

PROJECT SCHEDULE

Milestone 1 – Full execution of the agreement

Agreement will identify Project Launch date.

Milestone 2 – Project Launch

We will conduct an interactive telephone conference with local government contacts. Our project leads will launch the project by clarifying and confirming expectations, detailing study parameters, and commencing information gathering. Should the additional cities join this project, they would be included in the project launch.

Milestone 3a – Information Gathering and Data Extraction – 30 Days

Immediately following project launch, the fire operations lead will deliver an information request to the department. This is an extensive request which provides us with a detailed understanding of the department's operations. Our experience is that it typically takes an agency several weeks to accumulate and digitize the information. We will provide instructions concerning uploading materials to our website. When necessary, the lead will hold a telephone conference to discuss items contained in the request. The team lead will review this material prior to an on-site visit.

Milestone 3b – Data Extraction and Analysis – 14 Days

Immediately following the project launch the Data Lead will submit a preliminary data request, which will evaluate the quality of the Computer Aided Dispatch (CAD) system data. This will be followed by a comprehensive request for data from the CAD system to conduct the response and workload analysis. This request requires a concerted effort and focused response from your department to ensure the timely production of required for analysis. Delays in this process will likely extend the entire project and impact the delivery of final report. The data team will extract one year's worth of Calls for Service (CFS) from the CAD system. Once the Data Team is confident the data are accurate, they will certify that they have all the data necessary to complete the analysis.

Milestone 3c – Data Certification – 14 days

Milestone 4a – Data Analysis and Delivery of Draft Data Report – 30 days

Within thirty days of data certification, the analysis will be completed and a draft, unedited data report will be delivered to each of the departments for their review and comment. After the data draft report is delivered, an on-site visit by the operations team will be scheduled.

Milestone 4b – Departmental Review of Draft Data Report – 14 days

The department will have 10 days to review and comment on the draft unedited data analysis. During this time, our Data team will be available to discuss the draft report. The Departments must specify all concerns with the draft report at one time.

Milestone 4c – Final Data Report – 10 days

After receipt of the department's comments, the data report will be finalized within 10 days.

Milestone 5 – Conduct On-Site Visit – 30 days

Subject matter experts will perform an on-site visit within 30 days of the delivery of the draft data report.

Milestone 6 – Draft Operations Report – 30 days

Within 30 days of the last on-site visit, the operations team will provide a draft operations report to each department. Again, the department will have 10 days to review and comment.

Milestone 7 – Final Report 15 days

Once the Department's comments and concerns are received by CPSM the combined final report will be delivered to the cities within 15 days. **TOTAL ELAPSED TIME: 105 – 135 days**

PROJECT UNDERSTANDING

Work Plan and Methodology

CPSM will work collaboratively with fire department and town officials when scheduling conference calls, on-site visits, and stakeholder meetings to ensure successful outcomes. CPSM has identified five (5) major outcomes for this project. Of course, we always work with our client when additional outcomes are identified. To achieve each of the five (5) major outcomes, CPSM has developed the following work plan:

Immediately following project launch, the Project Manager will deliver an operational/administrative information request to the fire Department or designated point of contact. This is an extensive request which provides us with a detailed understanding of the department's operations. We will provide instructions concerning uploading materials to our website. When necessary, the Project Manager and/or the Operations Team Lead will lead a telephone conference with the point of contact for the project to discuss items contained in the request.

Once the operational/administrative information is received and reviewed by the project team, and the operations team will schedule an on-site visit for the purpose of reviewing the operational functions of the department and gathering further information for the development of the fire services analysis.

When considering consolidation, it is critical to determine the existing performance and service delivery of each department. For a consolidation to be successful, it is critical that performance not be negatively impacted. For that reason, the comprehensive forensic data operations analysis will quantify the current operational performance of Cornelius and any other community looking to consolidate. The analysis also allows CPSM to create response and performance maps that can be used when locating or re-locating stations, recommend any special system performance additions, and to identify the nature and location of calls for service. In consolidation or cities that have future development opportunities, the mapping and performance analysis can identify when and where additional resources may need deploying.

