a Medical Priority Dispatch System (MPDS), based upon national standards, to reduce the number and types of units dispatched to medical emergencies. Show deployment model(s) of a fully implemented MPDS approach as compared to the current system.**		
	Task	**TOC Entry**
01	Recommend use of MPDS in IPS-1	4.2 & 10.0
02	Implement MPDS in IPS-1. Fix inventory of apparatus. Create IPS-2	10.0
03	Create HIS-2 (w/ MPDS) for following comparison HIS-2	10.0
04	Compare IPS-2 (w/MPDS) to HIS-2 (w/ MPDS)	10.0
Comments: IPS-1 worked. Inventory of apparatus did not need fixing.		

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Table 11. Section D1 ¶ 5

Section D1 ¶5 IPS Study Review 5. Review to further refine the proposed IPS ALS Engine deployment plan, as needed, including the number and types of units assigned to each station and the percentile response times protected within each of the Fire/EMS Districts. Recommend alternative deployment options, if indicated, to achieve optimal efficiency to meet: (a) a minimum seven minutes and 30 seconds response time, within each Fire/EMS District, to 90% of emergency calls; and (b) a response interval target that is equal to the current response time performance for each Fire/EMS District.		
	Task	**TOC Entry**
01	Simulate IPS with ALS apparatus moved to optimum locations IPS-1 Report MFR response by district. Report Fire response by district Use %-tiles.	7.0
02	Fix IPS-2 with additional apparatus to get to: 7:30 @90% in all districts. Response time = HIS-1 in all districts. IPS-2	7.0
Comments:		

Table 12. Section D1 ¶ 6

Section D1 ¶6 IPS Study Review 6. Evaluate and document the level of Pinellas County's tire protection readiness and performance following the implementation of the ALS Engine deployment model (only for districts and areas surrounding those districts with a proposed change in ALS First Responder deployment). include a projected countywide analysis of a four minute response time for a first~due engine or truck company to a structure fire and an eight minute response time based on a structure fire initial alarm assignment (I5 or more responders on multiple pieces of apparatus).		
	Task	**TOC Entry**
01	Simulate multi-alarm fires in IPS-1	see below
02	Simulate enough events to provide statistics on response times	see below
03	Target 4:00 @ 50% first-due apparatus	see below
04	Target 8:00 @ 50% structure fire initial alarm assignment (15 or more responders on multiple pieces of apparatus)	see below
Comments: Multi-alarm fires are rare in Pinellas. Those that appeared in the historic record are included in the simulation of IPS-1 and had no discernable effect on compliance.		

Table 13. Section D1 ¶ 7

Section D 1¶7 IPS Study Review 7. Contractor will convert the resultant deployment models into a detailed operational plan with recommended timelines and implementation schedules. Provide a comparison between the existing system and the proposed, optimized ALS Engine deployment model(s)		
	Task	**TOC Entry**
01	Timeline and implementation schedule for IPS-1	14.1
02	Compare IPS-1 to HIS-1	7.0
Comments:		

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Cross Reference RFP Scope to Report Contents

Table 14. Section D1 ¶ 8

Section D1 ¶8 IPS Study Review 8. Provide presentation quality color coded map images capable of displaying anticipated performance (thematic maps) from countywide,		
	Task	**TOC Entry**
01	Provide hi res digital map images	see below
Comments: Jpegs transferred to County		

Table 15. Section D2 ¶ 1

Section D2 ¶1 Sanford-Millican Plan Review 1. Evaluate and document the current level of staffing and cost of all services and functions, currently provided by the Ambulance Contractor through the Ambulance Services Agreement. Evaluate and document the level of services and functions necessary to operate the Sanford/Millican Plan which is a multi-jurisdictional consolidated fire based EMS model including the integration of First Responder and Ambulance Services		
	Task	**TOC Entry**
01	Evaluate level of staffing at Sunstar	15.0
02	Evaluate cost of all services and functions	15.0
03	For SM-2, evaluate level of services and functions needed to function	14.0 & 15.0
Comments:		

Table 16. Section D2 ¶ 2

Section D2 ¶2 Sanford-Millican Plan Review 2. Fully develop an organization chart showing how multi~jurisdictional governance of fire based EMS Services would work. include the integration of current fire department organization charts to include the additional function of patient transportation using a fire based EMS model.		
	Task	**TOC Entry**
01	Develop an org chart for SM-2 to include current fire department org charts showing additional function of patient transportation	14.2
Comments:		

Table 17. Section D2 ¶ 3

Section D2 ¶3 Sanford-Millican Plan Review 3. Utilize commercially available Fire/EMS Deployment Analysis software to conduct the deployment analyses.		
	Task	**TOC Entry**
01	Utilize Optima Predict™ to conduct simulations	1.1 see below
Comments: Optima software installed. Input & output files transferred to County.		

