Public Protection Classification

Summary Report

Hart Co FPSA

Georgia

Prepared by

Insurance Services Office, Inc.
4B Eves Drive, Suite 200
P.O. Box 961
Marlton, New Jersey 08053-3112
(856) 985-5600

February 2013

©ISO Properties, Inc., 2007

Background Information

Introduction

ISO collects and evaluates information from communities in the United States on their structure fire suppression capabilities. The data is analyzed using our Fire Suppression Rating Schedule (FSRS™) and then a Public Protection Classification (PPC™) number is assigned to the community. The surveys are conducted whenever it appears that there is a possibility of a classification change. As such, the PPC program provides important, up-to-date information about fire protection services throughout the country.

The Fire Suppression Rating Schedule (FSRS) recognizes fire protection features only as they relate to suppression of first alarm structure fires. In many communities, fire suppression may be only a small part of the fire department's overall responsibility. ISO recognizes the dynamic and comprehensive duties of a community's fire service, and understands the complex decisions a community must make in planning and delivering emergency services. However, in developing a community's Public Protection Classification, only features related to reducing property losses from structural fires are evaluated. Multiple alarms, simultaneous incidents and life safety are not considered in this evaluation. The PPC program evaluates the fire protection for small to average size buildings. Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual classification.

A community's investment in fire mitigation is a proven and reliable predictor of future fire losses. Statistical data on insurance losses bears out the relationship between excellent fire protection – as measured by the PPC program – and low fire losses. So, insurance companies use PPC information for marketing, underwriting, and to help establish fair premiums for homeowners and commercial fire insurance. In general, the price of fire insurance in a community with a good PPC is substantially lower than in a community with a poor PPC, assuming all other factors are equal.

ISO is an independent company that serves insurance companies, communities, fire departments, insurance regulators, and others by providing information about risk. ISO's expert staff collects information about municipal fire suppression efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data and assigns a Public Protection Classification – a number from 1 to 10. Class 1 represents an exemplary fire suppression program, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria.

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. A community's PPC depends on:

- **Needed Fire Flows**, which are representative building locations used to determine the theoretical amount of water necessary for fire suppression purposes.
- **Receiving and Handling Fire Alarms**, including telephone systems, telephone lines, staffing, and dispatching systems.
- **Fire Department**, including equipment, staffing, training, and geographic distribution of fire companies.
- **Water Supply**, including condition and maintenance of hydrants, alternative water supply operations, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires up to 3,500 gpm.

©ISO Properties, Inc., 2007

Data Collection and Analysis

ISO has evaluated and classified over 48,000 fire protection areas across the United States using its Fire Suppression Rating Schedule (FSRS). A combination of meetings between trained ISO field representatives and the dispatch center coordinator, community fire official, and water superintendent is used in conjunction with a comprehensive questionnaire to collect the data necessary to determine the PPC number. In order for a community to obtain a classification better then a Class 9, three elements of fire suppression features are reviewed. These three elements are Receiving and Handling Fire Alarms, Fire Department and Water Supply.

A review of the **Receiving and Handling Fire Alarms** fire alarm and communication system accounts for 10% of the total classification. The review focuses on the community's facilities and support for handling and dispatching fire alarms. This section is weighted at **10 points,** as follows:

- Telephone Service 2 points
- Number of Needed Operators 3 points
- Dispatch Circuits 5 points

A review of the **Fire Department** accounts for 50% of the total classification. ISO focuses on a fire department's first alarm response and initial attack to minimize potential loss. In this section, ISO reviews such items as engine companies, ladder or service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, reserve apparatus, department personnel, and training. The fire department section is weighted at **50 points,** as follows:

- Engine Companies 10 points
- Reserve Pumpers 1 point
- Pumper Capacity 5 points
- Ladder/Service Companies 5 points
- Reserve Ladder/Service Trucks 1 point
- Distribution of Companies 4 points
- Company Personnel 15 points
- Training 9 points

A review of the **Water Supply** system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire suppression purposes. Hydrant size, type, and installation is also considered, as well as the inspection frequency and condition of fire hydrants. The water supply system is weighted at **40 points,** as follows:

- Credit for Supply System 35 points
- Hydrant Size, Type & Installation 2 points
- Inspection/Condition of Hydrants 3 points

©ISO Properties, Inc., 2007

There is one additional factor considered in calculating the final score – **Divergence**.

Even the best fire department will be less than fully effective if it has an inadequate water supply. Similarly, even a superior water supply will be less than fully effective if the fire department lacks the equipment or personnel to use the water. The FSRS score is subject to modification by a divergence factor, which recognizes disparity between the effectiveness of the fire department and the water supply.

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

Public Protection Classification Number

The PPC number assigned to the community will depend on the community's score on a 100-point scale:

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

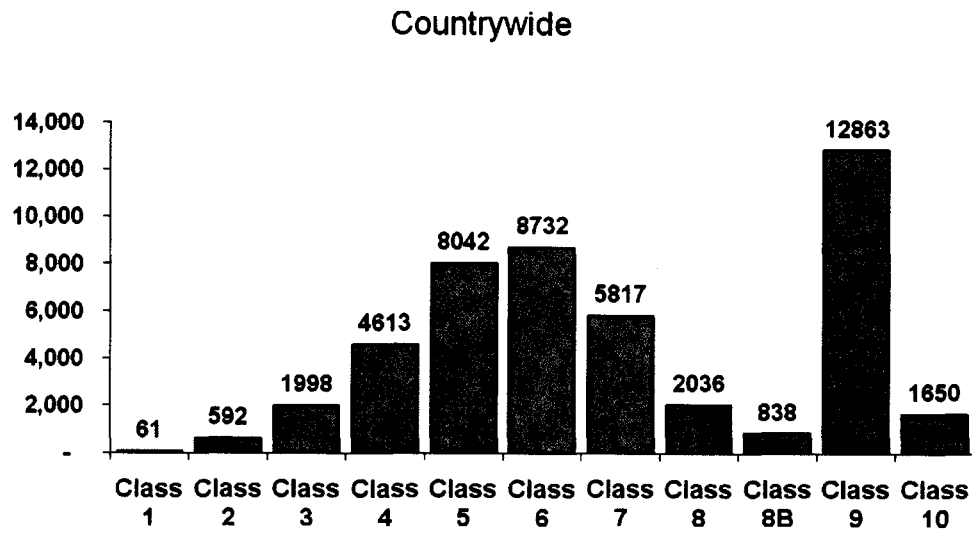
The classification numbers are interpreted as follows:

- Class 1 through (and including) Class 8 represents a fire suppression system that includes an FSRS creditable dispatch center, fire department, and water supply.
- Class 8B is a special classification that recognizes a superior level of fire protection in otherwise Class 9 areas. It is designed to represent a fire protection delivery system that is superior except for a lack of a water supply system capable of the minimum FSRS fire flow criteria of 250 gpm for 2 hours.
- Class 9 is a fire suppression system that includes a creditable dispatch center, fire department but no FSRS creditable water supply.
- Class 10 does not meet minimum FSRS criteria for recognition.

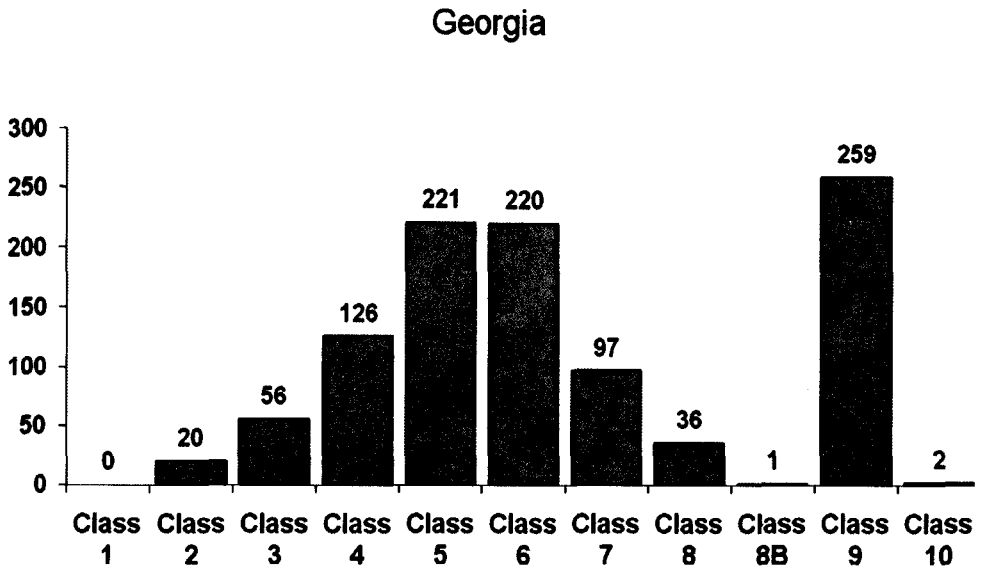
©ISO Properties, Inc., 2007

Distribution of Public Protection Classification Numbers

The 2011 published countrywide distribution of communities by the Public Protection Classification number is as follows:



The 2011 published statewide distribution of communities by the Public Protection Classification number is as follows:



©ISO Properties, Inc., 2007

Assistance

The PPC program offers help to communities, fire departments and other public officials as they plan for, budget, and justify improvements. ISO is also available to assist in the understanding of the details of this evaluation.

