FIRE RESCUE SHARED SERVICES
FEASIBILITY STUDY

CHISAGO CITY
and
CITY OF LINDSTROM
MINNESOTA

Pat Simpson
and
Mike Clark, AIA
Public Safety Consultants
May 28, 2013

John Pechman,
City Administrator
10625 Railroad Avenue
PO Box 611.
Chisago City, MN 55013

RE: Fire and Rescue Shared Services Study
Chisago City and City of Lindstrom

Dear John,

Please find attached the final report of the Fire and Rescue Shared Services Study. Our team has met with the administration of each community, the leadership of each department, and we have gathered and analyzed pertinent data supplied by all concerned to reach the conclusions contained herein. We are pleased to submit this final report for your review and acceptance.

We look forward to delivering making a final presentation to your communities.

Sincerely,

Patrick L. Simpson
Fire & Emergency Consulting
100 East Main St
Burkittsville, MD 21718
(301) 712-5525
Background

In November 2012, Chisago City and Lindstrom, MN applied to Minnesota State Fire Marshal, Jerry Rosendahl for a “Fire and Rescue Services Shared Services Feasibility Study Grant”. The application was approved and the Cities hired Pat Simpson and Mike Clark, consultants, to complete the project.

The Chisago City and Lindstrom Fire Departments currently cover a response area of 58.5 square miles and a population of 14,828 citizens. This includes Lindstrom, Chisago City, Chisago Lakes Township North, Chisago Lakes Township South, and parts of Franconia Township. The breakout of the jurisdictions is:

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>POPULATION</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chisago City</td>
<td>4974</td>
<td>14.5</td>
</tr>
<tr>
<td>Lindstrom</td>
<td>4464</td>
<td>3.0</td>
</tr>
<tr>
<td>Chisago Lakes (N)</td>
<td>2470</td>
<td>13.5</td>
</tr>
<tr>
<td>Chisago Lakes(S)</td>
<td>2470</td>
<td>19.0</td>
</tr>
<tr>
<td>Franconia</td>
<td>450</td>
<td>8.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>14828</strong></td>
<td><strong>58.5</strong></td>
</tr>
</tbody>
</table>

Currently Chisago City Fire Department and Lindstrom Fire Department each operate single station operations approximately 2.5 miles apart. Each department is a volunteer operation and provides standard fire/rescue services with some special operations services found at each department.
EXECUTIVE SUMMARY

The major goal of this study is to examine the ability of the Chisago City Fire Department and Lindstrom Fire Department to improve their responsiveness to their respective communities through the sharing of services. The study analyzed the following primary aspects of the two departments:

- Operational policies, procedures and standards
- Risk and Demand for service
- Facility effectiveness and location

An interactive study process was employed whereby our team of experts met with representatives of each City’s administration and planning departments, Fire Department leadership and toured the community and facilities.

Major Findings:
1. Each Department individually appears to be meeting required standards for response, training and equipment.
2. The two departments are currently cooperating to provide a shared response in some situations within the respective jurisdictions.
3. The two departments are including each other in discussions about equipment purchases in an effort to increase purchasing power and the potential to share equipment.
4. Combining the departments into a single facility does NOT appear to present any savings or improvements to the departments services.
5. This report suggests the addition of a ¼ time, administrative position for the two departments. This position would provide the following benefits to the departments:
   a. A standardization of record keeping and reporting between the departments
   b. Formalization of shared training and response agreements
   c. Assist in the development, implementation and coordination of a shared response system that will better utilize equipment and personnel of each department for a coordinated response.
   d. Function as the department’s representative with regular office hours to increase community awareness and fire education opportunities.
6. The Departments’ facilities are reaching the end of their life span and will likely begin to experience continued maintenance challenges. New equipment will not likely be well supported or even fit into the existing facilities.

Conclusions:
There is no evidence at this point in time to support a recommendation of combining or merging the two departments. The departments are providing appropriate levels of service to their communities. Combining the facilities into a single
location will NOT improve response time in any way and likely decrease response capability in remote areas of each jurisdiction. As a volunteer organization, there is little organizational or cost savings improvement to be seen by combining the operational command structures of the departments. Chisago City Fire Department and Lindstrom Fire Department should for the foreseeable future maintain their separate identities and structures.

There are improvements and recommendations detailed in the report that will provide improvement to the individual department’s service delivery capabilities. Some of the major recommendations are as follows:

1. Addition of an administrative level shared resource person between the departments will improve and formalize current sharing of resources between the departments.

2. Development of coordinated MABAS type response will improve response where shared operations or equipment is required.

3. Development of a vehicle replacement program based on an APWA analysis will assist the department and community in evaluating and planning for expensive equipment investments.

4. Both departments should consider replacement or modernization of their facilities in the next 5 years.

Shared Fire Services Study

Chisago City and City of Lindstrom, MN

May 28, 2013
1. The Study

This shared services report focuses upon delivering the best fire/rescue services to the citizens with the assets of both departments. The goal of the study is making optimum use of current and future resources to deliver high quality, consistent service for fire related emergencies, fire prevention programs, and related programs.

The study process will be a six step project including:

2. Initial triage meetings with project stakeholders.
3. Draft of Risk and Demand Analysis (Phase 1) and Fire Department Analysis (Phase 2).
4. Draft of Future Services Delivery Options (Phase 3).
5. Draft of Facility Recommendations.

2. Current Situation

Chisago City and Lindstrom Fire Departments are very similar in many aspects of both operations and administration. Both are volunteer departments which are part of their municipal government but are semi-autonomous in that they elect their leadership from within their ranks, administer their budget, and operate with their own rules and bylaws. Both departments provide protection to the cities as well as areas of adjoining townships. Both do some training and response together, as well as operate specialized units which complement each other rather than having redundant equipment.

Chisago City FD and Lindstrom FD also have several areas of departmental independence, such as red trucks and yellow trucks; black gear and tan gear; apparatus from competing manufacturers. Though these are not bad differences they serve to illustrate the sense of individual pride in each department.