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Table 18. Section D2 ¶ 4

Section D2 ¶4 Sanford-Millican Plan Review 4. Include in the study a recommendation on implementing a Medical Priority Dispatch System (MPDS), based upon national standards, to reduce the number and types of units dispatched to medical emergencies. Show deployment model(s) of a fully implemented MPDS approach as compared to the current system.		
	Task	**TOC Entry**
01	Recommend implementation of MPDS	4.2.2 & 10.0
02	Compare SM-2 to HIS-1	8.2
Comments:		

Table 19. Section D2 ¶ 5

Section D2 ¶5 Sanford-Millican Plan Review 5. Review to further refine the proposed Sanford/Millican Plan, including the number and types of units assigned to each station including ALS Engines, Rescue Units (24/7 transport units) and Peak Rescue Units. Review the percentile response times (both First Response and Transport) projected within each of the Fire/EMS Districts. Recommend alternative deployment options, if indicated, to achieve optimal efficiency with (a) a minimum seven minutes and 30 seconds (7:30) response time, within each Fire/EMS District, to 90% of emergency calls for First Response, (b) meeting the current response time performance within each Fire/EMS District. Further, for transport units meet the following response time standards at a minimum: ten minutes (10:00) to 90% of emergency calls; twenty minutes (20:00) to 90% of downgraded emergency calls and sixty minutes (60:00) to 90% of interfacillty and non-emergency transports.		
	Task	**TOC Entry**
01	Fix SM-1 to create SM-2	8.2
02	Run simulation of SM-2, report:	8.2
03	Performance of MFR response in min:sec @90% compared to target by district	8.2
04	Performance of MFR response in min:sec @ 90% compared to HIS-1 by district	8.2
05	Performance of emergency transport (10:00 @90%) by district	see below
06	Performance of downgraded emergency transports (20:00 @ 90%) by district	see below
07	Performance of inter-facility transports (60:00 @ 90%) by district	see below
Comments Re 05, 06, & 07: Compliance of transport activities with targets is reported countywide for SM-2. The interaction of transport activities with MFR functions is reflected in the response times by district reported for SM-2.		

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Table 20. Section D2 ¶ 6

Section D2 ¶6 Sanford-Millican Plan Review 6. Evaluate and document the anticipated workload on ALS Engines, Rescue Units (24/7 transport units) and Peak Rescue Units to ensure personnel workloads are safe and effective.		
	Task	**TOC Entry**
01	Fix 0.6 UhU in SM-1. Create SM-2	8.1
02	Run simulation of SM-2.	8.2
03	Report UhU for SM-2	8.2
04	Performance of MFR response in min:sec @90% compared to target by district	8.2
05	Performance of MFR response in min:sec @ 90% compared to HIS-1 by district	8.2
06	Performance of emergency transport (10:00 @90%) by district	see below
07	Performance of downgraded emergency transports (20:00 @ 90%) by district	see below
08	Performance of inter-facility transports (60:00 @ 90%) by district	see below
Comments Re 06, 07, & 08: Compliance of transport activities with targets is reported countywide for SM-2. The interaction of transport activities with MFR functions is reflected in the response times by district reported for SM-2.		

Table 21. Section D2 ¶ 7

Section D2 ¶7 Sanford-Millican Plan Review 7. Ensure the re-use of existing Rescue Units as transport units is evaluated to ensure appropriate level of service and workload for the replacement ALS First Responder Unit and the workload and performance of the Rescue Units for all three missions (Fire, ALS First Response and Transport) is evaluated.		
	Task	**TOC Entry**
01	Reuse of vehicles	3.2
Comments:		

Table 22. Section D2 ¶ 8

Section D2 ¶8 Sanford-Millican Plan Review 8. Evaluate and document the level of Pinellas County's ALS First Response, Fire Protection and Transport readiness and performance following the implementation of the deployment model. Evaluate and document the potential positive or negative impact on each Fire/EMS District's insurance Services Office (ISO) rating.		
	Task	**TOC Entry**
01	Performance for MFR response (by district) SM-2	8.2
02	Performance for Fire response (by district) SM-2	8.2
03	Performance for transport response (by district) SM-2	see below
04	Present IOS ratings by district	16.0
05	Comment on changes to ISO ratings	16.0
Comments Re 03: For IPS & CARES, transport by Sunstar is unchanged from current. For SM-1 & SM-2, transport response is included in the Fire Emergency Medical response times.		