ISO Public Protection representatives can be reached by telephone at (800) 444-4554. The technical specialists at this telephone number have access to the details of this evaluation and can effectively speak with you about your PPC questions. What's more, we can be reached via the internet at www.isomitigation.com/talk/.

We also have a website dedicated to our Community Hazard Mitigation Classification programs at www.isomitigation.com. Here, fire chiefs, building code officials, community leaders and other interested citizens can access a wealth of data describing the criteria used in evaluating how cities and towns are protecting residents from fire and other natural hazards. This website will allow you to learn more about ISO's Public Protection Classification program. The website provides important background information, insights about the PPC grading processes and technical documents. ISO is also pleased to offer Fire Chiefs Online — a special secured website with information and features that can help improve your ISO Public Protection Classification, including a list of the Needed Fire Flows for all the commercial occupancies ISO has on file for your community. Visitors to the site can download information, see statistical results and also contact ISO for assistance.

In addition, on-line access to the Fire Suppression Rating Schedule and its commentaries is available to registered customers for a fee. However, fire chiefs and community chief administrative officials are given access privileges to this information without charge.

To become a registered fire chief or community chief administrative official, register at www.isomitigation.com.

Classification Details

Public Protection Classification

ISO concluded its review of the fire suppression features being provided for/by Hart Co FPSA. The resulting community classification is **Class 4/9**.

If the classification is a single class, the classification applies to properties with a Needed Fire Flow of 3,500 gpm or less in the community. If the classification is a split class (e.g., 6/9), the following applies:

- The first class (e.g., "6" in a 6/9) applies to properties within 5 road miles of a recognized fire station and within 1,000 feet of a fire hydrant or alternate water supply.
- Class 8B or class 9 applies to properties beyond 1,000 feet of a fire hydrant but within 5 road miles of a recognized fire station.
- Alternative Water Supply: The first class (e.g., "6" in a 6/10) applies to properties within 5 road miles of a recognized fire station with no hydrant distance requirement.
- Class 10 applies to properties over 5 road miles of a recognized fire station.
- Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual classification.

©ISO Properties, Inc., 2007

Summary Evaluation Analysis

The following points represent the analysis of the application of the criteria outlined in the FSRS of four topics– Receiving and Handling Fire Alarms, Fire Department, Water Supply, and the Divergence factor for Hart Co FPSA:

FSRS Feature	Earned Credit	Credit Available
Receiving and Handling Fire Alarms		
414. Credit for Telephone Service	**2.00**	2
422. Credit for Operators	**2.22**	3
432. Credit for Dispatch Circuits	**3.50**	5
440. Credit for Receiving and Handling Fire Alarms	**7.72**	**10**
Fire Department		
513. Credit for Engine Companies	**10.00**	10
523. Credit for Reserve Pumpers	**1.00**	1
532. Credit for Pumper Capacity	**5.00**	5
549. Credit for Ladder Service	**4.89**	5
553. Credit for Reserve Ladder and Service Trucks	**0.98**	1
561. Credit for Distribution	**0.97**	4
571. Credit for Company Personnel	**4.01**	15
580. Credit for Training	**4.37**	9
590. Credit for Fire Department	**31.22**	**50**
Water Supply		
616. Credit for Supply System	**20.74**	35
621. Credit for Hydrants	**2.00**	2
631. Credit for Inspection and Condition	**2.31**	3
640. Credit for Water Supply	**25.05**	**40**
Divergence	**-0.04**	--
Total Credit	**63.95**	**100**

©ISO Properties, Inc., 2007

General Information

To determine the Total Credit, the points for Receiving and Handling Fire Alarms, Fire Department and Water Supply are added together and the Divergence factor is applied. To establish the points for each category, FSRS items labeled as "Credit for..." are totaled. These particular items are intermediate values. Usually these intermediate values are based upon a 100-point scale, but they can be different. The ratios between the actual points scored in each of these sub-items and the points available for full credit are then multiplied by the points available for the sub-item.

For instance, Item 414 "Credit for Telephone Service (CTS)" is valued at 2 points. To determine the credit earned, the totals for Item 411 "Review of Telephone Lines (TL)", Item 412 "Review of Telephone Directory (TD)", and Item 413 "Review of Recording Device (RD)" are summed. In Item 411, up to 60 points can accrue; Item 412 has a combined value of 20 points; and 20 points are available for Item 413. The sum of these three Items is divided by 100 and then multiplied by the 2 point weight in Item 414 to determine the final score for "Credit for Telephone Service (CTS)".

The formula for Item 414 "Credit for Telephone Service (CTS)" looks like this:

$$\mathbf{CTS} = \frac{\mathbf{TS}}{\mathbf{100}} \times 2$$

Where TS = TL + TD + RD

Detailed Evaluation Analysis

On the following pages are the details of the evaluation of each category for Hart Co FPSA. These details relate only to the fire insurance classification for this jurisdiction. They are not for property loss prevention or life safety purposes and no life safety or property loss recommendations are made.

At the end of the detailed analysis the relative class is indicated. The relative class represents the classification each category would have achieved if the individual score was translated into a 100-point scale instead of the points available for that category.

©ISO Properties, Inc., 2007

Receiving and Handling Fire Alarms

Ten percent of a community's overall score is based on how well the communications center receives and dispatches fire alarms. Our field representative evaluated:

- the telephone service, including the number of telephone lines coming into the center
- the listing of the emergency number and business number in the telephone directory
- the automatic recording of emergency calls
- the communications center, including the number of operators on-duty and awake at the center
- the dispatch circuits and how the center notifies firefighters about the location of the emergency

Item 414 - Credit for Telephone Service (2 points)

The first item reviewed is Item 414 "Credit for Telephone Service (CTS)". This item reviews the facilities provided for the public to report fires including the telephone line used to report an emergency, business and private alarm lines including progression of emergency calls to business lines. Also analyzed is the listing of fire and business numbers in the telephone directory and the automatic recording of emergency calls. ISO uses National Fire Protection Association (NFPA) 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems* as the reference for this section.

To determine the score for Item 414, three sub-items (Item 411, Item 412, and Item 413) were evaluated. The details are as follows:

©ISO Properties, Inc., 2007

Item 411 - "Review of Telephone Lines (TL)"	Earned Credit	Credit Available
A. Number of needed fire lines* For maximum credit, there should be 2 incoming telephone lines reserved for receiving notification of fires. The Communication Center serving Hart Co FPSA has 10 lines reserved. The telephone directory listed both a business and an emergency number.	25.00	25
B. Number of needed fire, business, and private alarm lines* For maximum credit, there should be 2 incoming lines reserved for notification of fires (and other emergency calls) plus 1 additional line for conducting other fire department business and, if applicable, for private alarms. The Communication Center serving Hart Co FPSA has 1 line in addition to the 10 lines reserved for receiving notification of fires (and other emergency calls). The telephone directory listed both a business and an emergency number.	25.00	25
C. Progression of emergency calls to business lines For maximum credit, unanswered emergency calls should progress to the business number.	10.00	10
D. If detailed information of a fire is received and transmitted through more than one communication center, DEDUCT For no deduction of points, fire calls should be immediately transferred from the answering point to the dispatcher who will then obtain the needed information from the caller for dispatching.	0.00	-20
Review of Telephone Lines (TL) total:	60.00	60

***Note:** When only one telephone number is listed in the telephone directory the telephone lines provided cannot be reserved for emergency calls because the general public is not given a choice of telephone lines to use. Therefore, the operator/telecommunicator must accept both emergency and business calls over the same lines. The number of needed fire, business, and alarm lines will show a reduction in credit.