It Begins with Data

We begin with a forensic and comprehensive Data Gathering launch. During this phase we begin to capture the various inputs needed to **develop a comprehensive profile of the Cornelius Fire Department (and any surrounding cities)** and its workload. We will evaluate service delivery outcomes, deployment practices along with an evaluation of the department's physical plant and its support functions. We will interact with neighboring communities to evaluate any appropriate comparisons or to develop a basis for **benchmarking**. We will produce a **Draft Data report** and review this with the city's POC, steering committee and others designated for the purpose of verification of key data sets upon which our assessment will be made.

Our observations and recommendations will be developed around a number of key performance measures and a detailed analysis including:

- Comprehensive Data Analysis
 - Incident Type Workload
 - Response Time
 - Call duration and on-scene times
 - Unit Workload
 - Analysis of availability and simultaneous responses
- Governance and Administration

- Organizational Structure
- Organizational Leadership
- Staffing and Deployment
- External Relationships
- Organizational Behavior/Management/Processes
 - Time Allocation of Staff
 - Organizational Communication and Labor Relations
 - Strategic Planning
 - Performance Measurement
- Financial Resources (Operating and Capital Resources)
- Assessment of capital facilities, apparatus and equipment
- Support Programs (Fire/EMS Training, fire prevention, public education, fire investigation, technical rescue, hazardous materials, emergency management, vehicle maintenance, risk assessment, safety, fitness and employee health)
- ISO/Accreditation Benefit Analysis

CPSM maintains a full-time data assessment TEAM that has extensive capabilities in extracting and presenting statistical analysis regarding Fire and EMS activities. In addition, using Q-GIS we can conduct an analysis of fire station locations that will identify the optimal locations, the impacts of fire station re-locations and identify those optimal sites that may be considered for future fire station locations. Under the direction of Dr. Dov Chelst, PH.D, our team will produce a series of unique analysis regarding workload, unit response activities, call distribution, unit and station workloads, response times, call durations, unit availability, fire loss analysis, fire by occupancy type, EMS call types, emergency and non-emergent call volumes and a whole host of activity reports that create a comprehensive understanding of workload and community risk.

A key component to our deployment modeling strategy is to identify **emergent and non-emergent workloads**. This is essential for future planning because this analysis will provide factually based options to alter response patterns on the basis of the severity of the call type. Through this type of analysis we provide the forensic support to adjust and modify deployment strategies on the basis of risk. This is the essence of the standard of cover (SOC) concept. Every call is not the same and the ability to interrogate the caller at the 911 call center and make tactical determinations based of proven and clinical findings will then allow a "**Smart Deployment Strategy**" that optimizes resources to improve efficiencies.

In addition we will reach out to our partners nationally, including other state Fire and EMS providers in obtaining their best practices and experience in dealing with similar issues. EMS in America is rapidly evolving and as more evidence-based research is available on the efficacy and effectiveness of traditional EMS models **we have found that two widely-held EMS system response beliefs are being challenged** by this research;

- **faster response times improve patient outcomes**
- **the more paramedics in an EMS system the higher the level of care**

These concepts along with the assessment of EMS performance outcomes will be a key focus in our analysis. EMS is healthcare, and until recently, EMS Quality Assurance/Quality Improvement (QA/QI) measures have focused more on procedural success (response time compliance, IV start rate success, endotracheal success rates, etc.) as opposed to successfully complying with **evidence-based clinical bundles**. Our research is finding that compliance in completing the full regimen of these treatment modalities has a direct impact on patient outcome. Though it is important to know and monitor specific procedural performance, CPSM believes it is more important that agencies look at the entire treatment regimen (evidence based clinical bundles) in assessing overall system performance.