All said there are good foundations for a closer look at how CCFD and LFD can work and plan together to better serve their respective jurisdictions as well as each other. To do this closer look this study will start by looking at each department including their strengths and areas for improvement.
Organization, Management, and Operations

CCFD has been in operation since 1912 delivering fire services to its citizens and guests. They currently respond to 60 to 80 calls for service each year. Below is the total call for the past 4 years:

- 2009: 80 calls
- 2010: 66 calls
- 2011: 69 calls
- 2012: 60 calls

Average: 68.75 calls per year

CCFD is an all-volunteer department with the following membership for the past 5 years:

- 2009: 24 members
- 2010: 23 members
- 2011: 21 members
- 2012: 21 members
- 2013: 23 members

Average: 22.4 members

Departmental command consists of a Fire Chief; 3 Assistant Chiefs; and 3 Captains and secretary.

Relief association officers include President; Vice President; Gambling Manager; Secretary; and Treasurer.

By-laws

CCFD has a set of bylaws to administer its operations and set standards for attendance and member accountability. Members are required to attend reasonable amount of calls during normal availability and overall. Failure to attend 3 consecutive meeting or 3 consecutive drills can result in disciplinary actions. Response is based upon call type and apparatus priority.

Apparatus

Current apparatus includes:

- 2003 Peterbilt pumper; 2000 gpm pump; 750 gal onboard water
- 1991 Peterbilt pumper; 1500 gpm; pump1000 gal onboard water
- 1993 Ford tender; 250 gpm pump; 3000 gal onboard water
- 1993 Ford utility 4x4 pickup, 4 door
2005 Chevrolet grass truck; 250 gpm pump; 250 gal onboard water

1996 Dodge grass truck; 250 gpm pump; 250 gal onboard water

2006 Ford Expedition Command Vehicle

Apparatus are well maintained and appear to be in good working order at the time of the onsite visit.

Finance - CCFD annual budget for the past 4 years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$101,793</td>
</tr>
<tr>
<td>2011</td>
<td>$107,381</td>
</tr>
<tr>
<td>2012</td>
<td>$117,166</td>
</tr>
<tr>
<td>2013</td>
<td>$117,150</td>
</tr>
</tbody>
</table>

Training: CCFD trains monthly on the last Tuesday. Members are required to attend 12 sessions per year. 2013 training includes:

- 1/29 Truck checks, equipment
- 2/26 Truck-compartmentation, radios, communications
- 3/26 Building construction updates
- 4/3 Officer I with certification
- 4/4 NIMS-300 followed by NIMS-400
- 4/30 Incident safety officer
- 5/28 SAAS confined space trailer
- 6/25 High level rescue/extrication
- 7/30 Wild fire tactics/safety
- 8/27 LIVE burn trailer
- 9/24 Stacy burn tower
- 10/29 OSHA required Hazmat operations refresher
- 11/26 OSHA required right to know refresher
- 12/31 Maps drill

CCFD is covering required training and specialized training routinely. Training is set out well in advance. Members also attend state fire school.

Standard Operating Guidelines (SOG) – CCFD has a complete set of SOG’s covering incident management, operations, safety, equipment, building fire suppression equipment, and Haz-Mat. The document is well written and organized.

Shared Fire Services Study
Chisago City and City of Lindstrom, MN

May 28, 2013
CHISAGO CITY FACILITIES

The Chisago City Fire Station is located at 10825 Lake Boulevard in Chisago City, Minnesota. It supports a compliment of 23 fire fighters with seven pieces of major equipment used for typical emergency response scenarios.

The building was built in the 1970’s in conjunction with the adjoining community center. It is approximately 4,875 gross square feet in size and is constructed of load bearing masonry with a single wythe exterior wall containing no insulation. It has a minimal slope roof that likely has code minimum insulation for the time period of its construction.

Response from the station is onto a frontage road or onto secondary roads prior to entering traffic on Hwy 8 thus alleviating major traffic concerns and giving the department several choices in the direction of their response during heavy traffic periods.

The department is currently storing important records (gambling receipts) in a secured offsite storage facility.

The department reports the following recent maintenance issues:

1. Roof leaks; particularly where the fire department abuts the Community Center.
2. The south concrete apron appears to be settling in the south east corner.

While neither of these issues is ongoing, they represent a pattern typical for aging buildings of continued and increasing maintenance costs. Attention should be paid to continuing cost of maintenance versus cost of replacement.

The facility offers the following amenities:

1. The facility has approximately 6 bays in a variety of configurations. One double deep bay has drive though capabilities and communicates with two exiting bays on the south side of the building and can support up to 4 vehicles. In addition there are three non-drive though bays that face south.
2. Turn-out gear, maintenance and SCBA functions are contained within the apparatus bays.
3. A small training room with capacity for approximately 25 people,
4. A large office shared with the Relief Association
5. Small kitchen
6. Bathrooms for the facility are located in the adjoining community center and accessed through a communicating door.

In general the facility is functional for the department, but is failing to meet the minimum requirements of a modern fire station in a number of ways:

1. While there is adequate space to house the department’s compliment of vehicles, there is an inadequate separation of functions within the apparatus bays. Turn out gear is dangerously close to responding vehicles, it is subject to fumes and damage, and does not receive adequate ventilation. Maintenance and SCBA filling and maintenance also occur in the same space with inadequate ventilation.

2. There is a lack of decontamination space. Today’s fire fighters are exposed to a host of dangerous chemicals in the normal pursuit of their duties. Showers, equipment washing and decontamination/washing of SCBA equipment is a critical safety element of a modern facility.

3. General Storage is lacking in the facility.

**General Code Compliance**

In general the facility appears to meet the codes that were in affect when it was constructed with adequate exiting, circulation, structural, mechanical and electrical needs met.

Heating in the apparatus bay is by means of ceiling mounted, gas fired radiant heat supplemented with a single gas fired heating unit. Heating and cooling of the Training and Administrative areas is though a residential type, gas fired furnace with cooling coils. No ventilation air is provided.

The building is not sprinklered. While not required it is recommended that important public safety assets have this minimum level of protection against fire.

The building is provided with minimal emergency power generation to power doors and some lighting.