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Table 23. Section D2 ¶ 9

Section D2 ¶9 Sanford-Millican Plan Review 9. Contractor will convert the resultant deployment models into a detailed operational and human resource plan.		
	Task	**TOC Entry**
01	Create operational plan for SM-2	14.2
02	Create human resources plan for SM-2	14.2
Comments:		

Table 24. Section D2 ¶ 10

Section D2 ¶10 Sanford-Millican Plan Review 10. Provide presentation quality color coded map images capable of displaying anticipated performance (thematic maps) from countywide, district level and response zone views. Provide all input and resultant data files from the commercial analysis software for the County's future use.		
	Task	**TOC Entry**
01	Provide hi res digital map images	see below
0s	Provide all input data files for Optima analyses	see below
03	Provide all output data files from Optima analyses	see below
Comments: Jpegs, input files, and output files transferred to County.		

Table 25. Section D2 ¶ 11

Section D2 ¶11 Sanford-Millican Plan Review 11. Evaluate and document existing capital equipment assets and develop a complete capital equipment plan to include frontline Rescue Units to meet a 130% peak deployment standard for fleet size, all necessary EKG equipment, hydraulic stretchers, mobile data and radio communications equipment, and any other capital equipment needed to operate existing and new Rescue Units for transport duty. Utilize a five (5) year frontiine use and five (5) year reserve use “safe useful life” or specify an alternate plan. Capital plan needs to include specialty transport, supervisory and support vehicles. Capital plan needs to include all necessary computer networking, hardware, and software to provide all services specified		
	Task	**TOC Entry**
01	Inventory existing capital equipment	Atmnt “H”
02	Develop a complete capital equipment plan (5 yr frontline or reserve use plans)	see below
03	130% peak deployment standard for fleet size	Atmnt “H”
04	EKG equipment	Atmnt “H”
05	Hydraulic stretchers	Atmnt “H”
06	Mobile data terminals	Atmnt “H”
07	Radio communications equipment	Atmnt “H”
08	Other equipment to operate existing and new Rescue Units for transport duty	Atmnt “H”
09	Include specialty transport, supervisory, and support vehicles	Atmnt “H”
10	Computer networking hardware	Atmnt “H”
11	Computer networking software	Atmnt “H”
Comments: The inventory of capital equipment is exactly the same for HIS-1, IPS-1, CARES-1, and centralized SM-1 or SM-2. The numerous possible variants to decentralization preclude detailed inventories.		

Attachment I
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Table 26. Section D2 ¶ 12

Section D2 ¶12 Sanford-Millican Plan Review 12. Prepare an operational budget to include fuel, fleet repair and maintenance, uniforms, supplies and equipment and all other operational costs of operating a multi-jurisdictional fire based EMS system. Such components will be assessed to maintain all currently provided services and functions at the respective current service delivery levels.		
	Task	**TOC Entry**
01	Prepare operational budget	3.2
02	Fuel	3.2
03	Fleet repair and maintenance	3.2
04	Uniforms	3.2
05	Supplies and equipment	3.2
06	Other operational costs	3.2
Comments:		

Table 27. Section D2 ¶ 13

Section D2 ¶13 Sanford-Millican Plan Review 13. Other costs shall be considered and include, but not be limited to, accounting, human resources, legal support, insurance, indemnification, and any other indirect costs. The existing resources within the fire departments will be considered when integrating the transport function.		
	Task	**TOC Entry**
01	Prepare operational budget (continued)	3.2
02	Accounting	3.2
03	Human resources	3.2
04	Legal support	3.2
05	Insurance	3.2
06	Indemnification	3.2
07	Other indirect costs	3.2
Comments:		