©ISO Properties, Inc., 2007

Item 412 - "Review of Telephone Directory (TD)"	Earned Credit	Credit Available
A. Emergency number on the inside front cover or the front page For credit, the fire emergency telephone number should be printed on the inside front cover or front page of the white pages in the telephone directory.	10	10
B. Emergency number and business number listed under "Fire Department" For credit, both the number to report a fire and the fire department business number should be listed under "FIRE DEPARTMENT" in the white pages (or government section) of the telephone directory. The fire number is listed and the business number is listed.	5	5
C. Emergency number and business number listed under the name of the city For credit, both the number to report a fire and the fire department business number should be listed under the community or fire district in the white pages (or government section) of the telephone directory. The fire number is listed and the business number is listed.	5	5
D. If the numbers for individual fire stations are listed, DEDUCT For no deduction of points, the individual fire stations should not be listed in the telephone directory.	0	-10
Review of Directory Listing (TD) total:	20	20

Item 413 - "Review of Recording Device (RD)"	Earned Credit	Credit Available
A. Review of the recording device (RD): For credit, a voice recorder should automatically record all emergency calls and the operator should be able to immediately play back any emergency call to review the conversation.	20	20
Review of Recording Device (RD) total:	20	20

©ISO Properties, Inc., 2007

The Items "TL", "TD", and "RD" are then added together and divided by the total possible points (100 points) to determine the factor that is applied to the 2 points available for Item 414 "Credit for Telephone Service (CTS)".

414 "Credit for Telephone Service (CTS)" = 2.00 points

Item 422 - Credit for Operators (3 points)

The second item reviewed is Item 422 "Credit for Operators (CTO)". This item reviews the number of operators on duty and awake at the center to handle fire calls and other emergencies. All emergency calls including those calls that do not require fire department action are reviewed to determine the proper staffing to answer emergency calls and dispatch the appropriate emergency response. NFPA 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems,* recommends that ninety-five percent of emergency calls shall be answered within 15 seconds and ninety-nine percent of emergency calls shall be answered within 40 seconds. In addition, NFPA recommends that ninety percent of emergency alarm processing shall be completed within 60 seconds and ninety-nine percent of alarm processing shall be completed within 90 seconds of answering the call.

To receive full credit for operators on duty, ISO must review documentation to show that the communication center meets NFPA 1221 call answering and dispatch time performance measurement standards. This documentation may be in the form of performance statistics or other performance measurements compiled by the 9-1-1 software or other software programs that are currently in use such as Computer Aided Dispatch (CAD) or Management Information System (MIS). If the necessary data is not available, the number of needed operators will be determined by specification criteria using a "Call Volume Matrix Table" (see the following page).

©ISO Properties, Inc., 2007

CALL VOLUME MATRIX TABLE #1
For Public Safety Answering Points that Perform Call Taking and Dispatching

Alarms per Year	Number of Needed Telecommunicators
Less than 731	1*
731 to 10,000	2
10,001 to 25,000	4**
25,001 to 50,000	5**
50,001 to 100,000	6**
100,001 to 150,000	7**
150,001 to 200,000	8**
200,001 to 250,000	9**
250,001 to 300,000	10**
Over 300,000***	11**

CALL VOLUME MATRIX TABLE #2
For Public Safety Answering Points that Perform Call Taking Without Dispatching

Alarms per Year	Number of Needed Telecommunicators
Less than 10,001	1
10,001 to 50,000	2
50,001 to 100,000	4**
100,001 to 150,000	5**
150,001 to 200,000	6**
200,001 to 250,000	7**
250,001 to 300,000	8**
Over 300,000***	9**

* *Communication centers that provide emergency medical dispatching (EMD) protocols need two telecommunicators on duty at all times.*

** *Includes a supervisor in the communication center.*

*** *For every 10 additional calls (alarms) that are averaged per hour (87,600 calls per year), one additional telecommunicator is added.*

©ISO Properties, Inc., 2007

To determine the score for Item 422, two sub-Items (421.A and 421.B) are summed. The details are as follows:

Item 421 - "Review of Operators (PO)"	Earned Credit	Credit Available
A. Number of operators on-duty (OD): For maximum credit, there should be 4 operators on duty at all times. There are an average of 2.96 operators on duty at the communication center.	**59.20**	**80**
B. Number of operators awake at all times (OA): For maximum credit, all operators should be awake at all times. There is an average of 2.96 operators awake at all times.	**14.80**	**20**
Review of Operators (PO) total:	**74.00**	**100**

After the items "OD" and "OA" are summed up to determine the points received for the "Review of Operators", the sum is divided by the total possible points (100 points) to determine the factor that is applied to the 3 points available for Item 422 "Credit for Operators (CTO)".

Item 422 "Credit for Operators (CTO)" = 2.22 points

Item 432 - Credit for Dispatch Circuits (5 points)

The third item reviewed is Item 432 "Credit for Dispatch Circuits (CDC)". This item reviews the dispatch circuit facilities used to transmit alarms to fire department members. A "Dispatch Circuit" is defined in NFPA 1221 as "A circuit over which an alarm is transmitted from the communications center to an emergency response facility (ERF) or emergency response units (ERUs) to notify ERUs to respond to an emergency". All fire departments (except single fire station departments with full-time firefighter personnel receiving alarms directly at the fire station) need adequate means of notifying all firefighter personnel of the location of reported structure fires. The dispatch circuit facilities should be in accordance with the general criteria of NFPA 1221. "Alarms" are defined in this Standard as "A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency".

There are two different levels of dispatch circuit facilities provided for in the Standard – a primary dispatch circuit and a secondary dispatch circuit. In jurisdictions that receive 730 alarms or more per year (average of two alarms per 24-hour period), two separate and dedicated dispatch circuits, a primary and a secondary, are needed. In jurisdictions receiving fewer than 730 alarms per year, a second dedicated dispatch circuit is not needed. Dispatch circuit facilities installed but not used or tested (in accordance with the NFPA Standard) receive no credit.

©ISO Properties, Inc., 2007

The score for Credit for Dispatch Circuits (CDC) is influenced by monitoring for integrity of the primary dispatch circuit. There are up to 1.5 points available for this Item. Monitoring for integrity involves installing automatic systems that will detect faults and failures and send visual and audible indications to appropriate communications center (or dispatch center) personnel. ISO uses NFPA 1221 to guide the evaluation of this item.

Additional points are available for dispatch recording facilities at the Communication Center. All alarms that are transmitted over the required dispatch circuits need to be automatically recorded (including the dates and times of transmission) to earn the maximum points in this item.

ISO's evaluation includes a review of the communication system's emergency power supplies. To receive maximum credit, two sources of power need to be provided for the operation of the communications network including dispatch circuits and its related support systems and equipment. A common arrangement is to have the primary power come from a utility distribution system and a secondary power source from an automatic starting emergency engine-generator and/or an Uninterruptible Power Supply (UPS) and Battery System – (SEPSS-Stored Emergency Power Supply Systems).

To determine the score for Item 432, four sub-items (Item 431.A, Item 431.B, Item 431.C and Item 431.D) needed to be evaluated.