There are several deficiencies that should be noted:

1. Handicapped access is challenged. The apparatus bays are on two levels. Barrier free access to the administrative and training rooms is through the community center. Fire Departments are not exempt from the requirements of the Americans with Disabilities Act.
even though being physically handicapped would exclude responding or participating in fire calls.

2. Ventilation air is not provided by the current heating and cooling system. This was not required at the time of construction of the building. However, ventilation air in this type of facility is an important and growing health issue in the fire service. Vehicle exhaust and other contaminants are often released in the building. Consideration should be given to adding exhaust and make up air systems to the facility.

Age and Wear of the Facility

Generally, masonry buildings of this sort can be expected to last 40 years or more without need for significant upgrades or remodeling. The facility has surpassed this milestone, and while not currently experiencing any structural deficiencies it should be considered for replacement for the following reasons:

1. The construction type is extremely lacking in insulation and efficient heating and cooling equipment. Newer construction would save as much as 30% in operating expenses over the current facility.

2. The practice of storing and maintaining all equipment in the same space as the fire trucks is an outdated operational practice that has a negative effect on the life cycle of expensive turnout gear as well as life safety implications for cleaning and maintaining breathing apparatus.

3. Safety concerns related to the donning of gear in close proximity to responding apparatus.

4. Acquisition of additional major equipment or replacement of existing equipment with larger equipment will be a concern

Conclusion

Regardless of the outcome of this study the Department should begin planning for the replacement or major expansion of this facility within the next five years. The challenges being experienced by the facility are of the type that will be difficult to resolve with even a major remodeling effort as they require additional space and revisions to major mechanical systems of the building.
Lindstrom Fire Department

Organization, Management, and Operations

Lindstrom Fire Department has been in operation since 1855 delivering fire services to its citizens and guests. They currently respond to 50 to 70 calls for service each year. Below is the total call for the past 4 years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>68</td>
</tr>
<tr>
<td>2010</td>
<td>51</td>
</tr>
<tr>
<td>2011</td>
<td>59</td>
</tr>
<tr>
<td>2012</td>
<td>65</td>
</tr>
<tr>
<td>Average</td>
<td>61 calls per year</td>
</tr>
</tbody>
</table>

LFD is an all-volunteer fire department which has had a membership of 25 firefighters for the past 5 years.

Departmental command consists of: Fire Chief; Assistant Chief; 2 Captains; Lieutenant; and 2 Safety Officers and secretary.

Relief Association officers are: CEO; Treasurer; Gambling Manager and assistant; and Secretary.

By-laws

LFD has a set of bylaws to administer its operations and set standards for attendance and member accountability. Members are required to attend reasonable amount of calls during normal availability and overall. Failure to attend 3 consecutive meeting or 3 consecutive drills can result in disciplinary actions. Response is based upon call type and apparatus priority.

Apparatus

1991 Ford water tender (Tanker); 2800 gallon water and portable pump.

1995 Peterbilt-General Rosenbauer Engine; 750 gallon water; 1250 GPM pump

1996 Ford 4 X 4 Crew Cab Rescue/Brush truck; 200 gallon water with portable pump

2002 Freightliner General Rosenbauer Equipment Van; Personnel Carrier with water rescue equipment.

2006 Spartan Chassis Rosenbauer 104’ Platform; 500 gallon water and 2000 GPM pump.

Shared Fire Services Study

Chisago City and City of Lindstrom, MN

May 28, 2013
2009 Diamond Back Air Boat.

2012-Ford F350 Brush Truck; 250 gallon water with portable pump.

Command Trailer

2001 Dodge Durango Command Vehicle

Apparatus are well maintained and appear to be in good working order at the time of the onsite visit.

**Finance** – LFD annual budget for the past 4 years is:

<table>
<thead>
<tr>
<th>Year</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$168,371</td>
</tr>
<tr>
<td>2011</td>
<td>$168,414</td>
</tr>
<tr>
<td>2012</td>
<td>$173,406</td>
</tr>
<tr>
<td>2013</td>
<td>$178,456</td>
</tr>
</tbody>
</table>

**Training** – LFD 2013 training is:

- January: CPR
- February: Haz Mat
- March: Lakes area EMS
- April: Driving
- May: Confined Space
- June: Pumps and Fire Streams
- July: Auto Extrication
- August: Hose Testing
- September: Forcible Entry/Ladders/Ventilation
- October: Air Boat
- November: Ice Rescue
- December: Blood borne pathogens/SCBA/ PPE & Safety

LFD training is covering required topical areas annually and specialized topics routinely. Training is set out in advance.

**Shared Fire Services Study**

Chisago City and City of Lindstrom, MN

May 28, 2013
LINDSTROM FACILITIES

The Lindstrom Fire Station is located at 12955 Lake Boulevard, Lindstrom, MN. It supports a compliment of 25 fire fighters with nine pieces of major equipment used for typical emergency response scenarios.

The building is approximately 6,500 gross square feet in size and was built in two phases with the apparatus bay constructed in approximately 1970 and a Training/Administration addition added in the 1990’s. The apparatus bay would appear to be masonry load bearing construction with a single wythe exterior wall containing no insulation. The 1990’s addition is similar in construction but appears to have some insulation in interior furring of the exterior walls. Roof insulation is likely code minimum.

Response from the station is directly onto Highway 8, a major state highway. There are no other options during times of high traffic.

The department currently stores important records (gambling receipts) in a secured offsite storage facility

Amenities

The existing facility has the following amenities:
1. Three double deep, non-drive through apparatus bays accessed through three overhead doors and is capable of housing up to seven pieces of equipment.
2. Turn-out gear, SCBA and Maintenance spaces are all located within the apparatus bays
3. Two large Bathrooms, one with a shower.
4. Fitness room
5. Two offices
6. A large training room with adjoining kitchen

In general the facility is functional for the department, but is failing to meet the minimum requirements of a modern fire station in a number of ways:

1. One piece of equipment, the rehabilitation and incident command trailer, is currently stored outside.
2. There is a significant lack of space in the Apparatus Bays. Turn-out gear, maintenance and SCBA filling functions are hindered by the proximity of the fire trucks. Specifically, where turn out gear is concerned the proximity to vehicle exhaust is deleterious to the equipment and can make the donning of this gear in an emergency hazardous as the equipment is exiting the building. A modern facility would strive to separate these functions from the apparatus bay.