As communities as Cornelius respond to increasing demand related to population growth in the community, it is critical that the 911 dispatching system is effectively screening the various call types so that it can adjust the deployment of resources based on the severity of the incident. CPSM will evaluate these interactions and will provide insight as to improvements that can be considered. Our analysis will provide both statistical and spatial

depiction that supports these considerations. We have a broad grasp of the types of service demand that can exist and the optimum levels of staffing and resources that is needed to effectively manage this workload. We have also developed insightful analysis that predicts call activities associated with future population growth or increased

development. The following are some of the graphic representations from other CPSM studies that that will be utilized in our work in Cornelius;

Call Types

Call Type	Number of Calls	Calls per Day	Call Percentage
Breathing difficulty	1,173	3.2	7.2
Cardiac and stroke	1,085	3.0	6.7
Fall and injury	3,428	9.4	21.0
Illness and other	2,865	7.8	17.6
MVA	978	2.7	6.0
Overdose and psychiatric	500	1.4	3.1
Seizure and unconsciousness	886	2.4	5.4
EMS Total	10,915	29.8	66.9
False alarm	746	2.0	4.6
Good intent	203	0.6	1.2
Hazard	194	0.5	1.2
Outside fire	154	0.4	0.9
Public service	1,425	3.9	8.7
Structure fire	68	0.2	0.4
Fire Total	2,790	7.6	17.1
Cancelled	2,592	7.1	15.9
Mutual aid	12	0.0	0.1
Total	16,309	44.6	100.0

Content and Property Loss – Structure and Outside Fires

Call Type	Property Loss		Content Loss	
	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	\$296,350	20	\$233,600	9
Structure fire	\$367,900	15	\$210,660	13
Total	\$664,250	35	\$444,260	22

Note: This analysis only includes calls with recorded loss greater than 0.

Observations:

- Out of 94 outside fires, 20 had recorded property loss, with a combined \$296,350 in loss.
- Nine outside fires had content loss with a combined \$233,600 in loss.
- Out of 55 structure fires, 15 had recorded property loss, with a combined \$367,900 in loss.

- 13 structure fires had content loss with a combined \$210,660 in loss.
- The average total loss for all structure fires was \$10,519.

Total Fire Loss Above and Below \$20,000

Call Type	No Loss	Under \$20,000	\$20,000 plus
Outside fire	74	18	2
Structure fire	37	14	4
Total	111	32	6

Observations:

- The average total loss for all structure fires was \$10,519.
- 74 outside fires and 37 structure fires had no recorded loss.
- Two outside fires and four structure fires had \$20,000 or more in loss.
- The highest total loss for an outside fire was \$300,000.
- The highest total loss for a structure fire was \$400,000.

Number of Units Dispatched to Calls by Call Type

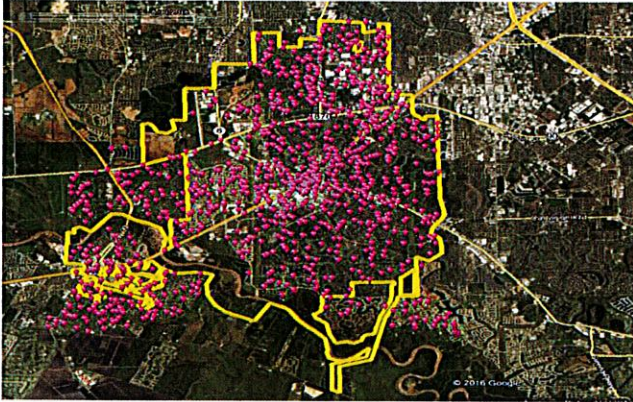
Call Type	Number of Units			Total Calls
	One	Two	Three or More	
Breathing difficulty	1,122	49	2	1,173
Cardiac and stroke	1,044	37	4	1,085
Fall and injury	3,236	174	18	3,428
Illness and other	2,745	108	12	2,865
MVA	751	174	53	978
Overdose and psychiatric	471	25	4	500
Seizure and unconsciousness	834	51	1	886
EMS Total	10,203	618	94	10,915
False alarm	668	36	42	746
Good intent	176	6	21	203