Table 28. Section D2 ¶ 14

Section D2 ¶14 Sanford-Millican Plan Review 14. Evaluate and document the implications of the governance structure on Ambulance billing, patient business services, Medicare compliance, and HIPAA compliance based upon a single licensed provider and multiple		
	Task	**TOC Entry**
01	Evaluate implications of single licensed provider and multiple providers on:	17.0
02	Governance structure on ambulance billing	17.0
03	Patient business services	17.0
04	Medicare compliance	14.0 & 17.0
05	HIPAA compliance	14.0 & 17.0
Comments:		

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Table 29. Section D2 ¶ 15

Section D2 ¶15 Sanford-Millican Plan Review 15. Ensure all plans and analysis include the following components governance structure, adrninistration/management, field supervision and coordination, all support services such as dispatch, patient business services, training/education, safety/risk, information technology management and support, materials management, scheduling, fleet management, etc. and compare to other multi-jurisdictional fire based EMS transport systems.		
	Task	**TOC Entry**
01	Analyse the following components	14.0 & 17.0
02	Governance structure	14.0 & 17.0
03	Administration/management	14.0 & 17.0
04	Field supervision and coordination	14.0 & 17.0
05	Dispatch	14.0 & 17.0
06	Patient business services	14.0 & 17.0
07	Training/education	14.0 & 17.0
08	Safety-risk	14.0 & 17.0
09	IT management and support	14.0 & 17.0
10	Materials management	14.0 & 17.0
11	Scheduling	14.0 & 17.0
12	Fleet management	14.0 & 17.0
13	Etc.	14.0 & 17.0
14	Compare all the above to other multi-jurisdictional fire based EMS transport systems	17.4
Comments:		

Table 30. Section D2 ¶ 16

Section D2 ¶16 Sanford-Millican Plan Review 16. Ensure all plans and analysis account for all services to include ALS First Responder Services and ALS Emergency and Non~Emergency Transport, Critical Care Transport, Mental Health Transport, All Children's Hospital Transport Team, and Tactical EMS Services		
	Task	**TOC Entry**
01	All plans and analyses to account for all services to include:	14.0
02	ALS First Responder Services	14.0
03	ALS emergency and non-emergency transport	14.0
04	Critical care transport	14.0
05	Mental health transport	14.0
06	All Children's Hospital Transport Team	14.0
07	Tactical EMS Service	14.0
Comments:		

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Table 31. Section D2 ¶ 17

Section D2 ¶17 Sanford-Millican Plan Review 17. For each category of transport of specialty services provided (9-1-1/Emergency, Non-Emergency, Interfacility, Critical Care, Mental Health, Critical Care, All Children's Transport Team and Tactical EMS Service), evaluate the individual revenue stream and individual program cost.		
	Task	**TOC Entry**
01	For each category of specialty transport services evaluate individual revenue stream and individual program cost	Not applicable
02	911/Emergency Transport	Not applicable
03	Non-Emergency Transport	Not applicable
04	Inter-facility Transport	Not applicable
05	Critical Care Transport	Not applicable
06	All Children's Transport Team	Not applicable
07	Tactical EMS Service	Not applicable
Comments: Each category of revenue would be identical since all are to be performed under all models and would be collected by the county or by the single intergovernmental agency. The system's revenues would continue to be a combination of millage and transport fees.		

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Cross Reference Scope of Work with Table of Contents.

For purposes of reference, page 17, 18, & 19 from the RFP are reproduced below in their entirety.

SECTION E – SCOPE OF WORK

C. SCOPE OF WORK:

Prior to conducting a study, the consultant will review documentation provided by the County as it pertains to the current operational performance and the cost of the existing EMS system, the Sanford/Millican Plan, and the IPS Study. All support materials will be provided on a Resource CD-ROM. Consultant is to utilize Fiscal Year 2010-2011 financial and operational data.

1 - The Contractor will review the current fire and EMS resources in Pinellas County and Resolutions pertaining to EMS system performance and provide the County with a detailed EMS and fire deployment and performance analysis. FY 10-11dispatch and geographic information system (GIS) data will be provided.

Following the current system performance analysis, the Contractor will then provide an analysis based on the ALS Engine model recommendations from the IPS Study, as provided, and determine the optimal deployment model(s). This analysis will also consider and document the impact that medical first responder deployment has on countywide fire protection and the impact countywide fire protection may have on medical first response.