2. There is a lack of decontamination space. Today’s fire fighters are exposed to a host of dangerous chemicals in the normal pursuit of their duties. Showers, equipment washing and decontamination/washing of
SCBA equipment is a critical safety element of a modern facility.

3. General Storage is lacking in the facility. Removing some of the miscellaneous equipment from the apparatus bay would be a step toward resolving issues noted in number one above.

General Code Compliance

In general the facilities appear to meet the codes that were in affect when they were constructed with adequate exiting, circulation, structural, mechanical and electrical needs met.

Heating in the apparatus bay is by means of ceiling mounted gas fired heating units. Heating and cooling the Training and Administrative addition is though a residential type, gas fired furnace with cooling coils. No ventilation air is provided.

There are several deficiencies that should be noted:

Handicapped access is challenged. The south entrance to the building (Training and Administrative Addition) requires stairs. The north entrance requires traversing the apparatus bays which have already been noted as tight and space challenged. Barrier free access is likely through a western entrance, but not without accommodations being made. Fire Departments are not exempt from these requirements even though being physically handicapped would exclude responding or participating in fire calls.

Ventilation air is not provided by the current heating and cooling system. This was not required at the time of construction of the building. However, ventilation air in this type of facility is an important and growing health issue in the fire service. Vehicle exhaust and other contaminants are often released in the building. Consideration should be given to adding exhaust and make up air systems to the facility.

The building is not sprinklered. While not required, it is recommended that important public safety assets have this minimum level of protection against fire.
The building is not provided with emergency power generation.

**Age and Wear of the Facility**

Generally, masonry buildings of this sort can be expected to last 40 years or more without need for significant upgrades or remodeling. This facility appears to be well maintained in no immediate failures or concerns have been noted. There is room however for improvement. The following items are deficiencies that would be noted when compared with more modern facilities.

1. The department reports that in floor drains in the apparatus bay have failed. Concern exists that this might be a collapsed pipe.
2. The exterior brick has been tuck-pointed in the past, but is again in need of attention.
3. Several glass blocks in windows are cracked and need replaced.
4. Over time firefighting equipment has gotten continually bigger and more complex. The existing facility barely manages to allow access for the current equipment. This condition will not likely last into the future.
5. The construction type is extremely lacking in insulation and efficient heating and cooling equipment. Newer construction would save as much as 30% in operating expenses over the current facility.

**Conclusion**

Regardless of the outcome of this study the Department should begin planning for the replacement or major expansion of this facility within the next five years. The challenges being experienced by the facility are of the type that will be difficult to resolve with even a major remodeling effort as they require additional space and revisions to major mechanical systems of the building.
3. Strengths and Areas of Opportunity

Operations

Both CCFD and LFD have proud histories of providing fire/rescue services to the citizens of their communities. The rosters of CCFD and LFD are filled by about 25 volunteers in each jurisdiction. Both departments respond to around 60 to 70 calls per year each. The first area of assessment is to look at how the departments respond to emergency calls.

**CCFD response procedures**- Response to emergencies is set out in the SOG manual. This document sets out response; safety; command; and all parts of ICS system.

**LFD response procedures**- Response is set out in the departmental By-laws.

- Structures - L#1; E#1; R; Van
- Structures (rural) - E#1 or L#1; T; R; grass rig; van
- Grass fire - Grass rig; R; T; van; E#1 or L#1
- Vehicle fire- E#1 or L@1; R; T; van
- Vehicle Rescue – R; E#1; Van

Industry Standards

There are two specific NFPA standards which are applicable to the fire service delivery system in Chisago City and Lindstrom. Both are set out below:

**NFPA 1720**

The most widely recognized standard used in response time analysis for volunteer fire departments is outlined in NFPA 1720, Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments.

NFPA 1720 was updated in 2004 and addresses benchmarks to be used by volunteer organizations in the delivery of their services, including specific recommendations regarding staffing and response times. Table 1 provides an overview of these recommendations and metrics.
CCFD and LFD with 60 square miles of land area and a population of 14,500, has a jurisdictional population density of 242 people per square mile. This population density puts the jurisdictions in the “rural” demand zone classification and recommends an initial response of 6 personnel responding to fire calls within 14 minutes 80% of the time.

National Fire Protection Handbook, 18th Edition,

Typical Initial Attack Response Capability Assuming Interior Attack and Operations Response Capability (Table 10-2A), makes staffing and initial response complement recommendations based on the number of firefighters arriving on the scene of a fire depending upon the risk of occupancy (low-, medium-, and high-hazard occupancy). The NFPA staffing recommendations by the type of hazard areas follows:

**High-Hazard Occupancies** (schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high-risk or large fire potential occupancies): At least four pumpers, two ladder trucks (or combination apparatus with equivalent capabilities), two chief officers, and other specialized apparatus as may be needed to cope with the combustible involved; **not fewer than 23 firefighters and two chief officers.**

**Medium-Hazard Occupancies** (apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces): At least three pumpers, one ladder truck (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus as may be needed or available; **not fewer than 16 firefighters and one chief officer.**

**Low-Hazard Occupancies** (one-, two-, or three-family dwellings and scattered small businesses and industrial occupancies): At least two pumpers, one ladder truck (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus are recommended to be available; **not fewer than 12 firefighters and one chief officer.**

Discussions with Chisago and Lindstrom Fire Chiefs indicated that both jurisdictions have 12 personnel on average respond to calls for service. This level of response would be sufficient personnel to handle initial response to low hazard occupancies within the respective jurisdiction. Clearly, initial response to medium and high hazard

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Table 1: NFPA 1720 - Staffing and Response Time Standards