Call Type	Number of Units			Total Calls
	One	Two	Three or More	
Hazard	148	23	23	194
Outside fire	98	15	41	154
Public service	1,343	52	30	1,425
Structure fire	3	2	63	68
Fire Total	2,436	134	220	2,790
Cancelled	2,420	150	22	2,592
Mutual aid	6	2	4	12
Total	15,065	904	340	16,309
Percentage	92.4	5.5	2.1	100.0

Call Workload by Unit

Station	Unit Type	Unit	Avg. Deployed Min. per Run	Total Annual Hours	Avg. Deployed Min. per Day	Total Annual Runs	Avg. Runs per Day
1	Engine	E1	18.6	804.7	131.9	2,594	7.1
	Truck	TRK1	19.9	546.4	89.6	1,651	4.5
	Utility	U1	28.6	4.3	0.7	9	0.0
	Total		19.1	1,355.4	222.2	4,254	11.6
2	Engine	E2	17.8	839.5	137.6	2,835	7.7
	Ambulance	SQ2	19.3	266.0	43.6	825	2.3
	Total		18.1	1,105.5	181.2	3,660	10.0
3	Engine	E3	18.1	831.7	136.3	2,764	7.6
	Total		18.1	831.7	136.3	2,764	7.6
4	Engine	E4	19.5	760.8	124.7	2,338	6.4
	Hazmat	HM4	324.3	10.8	1.8	2	0.0
	Truck	TRK4	18.8	441.5	72.4	1,407	3.8
	Utility	U4	17.7	3.2	0.5	11	0.0
	Total		19.4	1,216.4	199.4	3,758	10.3
5	Engine	E5	20.5	343.5	56.3	1,003	2.7
	Total		20.5	343.5	56.3	1,003	2.7
6	Engine	E6	20.1	924.5	151.6	2,758	7.5
	Specialty	R6	102.9	3.4	0.6	2	0.0
	Total		20.2	928.0	152.1	2,760	7.5
7	Engine	E7	23.3	79.8	13.1	205	0.6
	Specialty	C7	27.5	0.5	0.1	1	0.0
	Total		23.4	80.2	13.2	206	0.6
Overall Total			19.1	5,860.5	960.7	18,405	50.3

FIRE RUNS



Overlapping Calls by Station District

District	Number of Calls	Average Minutes of Overlap	Total Hours
Station 1	497	22.0	103.2
Station 2	339	20.3	63.0
Station 3	217	22.6	42.9
Station 4	247	18.1	40.4
Station 5	37	12.0	3.8
Station 6	96	14.0	11.9
Station 7	71	13.8	8.7