The contractor will work with multiple stakeholders by facilitating a process to refine a deployment plan for fire department ALS First Responder units to meet: (a) a 7:30 response interval target with at least 90% reliability for each Fire/EMS District (as applicable), and (b) a response interval target that is equal to the current response time performance for each Fire/EMS District. The plan will need to factor in any limitations or restrictions on fire apparatus placement (e.g., a second fire vehicle is needed for ALS First Responder at a station that only has room for one vehicle; ladder truck that might be used at another station for ALS First Responder should not be moved away from stations that are closest to the high rise structures, etc.) and any other factors that may impact deployment and ALS First Responder unit placement.

2 - The Contractor will analyze the Sanford/Millican Plan, as provided, to fully develop an organization chart, human resources plan, deployment plan capable of meeting response time and workload standards, a capital plan and an operational budget. Such components will be assessed to maintain all currently provided services and functions at the respective current service delivery levels to ensure an "apples to apples" comparison of the existing EMS System to the Sanford/Millican proposal.

Such components shall include, but is not limited to, governance structure, administration/management, field supervision and coordination, all support services such as dispatch, patient business services, training/education, safety/risk, information technology management and support, materials management, scheduling, fleet management, etc. All services including ALS First Responder Services and ALS Emergency and Non-Emergency Transport, Critical Care Transport, Mental Health Transport, All Children's Hospital Transport Team, and Tactical EMS Services,

D. DELIVERABLES

Note: For all deliverables listed below, Contractor shall provide an executive summary for each section of the Contractor's draft and final reports. Contractor shall fully vet both alternatives from an operational perspective that would allow for the full costing of each alternative to be compared with the existing EMS System's operational performance and cost.

1 - IPS Study Review

1. Utilize commercially available Fire/EMS Deployment Analysis software to conduct the deployment analyses.
2. Evaluate and document the current level of Pinellas County's EMS readiness and performance including the number and types of units assigned to each station and prepare percentile response time reports for FY 10-11, within each of the Fire/EMS Districts.
3. Evaluate and document the current level of Pinellas County's fire protection readiness and performance including the number and types of units assigned to each station. Include a countywide analysis of a four minute response time for a first-due engine or truck company to a structure fire and an eight minute response time for a structure fire initial alarm assignment (15 or more responders on multiple pieces of apparatus). Evaluate and document the potential positive or negative impact on each Fire/EMS District's Insurance Services Office (ISO) rating.

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4. Include in the study a recommendation on implementing a Medical Priority Dispatch System (MPDS), based upon national standards, to reduce the number and types of units dispatched to medical emergencies. Show deployment model(s) of a fully implemented MPDS approach as compared to the current system.

5. Review to further refine the proposed IPS ALS Engine deployment plan, as needed, including the number and types of units assigned to each station and the percentile response times projected within each of the Fire/EMS Districts. Recommend alternative deployment options, if indicated, to achieve optimal efficiency to meet: (a) a minimum seven minutes and 30 seconds response time, within each Fire/EMS District, to 90% of emergency calls; and (b) a response interval target that is equal to the current response time performance for each Fire/EMS District.

6. Evaluate and document the level of Pinellas County's fire protection readiness and performance following the implementation of the ALS Engine deployment model (only for districts and areas surrounding those districts with a proposed change in ALS First Responder deployment). Include a projected countywide analysis of a four minute response time for a first-due engine or truck company to a structure fire and an eight minute response time based on a structure fire initial alarm assignment (15 or more responders on multiple pieces of apparatus).

7. Contractor will convert the resultant deployment models into a detailed operational plan with recommended timelines and implementation schedules. Provide a comparison between the existing system and the proposed, optimized ALS Engine deployment model(s).

8. Provide presentation quality color coded map images capable of displaying anticipated performance (thematic maps) from countywide, district level and response zone views. Provide all input and resultant data files from the commercial analysis software for the County's future use.

2 – Sanford / Millican Plan Review

1. Evaluate and document the current level of staffing and cost of all services and functions, currently provided by the Ambulance Contractor through the Ambulance Services Agreement. Evaluate and document the level of services and functions necessary to operate the Sanford/Millican Plan which is a multi-jurisdictional consolidated fire based EMS model including the integration of First Responder and Ambulance Services.

2. Fully develop an organization chart showing how multi-jurisdictional governance of fire based EMS Services would work. Include the integration of current fire department organization charts to include the additional function of patient transportation using a fire based EMS model.