<table>
<thead>
<tr>
<th>Demand Zone</th>
<th>Demographics</th>
<th>Staffing / Response Times</th>
<th>Percentage of Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Risks</td>
<td>Authority Having Jurisdiction (AHJ)</td>
<td>AHJ</td>
<td>90</td>
</tr>
<tr>
<td>Urban</td>
<td>&gt;1000 people/mi</td>
<td>15/9</td>
<td>90</td>
</tr>
<tr>
<td>Suburban</td>
<td>500-1000 people/mi</td>
<td>10/10</td>
<td>80</td>
</tr>
<tr>
<td>Rural</td>
<td>&lt;500 people/mi</td>
<td>6/14</td>
<td>80</td>
</tr>
<tr>
<td>Remote*</td>
<td>Travel dist ≥8 mi.</td>
<td>4</td>
<td>90</td>
</tr>
</tbody>
</table>

* Upon assembling the necessary resources at the emergency scene, the fire department should have the capability to safely commence an initial attack within 2 minutes 90 percent of the time. Source: NFPA 1720, 2004 Edition
occupancies in either jurisdiction should be joint response by CCFD and LFD for safe fireground operations per these industry standards. Also CCFD has no ladder truck so this unit should come on first alarm from LFD.

**Recommendation:** These NFPA standards are not laws but are industry best practices standards. It is not mandatory that CCFD and LFD comply with the standards but using them to develop response guidelines would be advisable to provide recognized standard of response in the jurisdictions.

NFPA guidelines do not address how fire departments will also be able to comply with the OSHA-mandated “Two-in/Two-out” rule (discussed below). Also, the NFPA guidelines do not address OSHA’s requirement that a rapid intervention team (RIT) be on-scene at a working fire.

**OSHA Regulations**

Additional standards for staffing are related to OSHA’s regulations for firefighter safety. To protect the safety of firefighters, the United States Department of Labor and OSHA have enacted 29CFR1910.134, known as the two-in/two-out rule that requires four personnel on scene at all structure fires before initial interior attack begins.

**OSHA** – Firefighting is a dangerous and physical labor-intensive profession. Although technologically the tools and equipment used by firefighters have changed dramatically over the years, the basic goals have remained almost unchanged: to preserve life and protect property by successfully extinguishing fires—and not get hurt in the process. To accomplish this, firefighters must be able to quickly and efficiently gain access to a fire and apply an extinguishing agent (typically water, but foam and other agents are gaining in popularity). This requires emergency responders to operate in dangerous environments where they are at high risk for serious injury or death.

To protect the health, safety, and welfare of firefighters, the federal government enacted regulations to ensure that firefighters operate safely in and around structure fires. Enacted by the Department of Labor and the Occupational Safety and Health Administration (OSHA), 29 CFR 1910.134, also known as “Two-in/Two-out,” mandates that there must be a minimum of four personnel on the scene of a structural fire before personnel can initiate interior operations. Two firefighters must remain on the exterior of the structure, properly equipped with full turnout gear and self-contained breathing apparatus (SCBA) to act as a RIT in the event the firefighters operating inside the structure become incapacitated or trapped. Although OSHA allows one RIT member to have an additional role such as incident commander or safety officer, as long as rescue activities
can be performed without jeopardizing the safety of other firefighters, a pump operator cannot make up part of the RIT unless the apparatus utilizes a positive water source, which allows the pump to be unstaffed for a period.

ISO

Insurance Services Office (ISO) community fire protection ratings have been a benchmark for jurisdictions for decades. The system measures the effectiveness and efficiency of 3 key parts of community fire protection; fire department, water distribution, and alarm notification system. However there are two key limitations of this benchmark. First is that the evaluation is only used by some insurance companies, with several large insurers doing their own risk assessment by individual occupancy. Second is the fact that residential insurance rates for participating insurers are banded for class #2 through class #8 communities. This means that the premium for insurance to homeowners is the same for these communities. The only occupancy type which has separate rates for each class # is commercial occupancies where the needed fire flow is below 3500 gpm for suppression.

Bottom line ISO ratings are a good benchmark for suppression activities of a community but do not evaluate the key areas of prevention, code enforcement, and planning and zoning which are the proactive functions of community fire defense planning.

CCFD and LFD have ISO rating of Class #5 in hydranted areas and Class #9 in non-hydranted areas. Class #5 rating in hydranted areas is actually a good rating; however the Class #9 rating in non-hydranted areas should be reviewed for ways to improve the rating to at least a Class #8.

NFPA#1231 provides criteria for tanker/tender operations in non-hydranted areas, using this guideline as a blueprint CFD and LFD should develop a tanker/tender task force using area resources to deliver tanked water sufficient to address ISO criteria for suppression activities. This resource would likely lower the current Class #9 to a class #8 or even class #7.
RISK, DEMAND and DEPLOYMENT

Current service areas

The map above shows the current service areas for CCFD and LFD. Each department covers its incorporated city as well as parts of adjoining townships. The service areas are quite large and run times on calls in the outlying areas can be long. This will be illustrated later in this chapter.
Population density

Both Chisago City and Lindstrom have the most population density within their respective cities. Both cities would be considered suburban areas by population density. The remainders of the service areas are classified as rural areas and some areas are classified as remote with responses of over 8 miles.
Incident density

Incidents occurred in the more populated area of the cities and at several points on Highway #8. The northern areas of Lindstrom and Chisago had no significant concentrations of calls. There were numerous areas of moderate incident concentration in the southern parts of both jurisdictions.
Current coverage

CCFD and LFD cover a large response area. Response is broken down into suburban (5 minute) and Rural (10 minute) polygons. Both departments provide response to their respective cities within the suburban parameters and cover significant parts of the adjoining townships within rural parameters.
**Single merged station scenario coverage**

Combining the service delivery into a single combined station (between the cities) would reduce response polygons for both suburban and rural coverage. This Merged concept would decrease service delivery to a large part of the jurisdictions.
Move CCFD to public works building area and keep LFD at current location.

This scenario would enhance response to the southwest area of the jurisdiction and still keep suburban response capability in both cities. This proposed relocation of CCFD would benefit future growth in the likely areas of future growth for Chisago City.
Move LFD to Chisago Lakes Area High School (across street) and keep CCFD at public works.