©ISO Properties, Inc., 2007

The score that Hart Co FPSA received for Item 432 was calculated as follows:

Item 432 - "Credit for Dispatch Circuits (CDC)"	Earned Credit	Credit Available
Item 431A - "Dispatch Circuits Provided" The points are determined by prorating the value of the type of dispatch circuit using the percentage of members dependent upon each circuit.	40.00	40
Item 431B - "Monitoring for Integrity of Circuit" For maximum credit, the dispatch circuit should have an automatic system that will detect faults and failures and send visual and audible indications to appropriate personnel. These systems are subject to field verification and demonstration.	0.00	30
Item 431C - "Dispatch Recording Facilities at Communication Center" For maximum credit, all alarms that are transmitted over the required dispatch circuits need to be automatically recorded.	10.00	10
Item 431D - "Emergency Power Supply" For maximum credit, emergency power supplies need to be provided and regularly tested (one hour weekly, under load, with test documentation).	20.00	20
Item 431E - "When no circuit is needed" If all responding firefighters are in the same building as the communication center and are alerted, no dispatch circuit is needed and the maximum points are credited. However, the community does not operate in this fashion.	0.00	100
Dispatch Circuits (DC) total:	70.00	100

After the Items in 431 are summed up to determine the points received for the "Credit for Dispatch Circuits (CDC)", the sum is divided by the total possible points (100 points) to determine the factor that is applied to the 5 points available for Item 432 "Credit for Dispatch Circuits (CDC)".

Item 432 "Credit for Dispatch Circuits (CDC)" = 3.50 points

©ISO Properties, Inc., 2007

The final step in determining the credit for "Receiving and Handling Fire Alarms" is to add Item 414, Item 422, and Item 432:

Item	Earned Credit	Credit Available
414. Credit for Telephone Service (CTS)	**2.00**	2
422. Credit for Operators (CTO)	**2.22**	3
432. Credit for Dispatch Circuits (CDC)	**3.50**	5
Item 440. Credit for Receiving and Handling Fire Alarms:	**7.72**	**10**

Fire Department

Fifty percent of a community's overall score is based upon the fire department's structure fire suppression system. ISO's field representative evaluated:

- Engine and ladder/service vehicles including reserve apparatus
- Equipment carried
- Distribution of fire companies
- Available and/or responding firefighters
- Automatic Aid with neighboring fire departments
- Training

Basic Fire Flow

The Basic Fire Flow for the community is determined by the review of the Needed Fire Flows for selected buildings in the community. The following building addresses were used to determine the Basic Fire Flow:

- 4500 gpm 1755 Zion Cme Church Road, Hart Co Fd
- 3500 gpm 355 Industrial Park Road, Hart Co Fd
- 3500 gpm 4182 Lavonia Highway, Hart Co Fd
- 2500 gpm 1611 Zion Cme Church Road, Hart Co Fd
- 2250 gpm 29 Pinciaro Lane, Hart Co Fd

The fifth largest Needed Fire Flow is determined to be the Basic Fire Flow. Since the FSRS develops a PPC for properties with a Needed Fire Flow of 3,500 gpm or less, the maximum that the Basic Fire Flow can be is 3,500 gpm. The Basic Fire Flow for Hart Co FPSA has been determined to be 2250 gpm.

©ISO Properties, Inc., 2007

Item 513 - Credit for Engine Companies (10 points)

The first item reviewed is Item 513 "Credit for Engine Companies (CEC)". This item reviews the number of engine companies, their pump capacity, hose testing, pump testing and the equipment carried on the in-service pumpers. To be recognized, pumper apparatus must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* which include a minimum 250 gpm pump, an emergency warning system, a 300 gallon water tank, and hose.

The review of the number of needed pumpers considers the Basic Fire Flow; the response distance to built-upon areas; the method of operation; and the response outside the city. Multiple alarms, simultaneous incidents, and life safety are not considered.

Item 510.A Number of Needed Engine Companies (NE):

BASIC FIRE FLOW, GPM	ENGINE COMPANIES
500 - 1,000	1
1,250 - 2,500	2
3,000 - 3,500	3

The FSRS indicates that a minimum of 8 engine companies are needed in the fire district to suppress fires in structures with a Needed Fire Flow of 3,500 gpm or less. This number is calculated as follows:

The greater of:

a) 2 engine companies to support a Basic Fire Flow of 2250 gpm.

b) 8 engine companies to provide fire suppression services to areas with a reasonable number of properties without a responding fire station within 1½ miles.

c) 8 engine companies based upon the fire department's method of operation to provide a minimum two engine response to all first alarm structure fires.

There are 0 additional engine companies needed for response outside the city.

The FSRS recognizes that there are 8 engine companies in service.

For maximum credit, at least two engine companies should respond to all reported first alarms for fires in buildings (except when only one engine company is needed). The credit for engine companies has been reduced by 0.0 percent because the FSRS review deemed there is an adequate response to all reported fires in the district.

For each in-service engine, ISO reviews the pump capacity (as indicated by a pumper test), the hose (including hose testing) and the equipment carried.

For maximum credit, pumper service tests must be done annually and documented. ISO evaluates the pumper service tests using NFPA 1911, *Standard for the Inspection, Maintenance, Testing and Retirement of In-service Automotive Fire Apparatus.* This Standard indicates that the service tests should be conducted for:

- 20 minutes @ 100% capacity at 150 psi
- 10 minutes @ 70% capacity at 200 psi
- 10 minutes @ 50% capacity at 250 psi

©ISO Properties, Inc., 2007

Other factors such as the "overload test" are not evaluated in the FSRS and are not required for FSRS credit.

For maximum credit, hose tests must be performed annually and documented. ISO evaluates a hose testing program using NFPA 1962, *Standard for the Inspection, Care, and Use of Fire Hose, Couplings and Nozzles and the Service Testing of Fire Hose.*

The FSRS also reviews Automatic Aid. Automatic Aid is considered in the review as assistance dispatched automatically by contractual agreement between two communities or fire districts. That differs from mutual aid or assistance arranged case by case. ISO will recognize an Automatic Aid plan under the following conditions:

- It must be prearranged for first alarm response according to a definite plan. It is preferable to have a written agreement, but ISO may recognize demonstrated performance.
- The aid must be dispatched to reported structure fires on the initial alarm.
- The aid must be provided 24 hours a day, 365 days a year.
- The aid must offset a need in the community ISO is surveying. For example, if a community needs a ladder company and the fire department does not have one, but a neighboring community's ladder company responds by Automatic Aid agreement, credit may be available.
- The aiding ladder company must cover at least 50% of the needed ladder company Standard Response District by hydrant count in the community being graded.

FSRS Item 512.D "Automatic Aid Engine Companies" responding on first alarm and meeting the needs of the city for basic fire flow and/or distribution of companies are factored based upon the value of the Automatic Aid plan (up to 0.90 can be used as the factor). The Automatic Aid factor is determined by a review of the Automatic Aid provider's communication facilities, how they receive alarms from the graded area, inter-department training between fire departments, and the fire ground communications capability between departments.

For each engine company, the credited Pump Capacity (PC), the Hose Carried (HC), the Equipment Carried (EC) and a factor for an overweight apparatus all contribute to the calculation for the percent of credit the FSRS provides to that engine company.

After the Items in 512 are summed to determine the points received for the "In Service Total (EC)", the sum is divided by the total possible points and then multiplied by the Needed Engine Companies (NE). Next, this is multiplied by the appropriate factor representing the percent of built-upon area of the city with first alarm response of one or two engine companies. Finally, this product is multiplied by the 10 points available for Item 513 "Credit for Engine Companies (CEC)" to determine the final score for this item.

Item 513 "Credit for Engine Companies (CEC)" = 10.00 points

©ISO Properties, Inc., 2007

Item 523 - Credit for Reserve Pumpers (1 point)

The second pumper item reviewed is Item 523 "Credit for Reserve Pumpers (CRP)". This item reviews the number and adequacy of the pumpers and their equipment with one (or more in larger communities) pumper out of service. The number of needed reserve pumpers is 1 for each 8 needed engine companies determined in Item 513, or any fraction thereof. The number of reserve pumpers credited in this item will not exceed the number of needed reserve pumpers. If only one reserve pumper is needed, and more than one reserve pumper is provided in the city, only the best equipped reserve pumper will be credited. Reserve pumpers are reviewed for pump capacity, hose carried, and equipment in the same manner as described in Item 512 except that Automatic Aid reserve pumpers are not considered.

The value of the Reserve Pumper Credit (RPC) is determined by multiplying the credited Pump Capacity (PC) times the credit for the Hose Carried (HC) times the credit for the Equipment Carried (EC) times the factor for an overweight apparatus.

After the items in 521 are factored to determine the points received for each reserve pumper, the reserve pumper with the largest points is selected for the Reserve Pumper Credit (RPC). The value for RPC is added to the value in Item 512 determined above. Next, the best equipped in-service pumper is subtracted from the in-service and reserve total. The difference is then divided by the total the possible points times the Needed Engine Companies (NE). Finally, this quotient is multiplied by the 1 point available for Item 523 "Credit for Reserve Pumpers (CRP)".