Frequency Distribution of the Number of Calls

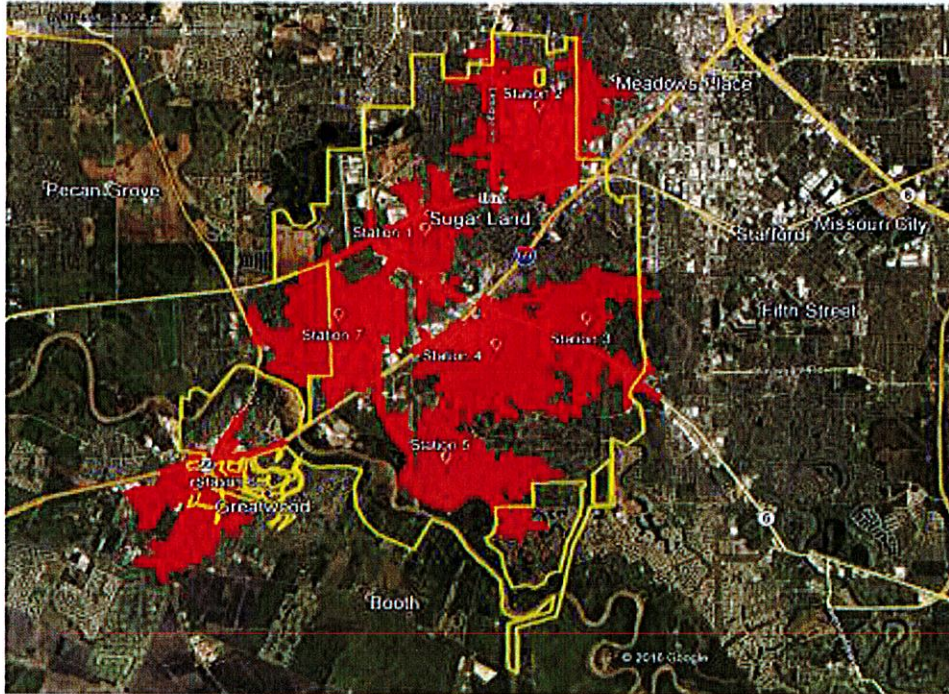
Calls in an Hour	Frequency	Percentage
0	3,792	43.2
1	2,885	32.8
2	1,406	16.0
3	526	6.0
4+	175	2.0

First Due Availability to Respond to Calls

Station Area	Number of Calls	Percent Responded to by First Due	Percent First Due Arrived First
1	1,690	80.7	74.6
2	1,238	85.8	82.4
3	953	60.0	50.6
4	1,084	82.7	67.6
5	448	72.1	68.4

6	994	87.5	84.9
7	773	82.3	77.7
Total	7,180	79.7	66.3

Station Locations and Travel Times (Red = 240 seconds)



In developing our analysis and conclusions, CPSM works closely with the fire department's upper management, mid-level supervisors, company officers, steering committees and emergency planners in understanding the unique aspects of the community and the rationale for operational practices. Our work is very inclusive and we build our analysis in cooperation with the local provider and its key administrative staff. Our findings and conclusions are fully vetted through a draft review process and there are typically no surprises when outcomes are reached and recommendations for implementation are developed.

Methodology to Achieve Major Outcomes

- Conduct a review of operational workload utilizing data provided by the Cornelius (NFIRS data) that has a focus on response types, workload dedicated to fire and EMS first response; station response workload; and apparatus/unit workload.

CPSM will request a one-year period of NFIRS data from the Fire Department. CPSM team members will review and analyze the data provided by the Fire Department for the purpose of

analyzing operational workload. CPSM will utilize information from this NFIRS analysis as a benchmark in the operational analysis.

- **Is the Fire Department able to meet the present and future needs of the community and region?**
 - **CPSM will analyze the current functional and operational service delivery model for fire operational services and make recommendations on the most viable, sustainable, and fiscally conscious fire service delivery model. This component will look at existing deployment of resources (including staffing) and recommend capital as well as personnel now and into the future.**

The operations team will schedule an on-site visit for the purpose of reviewing the operational functions and guidelines of the department, the operational service delivery model, and analyze further information for the development of the final report on fire Department operational services. Included in this visit will be workshops and interviews with a steering committee, the Fire Department, town staff, and other stakeholders for the purpose of gathering their input, information, and subject matter expertise.

The internal information gathering process (work conducted during CPSM conducted meetings/workshops) will include:

1. Examination and analysis of the factors that enhance/impact the Fire Department's current service delivery model;
 2. Examination and analysis of operational guidelines and their connection to the current service delivery model;
 3. Discussion of the organization's strengths, weaknesses, opportunities, and threats as it relates to deployment of resources and response times;
 4. Provide recommendations to accomplish the goals of the current service delivery model with a focus on sustainability and relevant future operational service delivery alternatives. Provide cost estimates as applicable.
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- **What are ways to improve the department and position it to meet future needs?**
 - **What are ways to improve the quality of service to the community as well as the efficiency and cost of such provision?**
 - **How should current and future needs impact planning for a new facility and apparatus?**
 - **CPSM will analyze current operational deployment resources, staffing structural design, and operational staffing deployment model and make recommendations on the most viable and sustainable staffing model to include alternative shift staffing strategies, part-time versus full-time, etc.**

During the on-site visit, the operations team will, through interviews with Fire Department and Town staff, as well as staffing policies and procedures, review and analyze the operational staffing model of the fire department.