This scenario would also keep response to the cities within suburban criteria and enhance responses to areas of the southwestern and southeastern part of the jurisdictions. The tradeoff is longer responses into the northern part of the jurisdictions.
Conclusions:
Based upon response calculations it appears that moving CCFD to the area of the City public works building is a positive possibility. Moving the LFD station to the area of the high school is beneficial to areas in the southeastern jurisdictions but would also increase response times in northern areas of the jurisdictions. Combining CCFD and LFD into a single station located between the cities would still give suburban response capability to both Cities but cause increased response times into much of the adjoining townships and decrease service delivery.

Management and Organization
CCFD and LFD are both city departments of their respective jurisdictions. Both departments have both command and relief association officers responsible for the departments elected by the membership of the department.

CCFD - Command officers include a fire chief; assistant chiefs; and captains. Relief Association officers include a president; vice-president; secretary; Gambling manager; and treasurer.

LFD – Officers include a fire chief; assistant chief; captains; and a lieutenant. Relief Association officers include: CEO, treasurer, gambling manager and Assistant, and secretary.

Both departments have by-laws which serve as general rules for non-emergency operations and departmental administrative guidelines. CCFD has a Standard Operations Guidelines (SOG) manual which is updated routinely. Compliance with state and federal mandates as well as tactical operations; training; safety; and job descriptions are included in these SOG’s.

Both departments designate a response procedure by unit but staffing per unit needs to be included in the SOG guidelines. There is also a need for joint response procedures and guidelines to include number of personnel and officers on a responding aid unit; the total number of units permitted to respond to an aid call; fill-in department designation during an emergency (if needed); and automatic activation of a full first alarm on any confirmed working fire, etc.. Finally these documents should be reviewed and updated routinely by both jurisdictions to be sure resources are accurate and available. This will be needed should FEMA funding be sought after a major incident or disaster.

Both departments have equipment maintenance programs and monitor vehicle condition routinely. However a documentation program such as the APWA vehicle plan should be brought onboard to help city administration and elected officials prepare for future apparatus needs as a routine CIP expenditure.

APWA Fleet replacement guidelines
Some fire departments use a scoring system developed by the American Public Works Association Fleet Service Committee for assessing fire apparatus for replacement, or a scoring system similar to it. The system entails considering a combination of variables that include age, mileage, maintenance costs, and operating conditions. A replacement score is calculated for each vehicle based on the sum of its scores for age, usage, and condition. The data for these calculations are usually obtained from vehicle maintenance records and work orders, but can also be obtained otherwise.

The age of the vehicle is scored by assigning one point for each month from the date on which it was purchased. The usage score assigns one point for each 1,000 miles traveled or 3.5 points for each 100 hours of use, whichever is higher. The condition of the vehicle is scored on a scale of one to five (with one being the best and five the worst) for each of five aspects—body, interior, functionality, maintenance/repair cost, and mission. These values are summed with the points assigned for age and mileage to obtain the overall vehicle score. If the overall score exceeds the point limit established for the respective vehicle category, the vehicle is recommended for replacement.

### Maximum Vehicle Points before Replacement (APWA System)

<table>
<thead>
<tr>
<th>Vehicle Category</th>
<th>Maximum Vehicle Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedans, station wagons, and jeeps</td>
<td>162</td>
</tr>
<tr>
<td>Light-duty trucks</td>
<td>196</td>
</tr>
<tr>
<td>Medium- to heavy-duty trucks (including ambulances)</td>
<td>220</td>
</tr>
<tr>
<td>Fire apparatus</td>
<td>225</td>
</tr>
</tbody>
</table>

**APWA Points**

- **When built** – unit gets 1 point for each month from date of manufacture
- **Current Mileage/Hours** – unit gets 1 point for each thousand mile or 3.5 points per 100 hours of usage.
- **Body Condition** – score 1 through 5: 1(excellent), 2 (good), 3 (fair), 4 (poor), 5 (replace)
- **Interior Condition** – score 1 through 5: 1(excellent), 2 (good), 3 (fair), 4 (poor), 5 (replace)
- **Functionality** – score 1 through 5: 1(excellent), 2 (good), 3 (fair), 4 (poor), 5 (replace)
- **Maintenance & Repair** – score 1 through 5: 1(excellent), 2 (good), 3 (fair), 4 (poor), 5 (replace)

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**Shared Fire Services Study**

Chisago City and City of Lindstrom, MN

May 28, 2013
Mission – score 1 through 5: 1 (excellent), 2 (good), 3 (fair), 4 (poor), 5 (replace)

Total Score – add entire column

Another critical component in any service-life-assessment system is the absolute requirement that a vehicle must be able to safely and reliably perform in a manner consistent with the vehicle’s design purpose, regardless of mileage or hours of use. Elected officials and organizational leaders must remember that fire service vehicles are subject to much more demanding operational conditions than other vehicles in a jurisdiction’s fleet. Rapid acceleration and deceleration, hard turns, quick stops, and other extreme demands are placed on fire apparatus on a regular basis. Additionally, fire apparatus are almost always fully-loaded with equipment. The water carried on a pumper can easily weigh several tons (over 12 tons in the case of a pumper-tanker), and aerial ladders may weigh more than 40 tons.

The replacement plan for CCFD and LFD apparatus is a decision made by city elected officials with input from city administration and FD leadership. The plan must look at apparatus condition based upon quantified criteria but also based upon municipal financial resources. This process is also part of the City CIP which includes needs city wide and in combination with the other jurisdiction. This evaluation provides this quantified vehicle information. The timing of replacement is now a task for municipal staffs and leaders.

Finance

CCFD and LFD operate primarily on funding from their respective city’s general funds, with the exception of gambling funds received by each department. Gambling funds are used for equipment needs to supplement general fund allotments to a varying degree in each department and likely explain most of the difference between the two budgets.