Item 523 "Credit for Reserve Pumpers (CRP)" = 1.00 point

Item 532 – Credit for Pumper Capacity (5 points)

The next item reviewed is Item 532 "Credit for Pumper Capacity (CPC)". The total pump capacity available should be sufficient for the Basic Fire Flow of 2250 gpm in Hart Co FPSA. The maximum needed pump capacity credited is the Basic Fire Flow of the community. The pump capacity is obtained by test at the rated pump pressure. Credit is limited to 80 percent of rated capacity if no test data is available within two years of the survey date. Less than 80 percent may be credited if other mechanical features of the apparatus indicate a generally poor mechanical condition.

The existing pump capacity (EP) represents the capacity of in-service pumpers, pumper-ladder, and pumper-service trucks that were credited in Item 513.

The reserve pump capacity (RP) is that capacity of reserve pumpers, reserve pumper-ladder, and pumper-service trucks that were credited in Item 523. One-half the capacity of permanently-mounted pumps capable of delivering at least 50 gpm at 150 psi on other apparatus, reserve pumpers and reserve pumper-ladder and reserve pumper-service trucks not credited in Items 513 or 523 is credited in this item. This capacity is expressed as "OP".

Automatic Aid pumper capacity is that capacity of pumpers credited as Automatic Aid in Item 513. The capacity credited does not exceed the percent determined by the value of the Automatic Aid plan determined in Item 512.D multiplies by the creditable pump capacity for each Automatic Aid pumper. This capacity is expressed as AAP.

©ISO Properties, Inc., 2007

The sum of the capacities determined for EP, RP, OP, and AAP is 10750 gpm. The FSRS limits the total capacity to the Basic Fire Flow of 2250 gpm. Next, this capacity is divided by the Basic Fire Flow. Finally, this factor is multiplied by the 5 points available for Item 532 "Credit for Pumper Capacity (CPC)".

Item 532 "Credit for Pumper Capacity (CPC)" = 5.00 points

Item 549 – Credit for Ladder Service (5 points)

The next item reviewed is Item 549 "Credit for Ladder Service (CLS)". This item reviews the number of response areas within the city with 5 buildings that are 3 or more stories or 35 feet or more in height, or with 5 buildings that have a Needed Fire Flow greater than 3,500 gpm, or any combination of these criteria. The height of all buildings in the city, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies. When no individual response area alone needs a ladder company, at least one ladder company is needed if buildings in the city meet the above criteria. The number and type of apparatus is dependent upon the height of buildings, Needed Fire Flow and response distance.

Response areas not needing a ladder company should have a service company. A service company is an apparatus with some or all of the equipment identified in Table 544.A (see the following pages).

The number of ladder or service companies, the height of the aerial ladder, aerial ladder testing and the equipment carried on the in-service ladder trucks and service trucks is compared with the number of needed ladder trucks and service trucks and an FSRS equipment list (Table 544 A, B, and C). Ladder trucks must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* to be recognized.

The number of needed ladder-service trucks is dependent upon the number of buildings 3 stories or 35 feet or more in height, buildings with a Needed Fire Flow greater than 3,500 gpm, the response distance to built-upon areas, the method of operation and the response outside the city.

The FSRS indicates that a minimum of 0 ladder companies are needed. This is calculated as follows:

> 0 ladder companies due to the number of buildings with a Needed Fire Flow over 3,500 gpm or 3 stories or more in height, the response distance to built-upon areas or the method of operation.
>
> There are 0 additional ladder companies needed because 10% or less of the responses outside of the district result in a reduction of the ladder companies left in the district to 50% or less of the normal strength level.

The FSRS recognizes that there are 0 ladder companies in service.

For maximum credit, a ladder or service company should respond on first alarms to all reported fires in buildings. It was determined the ladder or service company response is to 100% of first alarm fires in buildings.

©ISO Properties, Inc., 2007

The FSRS indicates that a minimum of 8 service companies are needed. This need is calculated as follows:

> 8 service companies due to the number of buildings with a Needed Fire Flow over 3,500 gpm or 3 stories or more in height, the response distance to built-upon areas or the method of operation.

The FSRS recognizes that there are 8 service companies in service.

Ladders, tools and equipment normally carried on ladder trucks are needed not only for ladder operations but also for forcible entry, ventilation, salvage, overhaul, lighting and utility control.

If a ladder company is needed, the available equipment items in Table 544.A are summed to determine the points received for a Service Company, and available equipment items in Table 544.B are summed to determine the additional equipment points available for a Ladder Company. Table 544.A and 544.B points are added together to determine the total possible points available out of a possible 784 points.

Tests and sample forms for recording tests for aerial ladder and elevating platforms are described in NFPA 1911, *Standard for the Inspection, Maintenance, Testing and Retirement of In-service Automotive Fire Apparatus.*

If a service company is needed, the available equipment items are summed in Table 544.A. If additional ground ladders are needed for the service company, the assigned points for each available ground ladder up to 4 (from Table 544.B) are added to the points determined in Table 544.A.

All ladder company equipment, available service company equipment, available engine-ladder company equipment and available engine-service company equipment are summed. This sum is then divided by the sum of 784 points multiplied by the Needed Ladder (NL) plus 334 points multiplied by the Needed Service (NS) companies plus any points assigned for any additional ladders from Table 544.B.

Next, this factor is multiplied by the appropriate factor (A) representing the percent of built-upon area of the city with first alarm response of a ladder, service, engine-ladder or engine-service company to fires in buildings. Finally, this product is multiplied by the 5 points available for Item 549 "Credit for Ladder Service (CLS)".

Item 549 "Credit for Ladder Service (CLS)" = 4.89 points

©ISO Properties, Inc., 2007

Item 553 – Credit for Reserve Ladder and Service Trucks (1 point)

The next item reviewed is Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)". This item considers the adequacy of ladder and service apparatus when one (or more in larger communities) of these apparatus are out of service. The number of needed reserve ladder and service trucks is 1 for each 8 needed ladder and service companies that were determined to be needed in Item 540, or any fraction thereof. When 8 or less ladder and service companies are needed, and 1 or more ladder companies are needed, the reserve truck should be a ladder truck. When the number of needed reserve ladder and service trucks exceeds the number of needed reserve ladder trucks, the difference is considered as needed reserve service trucks.

The number of in-service ladder and service trucks considered out of service is determined by the number of needed reserve ladder and service trucks. The in-service ladder and service trucks credited in Item 549 having the largest number of points is what is considered as out of service. The equipment on credited reserve ladder and service trucks shall be reviewed by application of Tables 544.A, 544.B and 544.C.

The number of reserve ladder trucks credited in this item shall not exceed the number of needed reserve ladder and service trucks. If only one reserve ladder is needed, and if more than one reserve ladder or service truck is provided in the city, only the best equipped reserve ladder or service truck will be credited.

All ladder company equipment, available service company equipment, available engine-ladder company equipment and available engine-service company equipment are summed.

After the points for all reserve ladder and service equipment is determined, the reserve ladder service truck with the largest points is selected. This value is added to the value of all in-service ladder and service company equipment determined in Item 549. Next, the best equipped in-service ladder or service truck is subtracted from the in-service and reserve total. The difference is then divided by the total possible points for a ladder truck times the Needed Ladder (NL) plus the total possible points times the Needed Service (NS) plus any assigned points for any additional ladders needed from Table 544.B. Finally, this quotient is multiplied by the 1 point available for Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)".

Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)" = 0.98 points

Item 561 – Credit for Distribution (4 points)

Next, Item 561 "Credit for Distribution (CD)" is reviewed. This Item examines the number and adequacy of existing engine and ladder-service companies to cover built-upon areas of the city. The built-upon area of the city should have a fully equipped first-due engine company within 1½ miles and a fully equipped ladder-service company within 2½ miles.

To determine the Credit for Distribution, first the Existing Engine Company (EC) points and the Existing Engine Companies (EE) determined in Item 513 are considered along with Ladder Company Equipment (LCE) points, Service Company Equipment (SCE) points, Engine-Ladder Company Equipment (ELCE) points, and Engine-Service Company Equipment (ESCE) points determined in Item 549.