3. Utilize commercially available Fire/EMS Deployment Analysis software to conduct the deployment analyses.

4. Include in the study a recommendation on implementing a Medical Priority Dispatch System (MPDS), based upon national standards, to reduce the number and types of units dispatched to medical emergencies. Show deployment model(s) of a fully implemented MPDS approach as compared to the current system.

5. Review to further refine the proposed Sanford/Millican Plan, including the number and types of units assigned to each station including ALS Engines, Rescue Units (24/7 transport units) and Peak Rescue Units. Review the percentile response times (both First Response and Transport) projected within each of the Fire/EMS Districts. Recommend alternative deployment options, if indicated, to achieve optimal efficiency with (a) a minimum seven minutes and 30 seconds (7:30) response time, within each Fire/EMS District, to 90% of emergency calls for First Response, (b) meeting the current response time performance within each Fire/EMS District. Further, for transport units meet the following response time standards at a minimum: ten minutes (10:00) to 90% of emergency calls; twenty minutes (20:00) to 90% of downgraded emergency calls and sixty minutes (60:00) to 90% of interfacility and non-emergency transports.

6. Evaluate and document the anticipated workload on ALS Engines, Rescue Units (24/7 transport units) and Peak Rescue Units to ensure personnel workloads are safe and effective.

7. Ensure the re-use of existing Rescue Units as transport units is evaluated to ensure appropriate level of service and workload for the replacement ALS First Responder Unit and the workload and performance of the Rescue Units for all three missions (Fire, ALS First Response and Transport) is evaluated.

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8. Evaluate and document the level of Pinellas County's ALS First Response, Fire Protection and Transport readiness and performance following the implementation of the deployment model. Evaluate and document the potential positive or negative impact on each Fire/EMS District's Insurance Services Office (ISO) rating.

9. Contractor will convert the resultant deployment models into a detailed operational and human resource plan.

10. Provide presentation quality color coded map images capable of displaying anticipated performance (thematic maps) from countywide, district level and response zone views. Provide all input and resultant data files from the commercial analysis software for the County's future use.

11. Evaluate and document existing capital equipment assets and develop a complete capital equipment plan to include frontline Rescue Units to meet a 130% peak deployment standard for fleet size, all necessary EKG equipment, hydraulic stretchers, mobile data and radio communications equipment, and any other capital equipment needed to operate existing and new Rescue Units for transport duty. Utilize a five (5) year frontline use and five (5) year reserve use "safe useful life" or specify an alternate plan. Capital plan needs to include specialty transport, supervisory and support vehicles. Capital plan needs to include all necessary computer networking, hardware, and software to provide all services specified.

12. Prepare an operational budget to include fuel, fleet repair and maintenance, uniforms, supplies and equipment and all other operational costs of operating a multi-jurisdictional fire based EMS system. Such components will be assessed to maintain all currently provided services and functions at the respective current service delivery levels.

13. Other costs shall be considered and include, but not be limited to, accounting, human resources, legal support, insurance, indemnification, and any other indirect costs. The existing resources within the fire departments will be considered when integrating the transport function.

14. Evaluate and document the implications of the governance structure on Ambulance billing, patient business services, Medicare compliance, and HIPAA compliance based upon a single licensed provider and multiple licensed provider approach.

15. Ensure all plans and analysis include the following components governance structure, administration/management, field supervision and coordination, all support services such as dispatch, patient business services, training/education, safety/risk, information technology management and support, materials management, scheduling, fleet management, etc. and compare to other multi-jurisdictional fire based EMS transport systems.

16. Ensure all plans and analysis account for all services to include ALS First Responder Services and ALS Emergency and Non-Emergency Transport, Critical Care Transport, Mental Health Transport, All Children's Hospital Transport Team, and Tactical EMS Services.

17. For each category of transport of specialty services provided (9-1-1/Emergency, Non-Emergency, Interfacility, Critical Care, Mental Health, Critical Care, All Children's Transport Team and Tactical EMS Service), evaluate the individual revenue stream and individual program cost.

3- Presentations and Reports:

1. Consultant shall provide a written draft final report and present preliminary findings at an EMS Committee meeting to be scheduled.

2. Consultant shall provide a written final report and present findings at an EMS Committee meeting to be scheduled.

3. Consultant shall provide a written final report and present findings at an EMS Authority meeting to be scheduled.

4. Additional meetings as requested by the EMS Authority and/or the EMS Committee.

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