CCFD annual budget for the past 4 years is:

- 2010 $101,793
- 2011 $107,381
- 2012 $117,166
- 2013 $117,150

LFD annual Budget for the past 4 years is:

- 2010 $168,371
- 2011 $168,414
- 2012 $173,406
- 2013 $178,456

When compared to Minnesota’s average cost per citizen for fire services of $68.61 and national costs per citizen of $104.00, both jurisdictions are getting very good fire service financial efficiency. Currently fire services in Chisago City and Lindstrom are costing citizens about 1/3 of Minnesota average and 1/5 of national averages.

Shared Fire Services Study

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4. Future Options

This chapter will present options for future CCFD and LFD service delivery and organizational efficiency based on the assessment and analysis contained in the previous chapters and team observations. The options will be presented in the following order:

Management and Organization

SOG’s – Both departments have by-laws which also include policies for attendance, response, and recruitment. Both departments’ by-laws are several years old. Standard Operating Guidelines (SOG) are not present as a separate document in LFD. CCFD has a set of SOG’s which cover all aspects of emergency operations but should be reviewed annually and updated as needed.

Recommendations:

LFD needs to develop SOG’s which will set out operational procedures for the departments. These procedures could also be done by both departments together to make joint response easier and smoother for both.

CCFD should have a system for annual updates of SOG document and staff briefing of these changes.

MABAS - CCFD and LFD have the apparatus and staff to provide initial response to most structural calls (light hazard) in the jurisdiction as set out in NFPA Fire Chief’s Shared Fire Services Study

Handbook. However there are several structures which would be classified as medium and high hazard occupancies also within the Cities. For these responses there is a need for apparatus and personnel which exceed individual departmental resources. Such a need to use outside resources is now usually the norm for most jurisdictions in the country. To proactively plan for this eventuality designating specific outside resources for these target hazards is routinely used by many fire departments across the country. Mutual -aid Auto Box Alarm System (MABAS) has become a state standard in Illinois, Wisconsin, and Michigan and is currently being considered in Iowa and Minnesota for a state-wide system.

Recommendation:

CCFD and LFD are currently participants in county and area MABAS systems, but it would be advantageous to both to create a joint response process within the two cities to use both departments’ resources as a single responding system for target hazards.

CCFD and LFD need to create a predetermined response system including equipment, personnel, and other logistics in an alarm box system, for these medium and high hazards within their jurisdictions. Preplan and train with all other designated responders to ensure an effective and efficient response to these scenarios.
Single Fire Liaison position for departmental assistance — In today’s complex environment of rules, regulations, and standards, keeping up with these mandates is a constant issue. CCFD and LFD, though small in jurisdictional population and call volume, must maintain complete and accurate data regarding response, training, health and safety, apparatus condition, mandated testing of hose, ladders, firepumps, turnout gear, and SCBA’s to name a few. Additionally, having complete financial records including annual audits is the standard for the Cities and thus the fire departments.

Recommendation:
Creation of a fire liaison position to be shared by Chisago City and Lindstrom would be an effective way to mitigate this risk. The Fire Liaison position would be a shared position who serves between the departments and the Cities. This position could start at ¾ time and expand as needed.

Shared CIP plan — CCFD and LFD are currently working together to plan for apparatus needs and avoid unneeded redundancy. This Shared CIP could help both cities and the departments in many future major purchases.

Recommendation:
Continue to work together to plan for apparatus and major equipment needs. Also look at buying such things as turnout gear and SCBA’s together to get the best bang for your buck. Information in this report suggests that each city will likely have a fire station although the location of these new buildings may change for better coverage.

Shared/Merged Services — This is the largest issue facing both Cities and it is the opportunity for the most improvements in operational and financial functions. However, such changes in the departments will be a major stressor for all concerned.

To analyze this shared/merged services concept a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis is used.

STRENGTHS
• More personnel in a single response system for improved safety and initial response
• Shared budget for CIP, larger funding stream,
• Improved support services for fire prevention, training, records management, and personnel records
• Ability to focus on area needs on larger scale

WEAKNESSES
• Lack of individual control of programs and operations by departments
• Blended CIP budget means less control of monies at a departmental level
• Control of individual departments will become a shared function of Cities
• Loss of some individual departmental identity
OPPORTUNITIES

- More shared resources will better serve the citizens as a whole
- New programs can be implemented because there will be more staff available
- Opportunity to use the key strengths (interests) of volunteers and keep personnel motivated about fire service
- A fire liaison position would lessen the paperwork workload and let volunteers focus on service delivery

THREATS

- Some volunteers could feel threatened and try to derail the process
- Some citizens could see the process as bigger government
- If the whole process is not transparent there could be negative feedback to city leaders
- Once decided as the course of action everyone must stay onboard at the policy level

Recommendation:

Merging CCFD and LFD into a single department will likely not decrease costs or enhance current services beyond what can be achieved from a well-designed shared services operation.

The most advantageous approach for CCFD and LFD would be to continue their current efforts to share services and to formalize this arrangement with a Shared Services Agreement. This approach would likely save monies on capital needs as well as deliver more efficient services to citizens, without the stress of creating a new organization. This shared services concept could also provide impetus for additional new services and enhance some existing programs (fire prevention, records management, and training).

This shared services plan will need buy in from many stakeholders to be successful. The key is to identify these parties and get them onboard early. This process would likely focus on city elected officials and FD membership as well as the community at large.

Operations –

Currently CCFD and LFD are autonomous operations and all aspects of response, training, and administration are decided by the individual departments. While this way of doing business has a very long history of getting the job done, the 21st century presents a new set of challenges which were not reality 50, 25, or sometimes even 10 years ago. The demand from citizens is for more service at less cost, the dictates from federal and state government is a 2 to 3 fold increase in training, records management, and accountability.

This new paradigm calls for regional approaches to issues to bring enough resources to the table to safely mitigate the
situation. Jurisdictions and fire departments across America are finding the first step to the 21st century issues is using coordinated or joint response to emergency incidents to deliver the resources needed to get the job done safely and quickly.