Secondly, a determination is made of the percentage of built upon area within 1½ miles of a first-due engine company and within 2½ miles of a first-due ladder-service company.

Item 561 "Credit for Distribution (CD)" = 0.97 points

©ISO Properties, Inc., 2007

Item 571 – Credit for Company Personnel (15 points)

Item 571 "Credit for Company Personnel (CCP)" reviews the average number of existing firefighters and company officers available to respond to reported first alarm structure fires in the city.

The on-duty strength is determined by the yearly average of total firefighters and company officers on-duty considering vacations, sick leave, holidays, "Kelley" days and other absences. When a fire department operates under a minimum staffing policy, this may be used in lieu of determining the yearly average of on-duty company personnel.

Firefighters on apparatus not credited under Items 513 and 549 that regularly respond to reported first alarms to aid engine, ladder and service companies are included in this item as increasing the total company strength.

Firefighters staffing ambulances or other units serving the general public are credited if they participate in fire-fighting operations, the number depending upon the extent to which they are available and are used for response to first alarms of fire.

Call and volunteer members (VM) are credited on the basis of the average number staffing apparatus on first alarms. Off-shift career firefighters and company officers responding on first alarms are considered on the same basis as call and volunteer personnel. For personnel not normally at the fire station, the number of responding firefighters and company officers is divided by 3 to reflect the time needed to assemble at the fire scene and the reduced ability to act as a team due to the various arrival times at the fire location when compared to the personnel on-duty at the fire station during the receipt of an alarm. The number of Public Safety Officers who are positioned in emergency vehicles within the jurisdiction boundaries may be credited based on availability to respond to first alarm structure fires. In recognition of this increased response capability the number of responding Public Safety Officers is divided by 2.

Call and volunteer firefighters and company officers assigned for on-duty shifts at fire stations on a pre-arranged schedule are considered as on duty for the proportional time that they are at the fire station.

The average number of firefighters and company officers responding with those companies credited as Automatic Aid under Items 513 and 549 are considered for either on-duty or volunteer company personnel as is appropriate. The actual number is calculated as the average number of company personnel responding multiplied by the value of AA Plan determined in Item 512.D.

The maximum creditable response of on-duty and call/volunteer firefighters is 12, including company officers, for each existing engine and ladder company and 6 for each existing service company.

Chief Officers are not creditable except when more than one chief officer responds to alarms; then extra chief officers may be credited as firefighters if they perform company duties.

The FSRS recognizes 0.48 on-duty personnel and an average of 56.32 volunteers/off-shift personnel responding on first alarm structure fires.

Item 571 "Credit for Company Personnel (CCP)" = 4.01 points

©ISO Properties, Inc., 2007

Item 581 – Credit for Training (9 points)

The final item reviewed in the Fire Department section is Item 580 "Credit for Training (CT)". This item evaluates training facilities and aids and the use made of them by the fire suppression force; company training at fire stations; classes for officers; driver and operator training; new driver and operator training; hazardous materials training; recruit training; the pre-fire planning inspection program; and the training and inspection records.

A maximum of 35% of the training evaluation is attributed to facilities, aids and use, and 65% is attributed to specialized training including the pre-fire planning inspection program.

Item 580.A.1 "Facilities and Aids"	Earned Credit	Credit Available
Drill Tower For maximum credit, a 3 story drill tower should be used. 0 points were credited as there is no drill tower available and used by the fire department.	**0.00**	**8**
Fire Building (including smoke room) For maximum credit, there should be a fire resistive smoke room that is separated from the drill tower so that training may be conducted in the tower and in the smoke room. A fire building is not available or used for training.	**8.00**	**8**
Combustible Liquids Pit For maximum credit, a 1,500 square foot combustible liquid pit or equivalent video instructing effective fire suppression of Class B fires should be used. Credit for a 1500 square foot combustible liquids pit was provided representing the actual size of the pit or that there is a video instructing effective fire suppression of Class B fires available for use to train the fire department personnel.	**5.00**	**5**
Library and Training Manuals For maximum credit, a complete library of training manuals should be available in the department for the membership. The library and manuals may include: NFPA "Fire Protection Handbook", "The Fire Chief's Handbook" published by Fire Engineering, "Managing Fire and Rescue Services" published by ICMA, Training manuals published by IFSTA or equivalent, and the following NFPA Standards, 472, 1001, 1002, 1021, 1201, 1401, 1403, 1410, 1451, and 1620. Credit was given for incomplete training materials.	**1.00**	**2**
Multi-Media Training Aids including Pump and Hydrant Cutaways A slide/overhead projector and compatible multi-media aids are available. A movie/VCR type projector and compatible multi-media aids are available. A pump cutaway is available in the department for the membership. A hydrant cutaway is available in the department for the membership.	**2.00**	**2**

Item 580.A.1 "Facilities and Aids" (continued)	Earned Credit	Credit Available
Training Area For maximum credit, a fire department training area of at least 2.0 acres in size should be available for single and multi-company drills. A training area of 5 acres is provided. Training is also conducted on streets or other areas.	10.00	10
Review of Facilities and Aids (FA) total:	26.00	35
Item 580.A.2 "Use"		
a. Half-day (3 hours) drills, 8 per year (0.05 each) For maximum credit, all members should participate in 8 half-day, single company drills. There were an average of 8.00 single company half-day drills.	0.40	0.40
b. Half-day (3 hours) multiple-company drills, 4 per year (0.10 each): For maximum credit, all members should participate in 4 half-day multiple company drills. There were an average of 4.00 multiple company drills.	0.40	0.40
c. Night drills (3 hours), 2 per year (0.10 each): For maximum credit, all members should participate in two 3-hour night drills per year. There were an average of 2.00 night drills.	0.20	0.20
Factor for "Use" subtotal -	1.00	
Average percentage participating in drills -	100%	
Factor for Use (FU):	1.00	1.0
Review of Facilities and Aids (FA) total:	26.00	35
"Facilities, Aids and Use" subtotal:	26.00	
Deduction for incomplete or missing records -	-2.60	

Note 1: A single company drill may receive credit under a and c; a multiple-company drill may receive credit under a, b, and c.

Note 2: If the Drill Tower, Fire Building, Combustible Liquids Pit or Training Area do not achieve at least 10 points, credit will be given for the use of buildings, streets and open areas (other than formal training grounds), but not both.

After the items under Item "Facilities and Aids" are summed and the factor for "Use" is established, the credit for "Facilities, Aids and Use" is determined by multiplying the total possible points (35 points) by the factor for "Use" (up to 1.0) and subtracting any deductions for record keeping.

Facilities, Aids and Use subtotal = 26.00 points

©ISO Properties, Inc., 2007

Specialized Training	Earned Credit	Credit Available
B. Company Training For maximum credit, each firefighter should receive 20 hours per month in structure fire related subjects as outlined in NFPA 1001. There was an average of 4.38 hours per month of company training received by company members and participation was 100% of those eligible to participate. 0.00 points will be deducted for missing or incomplete records.	**5.48**	**25**
C. Classes for Officers For maximum credit, each officer should receive 2 days of leadership, management, supervisory, and incident management system training per year as outlined in NFPA 1021. There was an average of 2.00 days devoted to officer classes and participation is 92% of those eligible to participate. 1.38 points will be deducted for missing or incomplete records.	**13.80**	**15**
D. Driver and Operator Training For maximum credit, each driver and operator should receive 4 half-day sessions of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451. There were 2.00 half-day sessions received per year by drivers and operators and participation was 85% of those eligible to participate. 0.09 points will be deducted for missing or incomplete records.	**0.85**	**2**
E. New Driver and Operator Training For maximum credit, each new driver and operator should receive 40 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451. There were 8.00 hours received per year by new drivers and operators and participation was 100% of those eligible to participate. 0.00 points will be deducted for missing or incomplete records.	**0.40**	**2**
F. Training on Hazardous Materials For maximum credit, each firefighter should receive ½ day of training for incidents involving hazardous materials in accordance with NFPA 472. There were 0.00 days of training received per year and participation was 0% of those eligible to participate. 0.00 points will be deducted for missing or incomplete records.	**0.00**	**1**

©ISO Properties, Inc., 2007

Specialized Training (continued)	Earned Credit	Credit Available
G. Recruit Training For maximum credit, each firefighter should receive 240 hours of structure fire related training in accordance with NFPA 1001 within the first year of employment or tenure. There were 240.00 hours received per year and participation was 100% of those eligible to participate. 0.00 points will be deducted for missing or incomplete records.	**5.00**	**5**
H. Pre-Fire Planning Inspections For maximum credit, pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except 1-4 family dwellings) should be made twice per year by company members. Records of inspections should include up-to date notes and sketches. There are 10.00% of the buildings inspected at a yearly frequency of 1.00. Participation is 100.00%. 0.12 points will be deducted for missing or incomplete records.	**1.20**	**15**

To determine the Credit for Training, the points credited in Item 580.A though 580.H are summed.