The internal work process (work conducted during CPSM conducted meetings) will include:

1. Examination of the factors that impact the Fire Department's fire services current staffing model;
2. Examination of the organization's strengths, weaknesses, opportunities, and threats as it relates to fire staffing and deployment of resources;
3. Exploration of various strategic alternative approaches to accomplish the goals of fire staffing and deployment of resources;
4. Recommend the most viable and sustainable operational and Fire Prevention model to include alternative staffing strategies.

Consolidation Review Option

CPMS is prepared to conduct an optional review of the potential effects of a consolidation with neighboring Huntersville and Davidson. To accomplish this will require a workload data analysis of all three agencies and a merged data base to understand the potential for staffing and cost reductions of a merger.

The three data analyses will provide a benchmark for each community and is critical to determine the available capacity in the system as well as where and when calls for service are received. The forensic analysis of performance benchmark is used when the operations team reviews one or more of the individual departments to create a data-based series of recommendations. These recommendations will include location of existing stations, recommendations for new or relocated stations, equipment, staffing, and system improvements.

A successful consolidation will result in the same or improved service levels while being fiscally conscious, effective in-service delivery, and improving the safety for the community as well as staff. If these levels are not analyzed and quantified, the success of consolidation can be challenged. CPMS will provide recommendations on consolidation or remaining the same; CPMS will look at new or relocated stations, capacity of existing stations, equipment, staffing, and other system improvements.

The on-site operational team will review each of the departments using the criteria listed in this proposal and create a combined report on consolidation as well as individual benchmark reports for each department.

Deliverables

Draft reports will be provided for review in electronic format. To be ecologically friendly, CPMS will deliver the final analysis of fire services report in computer readable material either by email or CD or both. The final analysis of fire services report will incorporate the data analysis as an addendum to the analysis of fire services report. Should the Fire Department desire additional copies of the final report, CPMS will produce and deliver whatever number of copies the Fire Department may request and will invoice the Fire Department at cost.

Proposed Fees

Base Study

CPMS will conduct base study of the Fire Department for \$49,500 exclusive of travel. Travel expenses will be billed as incurred with no overhead or administrative fees. A 10% discount will be provided because the city administration are active ICMA members, reducing the cost to \$44,550.

Consolidation Option

CPMS will conduct a review of the effects of a consolidation of the three department, including a workload data analysis for an additional \$15,000 per department. The cost for Cornelius will be \$3,000.

Combined project

Should the City decide to conduct the fire and police studies simultaneously, the price will be reduced to \$82,500 (without 10% ICMA discount) or \$74,250. The consolidated fees would be in addition to the \$74,250.

Proposed Presentations

Draft reports will be provided for department review in electronic format.

To be ecologically friendly, CPSM will deliver the final report in computer readable material either by email or CD or both. The final reports will incorporate the operational as well as data analysis. Should the municipality desire additional copies of the report, CPSM will produce and deliver whatever number of copies the client request and will invoice the client at cost.

Should the local government desire additional support or in-person presentation of findings, CPSM will assign staff for such meetings at a cost of \$2,500 per day/per person along with reimbursement of travel expenses.

CONCLUSION

Part of ICMA's mission is to assist local governments in achieving excellence through information and assistance. Following this mission, Center for Public Safety Management, LLC acts as a trusted advisor, assisting local governments in an objective manner. CPSM's experience in dealing with public safety issues combined with its background in performance measurement, achievement of efficiencies, and genuine community engagement, makes CPSM a unique and beneficial partner in dealing with issues such as those being presented in this proposal. We look forward to working with you further.