1. **Coordinated incident response** – Currently CCFD and LFD are using this concept for specific response types and risks. The future means that this system should be enhanced and interlocal agreements approved by both cities with an assessment of when, where, and how the two departments will coordinate their resources and respond as one to unit to key calls approved by the governing bodies of both Cities. NFPA standards show that both CCFD and LFD can deliver enough personnel to handle a low hazard structural incident. But CCFD does not have an aerial unit for the initial response to all structural calls. Additionally both departments do not have enough equipment and/or personnel available for medium or high hazard structural calls.

**Recommendation:**

In addition to their current county and state mutual aid agreements, CCFD and LFD need to have a seamless joint response system which incorporates the resources of both departments for safety for both citizens and fire personnel. This is especially true in rural areas such as Chisago City and Lindstrom, where additional resources are further apart and thus need more time to get to an incident. The first alarm complement must be able to safely mitigate an incident since the cavalry may not get there for some time.

2. **Coordinated training programs** – Just like response capabilities CCFD and LFD have individual training programs to keep personnel up to date with the newest ways to get the job done. While both programs are doing the job a coordinated program would allow personnel to be even better trained by allowing personnel from one department who miss a training session at one department to get the same class at the other department.

The best thing about this program is that there would be no additional costs to implementation of the program but only coordination of the two training teams to see that overall the same programs are being taught at different times (months) but the final annual outcomes are the same.

**Recommendation:**

CCFD and LFD should create a joint training committee county wide, to plan and deliver training such that the personnel can get necessary training at either department and thus avoid potential recertification issues.

3. **Coordinated fire prevention** – Fire prevention is the biggest key to safer communities. CCFD and LFD currently have fire prevention programs in the schools and attend community gathering to promote the department as well as for fire safety.
Each department uses volunteer staff for these programs.

A new coordinated fire prevention program being used in a number of communities nationally is identifying people, especially seniors, who want to help with an all hazards safety education program. These programs can reside within the FD or can be in Parks and Rec; Senior Services; or any other agency where seniors volunteer to help the community.

**Recommendation:**
Leadership at CCFD and LFD should work together to expand fire prevention programs and create an all hazards approach to include everyone from 1 to 100 in fire safety education.

**Support Services**
It appears there is a need for a ¾ time Fire Liaison position that would be shared by CCFD and LFD to maintain proper departmental documentation and see that FD needs are identified and met. This position would not be a command position in the FD’s but would serve as an administrative liaison between the departments and City administrations.

Also with the Fire Liaison position there is a need to use a single IT system for all records functions of the FD’s. This will allow the jurisdictions to capture the same information from CCFD and LFD to aid in departmental efficiency and help focus on shared goals and objectives.

**Recommendation:**
CCFD and LFD need a ¾ time Fire Liaison position to focus upon developing singular information technology and incident reporting systems; tracking required training for personnel; monitoring exposure control; enhancing interaction between CCFD and LFD staff; and serving as a liaison between department staff and city administrations.

**Apparatus Replacement Plan**
An apparatus replacement plan based upon APWA guidelines is explained in this report and should become part of the justification process for any new apparatus. Additionally there is the issue of duplicity in apparatus and equipment. Some things such as pumpers; tenders; and grass units will need to be evaluated by each jurisdiction, but ladders, rescue squads; and specialized units can be evaluated with an overall perspective in mind.

**Recommendation:**
Working with City Administrations and using this APWA plan develop a multiyear CIP for CCFD and LFD apparatus replacement. Update the plan routinely and develop a 10 year joint CIP.

**Facilities**
The study explored several options related to facilities; one new combined station, two new individual stations, and an additional
option for relocating Chisago City station. An additional option that locates a new Lindstrom station at site near Olinda Trail is included as an option in addition to remaining at the current location. Each of these will be addressed individually.

**One new combined Station:** This option explored a single station solution to the communities’ facility needs with the station located centrally between the two communities. This solution showed a significant reduction in response time to the larger population centers or areas of projected growth but longer response times to most of the outlying areas. This option is not recommended.

**Two new individual stations:** The response time analysis for this option was created with an assumption of maintaining the current locations for the departments. This showed a well balanced response from each department. However, a plan that would include replacing or expanding facilities on these current sites has several challenges.

1. Chisago City site offers little opportunity for expansion. Expansion on the current site would require demolition of the existing community center and possible vacating of the adjacent road.
2. Lindstrom’s site offers little opportunity for expansion without acquiring more property on the block. An additional challenge with expanding on this site is the proximity of Hwy 8. Increased traffic will require a reorganization of the site and station to allow response on to other surrounding streets to avoid congestion. *It is recommended that a planning study of this option be accomplished before the City acquires property at this location.*

Response from a new site located near Olinda Trail represents a viable option if remaining at the current site proves unsupportable by future design efforts.

**Two new stations with Chisago City Station at Public Works site:** This option showed the best overall response for both communities. This option moves the station closer to the City’s industrial park, an area of risk in the community. Additionally the response to growing areas of the community to the west is significantly enhanced.

**Recommendations**

Development of any new construction or renovation project should consider the following criteria

1. Retain the services of Architects and Engineers experienced in the design of Fire Stations
2. Include both communities in the planning and development of any new facilities for either. Chisago City has the potential for additional site amenities and larger training facilities that could benefit both departments. Lindstrom may have an opportunity for a more
centrally located administrative element for both departments.

3. Acquire a site of adequate size. Three to five acres is required for a single story rural facility. One to two acres is adequate for a two story urban facility.

4. Apparatus Bays should be drive through and sized to allow five feet in front and behind and to the side of each vehicle.

5. Turn out gear should be stored in a space designed to provide adequate ventilation to dry equipment between calls.

6. SCBA filling cleaning and maintenance should be in a location that can be kept adequately clean and ventilated and allow for storage, drying and maintaining equipment.

7. Attention should be paid to adequate ventilation throughout the facility to reduce exposure of firefighters to vehicle exhaust fumes.

8. Provide emergency power generation.

9. An emphasis on energy efficient design is important in facilities that must maintain reasonable operating temperatures on a 24/7 basis.

10. Include fitness and training spaces. One of the largest concerns within the fire service is the health of fire fighters. Fitness programs can often repay the investment in space through lessened insurance and injury claims.