For maximum credit, records should be kept of all training. NFPA 1401 outlines the appropriate manner in which to accomplish this. A deduction of up to 20 points (20% for each Item) is made for a lack of records. A deduction of 10% is made for incomplete records and 20% for no records for each sub-item.

A total of **4.19** points is deducted to reflect a deficiency of record keeping for Hart Co FPSA.

Finally, this sum is divided by 100 and then multiplied by the 9 points available for Item 580 "Credit for Training (CT)".

Item 580 "Credit for Training (CT)" = 4.37 points

©ISO Properties, Inc., 2007

The final step in determining the Credit for Fire Department is to add the following eight components:

Item	Earned Credit	Credit Available
513. Credit for Engine Companies (CEC)	**10.00**	10
523. Credit for Reserve Pumpers (CRP)	**1.00**	1
532. Credit for Pumper Capacity (CPC)	**5.00**	5
549. Credit for Ladder Service (CLS)	**4.89**	5
553. Credit for Reserve Ladder and Service Trucks (CRLS)	**0.98**	1
561. Credit for Distribution (CD)	**0.97**	4
571. Credit for Company Personnel (CCP)	**4.01**	15
581. Credit for Training (CT)	**4.37**	9
Item 590. Credit for Fire Department:	**31.22**	**50**

Water Supply

Forty percent of a community's overall score is based on the adequacy of the water supply system. The ISO field representative evaluated:

- the capability of the water distribution system to meet the Needed Fire Flows at selected locations up to 3,500 gpm.
- size, type and installation of fire hydrants.
- inspection and condition of fire hydrants.

Item 616 – Credit for Supply System (35 points)

The first item reviewed was Item 616 "Credit for Supply System (CSS)". This item reviews the rate of flow that can be credited at each of the Needed Fire Flow test locations considering the supply works capacity, the main capacity and the hydrant distribution. The lowest flow rate of these items is credited for each representative location. A water system capable of delivering 250 gpm or more for a period of two hours plus consumption at the maximum daily rate at the fire location is considered minimum in the ISO review.

To determine the score for Item 616 "Credit for Supply System (CSS)", three sub-items are evaluated (Item 612 "Supply Works Capacity", Item 613 "Main Capacity" and Item 614 "Hydrant Distribution").

Where there are 2 or more systems or services distributing water at the same location, credit is given on the basis of the joint protection provided by all systems and services available.

©ISO Properties, Inc., 2007

The supply works capacity is calculated for each representative Needed Fire Flow test location, considering a variety of water supply sources. These include public water supplies, emergency supplies (usually accessed from neighboring water systems), suction supplies (usually evidenced by dry hydrant installations near a river, lake or other body of water), and supplies developed by a fire department using large diameter hose or vehicles to shuttle water from a source of supply to a fire site. The result is expressed in gallons per minute (gpm).

The normal ability of the distribution system to deliver Needed Fire Flows at the selected building locations is reviewed. The results of a flow test at a representative test location will indicate the ability of the water mains (or fire department in the case of fire department supplies) to carry water to that location.

The hydrant distribution is reviewed within 1,000 feet of representative test locations measured as hose can be laid by apparatus. Credit is allowed up to 1,000 gpm for each hydrant within 300 feet of the location, 670 gpm for hydrants within 301 to 600 feet of the location and 250 gpm for hydrants within 601 to 1,000 feet of the location. Credit may be reduced when hydrants do not have a pumper outlet and/or two or more hose outlets. If a hose diameter greater than 2½ inch is carried by all in-service pumpers, the hydrant distribution credit may be greater due to the reduced friction loss in the larger diameter hose.

For maximum credit, the Needed Fire Flows should be available at each location in the district. Needed Fire Flows of 2,500 gpm or less should be available for 2 hours; and Needed Fire Flows of 3,000 and 3,500 gpm should be obtainable for 3 hours.

Item 616 "Credit for Supply System (CSS)" = 20.74

Item 621 – Credit for Hydrants (2 points)

The second item reviewed is Item 621 "Credit for Hydrants (CH)". This item reviews the number of fire hydrants of each type compared with the total number of hydrants.

For maximum credit, all hydrants should have a pumper outlet, 6 inch or larger branch connection, uniform size operating nut and should operate in a uniform direction in accordance with AWWA C-502 *Standard for Dry-Barrel Fire Hydrants* or AWWA C-503 *Standard for Wet-Barrel Fire Hydrants.*

For maximum credit, all suction supply points should be equipped with a dry hydrant with a 6 inch or larger pipe and fittings, a minimum number of 90 degree elbows (preferably no more than two), and suction screen placement so that the dry hydrant will deliver the design capacity (usually 1,000 gpm) as specified in NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting.*

©ISO Properties, Inc., 2007

There are a total of 577 hydrants in the city.

620. Hydrants, - Size, Type and Installation	Earned Credit	Credit Available
A. With a 6 -inch or larger branch and a pumper outlet with or without 2½ -inch outlets There are 577 hydrants that have a 6 -inch or larger branch and a pumper outlet.	100.00	100
B. With a 6 -inch or larger branch and no pumper outlet but two or more 2½ -inch outlets, or with a small foot valve, or with a small barrel There are 0 hydrants that have a 6 -inch or larger branch but no pumper outlet, or have a small foot valve or with a small barrel.	0.00	75
C. With only a 2½ -inch outlet There are 0 hydrants with only a 2½ -inch outlet.	0.00	25
D. With less than a 6 -inch branch There are 0 hydrants with less than a 6 -inch branch connection.	0.00	25
E. Flush Type There are 0 hydrants that are of the flush type.	0.00	25
F. Cistern or suction point There are 0 locations that are considered a cistern and/or a suction point.	0.00	25
Total	100.00	100

Note 1: 2 points are deducted for each 10 percent of the hydrants that are not operating in a uniform direction of the majority, or with an operating nut different from the majority.

Of the 577 hydrants that were reviewed, 0% did not operate in the direction of the majority and 0% had a different size operating nut.

Note 2: 10 points are deducted if more than one type hose thread is used for pumper or hose outlets. Of the 577 hydrants that were reviewed, none had a different hose thread than the majority. There were no points deducted for this item.

To determine the "Credit for Hydrants (CH)", the points credited in Item 620.A though 620.F are summed, including any deductions. The sum is divided by 100 and then multiplied by the 2 points available for Item 621 "Credit for Hydrants (CH)".

Item 621 "Credit for Hydrants (CH)" = 2.00

©ISO Properties, Inc., 2007

Item 630 – Credit for Inspection and Condition (3 points)

The third item reviewed is Item 630 "Credit for Inspection and Condition (CIC)". This item reviews the fire hydrant inspection frequency, the completeness of the inspections and the condition of hydrants. Inspection and condition of hydrants should be in accordance with AWWA M-17, *Installation, Field Testing and Maintenance of Fire Hydrants.*

A. Inspection (HI):

The frequency of inspection is the average time interval between the 3 most recent inspections.

Frequency of Inspections	Points
½ year	100
1 year	80
2 years	65
3 years	55
4 years	45
5 years or more	40

Note: The points for inspection frequency are reduced by 10 points if the inspections are incomplete or do not include a flushing program. An additional reduction of 10 points are made if hydrants are not subjected to full system pressure during inspections. If the inspection of cisterns or suction points does not include actual drafting with a pumper, or back-flushing for dry hydrants, 40 points are deducted.

B. Condition (HF):

A factor (HF) is determined from the following list of conditions according to the actual condition of hydrants examined compared with the total number examined during the survey:

Condition	Factor
Standard (no leaks, opens easily, conspicuous, well located for use by pumper)	1.0
Usable (with some defects and/or impediments to use)	0.5
Not Usable	0.0

For maximum credit, all hydrants should be inspected twice a year. The inspection should include operation of the fire hydrant, a test for leaks (using domestic pressure), and a flushing of the hydrant. Records should be kept of inspections.

©ISO Properties, Inc., 2007

Water System: Hart County Water Department

Item 630.A "Inspection (HI):"		Time Interval
Most recent inspection was May 01, 2012		
1st prior inspection was May 01, 2011		1 year
2nd prior inspection was May 01, 2010		1 year
Review of Inspection (HI):	**Earned Credit**	**Credit Available**
	77	100

Note: The inspection dates shown are for the water system which includes the largest concentration of hydrants in the graded area; however, the earned credit reflects the frequency of inspection for all applicable water systems.

For maximum credit, all hydrants should be conspicuous, well located for use by a pumper and in good condition. There were 40 hydrants examined in this FSRS item.

Item 630.B "Condition (HF):"		Maximum Factor
Standard: There were 40 hydrants considered in standard condition.		1.0
Usable: There were 0 hydrants considered in usable condition.		0.5
Not Usable: There were 0 hydrants considered not usable.		0.0
Review of Condition (HF):	**Condition Factor (HF)**	**Maximum Factor**
	1.00	1.0

To determine the "Credit for Inspection and Condition (CIC)", the points credited in Item 630.A are multiplied by the Condition Factor from Item 630.B. The product is divided by 100 and then multiplied by the 3 points available for Item 631 "Credit for Inspection and Condition (CIC)".

Item 631 "Credit for Inspection and Condition (CIC)" = 2.31

©ISO Properties, Inc., 2007

The final step in determining the credit for Water Supply is to add Item 616, Item 621, and Item 631:

Item	Earned Credit	Credit Available
616. Credit for Supply System (CSS)	**20.74**	35
621. Credit for Hydrants (CH)	**2.00**	2
631. Credit for Inspection and Condition (CIC)	**2.31**	3
Item 640. Credit for Water Supply:	**25.05**	**40**

[redacted]-0.04

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

Summary of Public Protection Classification Review

Completed by ISO

for

Hart Co FPSA

FSRS Item	Earned Credit	Credit Available
Receiving and Handling Fire Alarms		
414. Credit for Telephone Service	**2.00**	2
422. Credit for Operators	**2.22**	3
432. Credit for Dispatch Circuits	**3.50**	5
440. Credit for Receiving and Handling Fire Alarms	**7.72**	**10**
Fire Department		
513. Credit for Engine Companies	**10.00**	10
523. Credit for Reserve Pumpers	**1.00**	1
532. Credit for Pumper Capacity	**5.00**	5
549. Credit for Ladder Service	**4.89**	5
553. Credit for Reserve Ladder and Service Trucks	**0.98**	1
561. Credit for Distribution	**0.97**	4
571. Credit for Company Personnel	**4.01**	15
580. Credit for Training	**4.37**	9
590. Credit for Fire Department	**31.22**	**50**
Water Supply		
616. Credit for Supply System	**20.74**	35
621. Credit for Hydrants	**2.00**	2
631. Credit for Inspection and Condition	**2.31**	3
640. Credit for Water Supply	**25.05**	**40**
Divergence	**-0.04**	--
Total Credit	**63.95**	**100**

Community Classification = 4/9

If the individual scores Hart Co FPSA achieved for Receiving and Handling Fire Alarms; Fire Department; and Water Supply were translated into a 100 point scale instead of the (10, 50 and 40) points actually used, the relative Fire Suppression Rating Schedule classification for each of these sections would be:

Receiving and Handling Fire Alarms: a (relative) **Class 3**

Fire Department: a (relative) **Class 4**

Water Supply: a (relative) **Class 4**

©ISO Properties, Inc., 2007

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Hart Co FPSA
County Hart State Georgia Witnessed by: Insurance Services Office, Inc. Date: July 12, 2012

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM $Q=(29.83(C(d^2)p^{0.5}))$ INDIVIDUAL HYDRANTS			TOTAL	PRESSURE PSI STATIC	PRESSURE PSI RESID.	FLOW -AT 20 PSI NEEDED **	FLOW -AT 20 PSI AVAIL.	REMARKS***
1	Comm	IFO 355 Industrial Dr	Hart County Water Department, Main	820	0	0	820	48	28	3500	1000	
2	Comm	IFO 1700 Zion CME Church Rd	Hart County Water Department, Main	790	0	0	790	65	24	4500	850	(A)-(3340 gpm)
2.1	Comm	Same as Test 2	Hart County Water Department, Main	790	0	0	790	65	24	2500	850	
3	Comm	Foundry Dr & Hwy 366	Hart County Water Department, Main	1110	0	0	1110	96	52	2000	1500	
4	Comm	Adj 2175 Providenc Church Rd	Hart County Water Department, Main	960	0	0	960	95	56	1250	1400	
5	Comm	Adj 7700 Rte 17	Town of Bowersville, Main.	750	0	0	750	65	30	1250	850	
6	Comm	Adj 900 Main St	Town of Bowersville, Main	920	0	0	920	68	40	1000	1200	
7	Res	Pine & College	Town of Bowersville, Main	710	0	0	710	66	36	750	900	
8	Comm	Goldmine Airline Rd & Royston Hwy	Hart County Water Department, Main	750	0	0	750	68	26	1000	800	
9	Comm	IFO 90 Eagle Grove School Rd	Hart County Water Department, Main	820	0	0	820	72	30	2000	900	
10	Comm	Adj 1500 St John CME Ch Rd	Hart County Water Department, Main	890	0	0	890	115	38	1000	1000	
11	Comm	Pinciaro Ln & Bowman Hwy	Hart County Water Department, Main	820	0	0	820	94	28	2250	850	
12	Res	IFO 1900 Elberton Hwy	Hart County Water Department, Main	920	0	0	920	100	40	750	1100	
13	Comm	Adj 3200 Anderson Hwy	Hart County Water Department, Main	990	0	0	990	105	42	2250	1200	
14	Comm	Adj 2200 Liberty Hill Rd	Hart County Water Department, Main	920	0	0	920	110	36	2000	1000	
15	Comm	IFO 1500 Old 29 Hwy	Hart County Water Department, Main	890	0	0	890	95	32	1750	1000	

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION.

THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

***Comm = Commercial; Res = Residential.**

****Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.**

***** (A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours, (C)-3 hours or (D)-4 hours.**

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Hart Co FPSA
County Hart State Georgia Witnessed by: Insurance Services Office, Inc. Date: July 12, 2012

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM $Q=(29.83(C(d^2)p^{0.5}))$ INDIVIDUAL HYDRANTS			TOTAL	PRESSURE PSI STATIC	RESID.	FLOW -AT 20 PSI NEEDED **	AVAIL.	REMARKS***
16	Res	Adj 130 Brown Circle	Hart County Water Department, Main	790	0	0	790	117	24	750	800	
17	Comm	Adj 4000 Lavonia Hwy	Hart County Water Department, Main	710	0	0	710	55	20	3500	700	(A)-(2340 gpm)
18	Comm	Adj 500 Whippoorwill Circle	Hart County Water Department, Main	1010	0	0	1010	116	46	1500	1200	
Hart Co Dry Hydrant 1	Res	Joe Findley Rd & Vanna Rd	Hart Co Dry Hydrant 1, Dry Hydrant #1	0	0	0	865	0	0	750	865	
Hart Co Dry Hydrant 8	Res	Vanna Rd & Bryant Dr	Hart Co Dry Hydrant 8, Dry Hydrant #8	0	0	0	865	0	0	500	865	
Hart Co Dry Hydrant 17	Res	Ridgeview Rd & Century Lane	Hart Co Dry Hydrant 17, Dry Hydrant #17	0	0	0	865	0	0	500	865	
Hart Co Dry Hydrant 25	Res	Ayers Road & Joe Findley Rd	Hart Co Dry Hydrant 25, Dry Hydrant#25	0	0	0	865	0	0	750	865	

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION.

THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

*Comm = Commercial; Res = Residential.

**Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

*** (A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours, (C)-3 hours or (D)-4 hours.