



GSPIA Capstone: Addressing the  
Volunteer Firefighter Crisis  
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## **I. Introduction**

At the 2018 Congress of Neighboring Communities (CONNECT) the issue of the increasing pressures being placed on volunteer fire companies was addressed with a call to undertake a preliminary assessment of fire service. This report is designed to partially fulfill that request. We, a capstone class at the University of Pittsburgh Graduate School of Public and International Affairs, researched and analyzed fire services data specific to Allegheny County and CONNECT communities. We then researched models of fire emergency services which may be utilized to mitigate the crisis of declining volunteer firefighters.

The decline in number of volunteer firefighters has been significant over the last 50 years. The 2018 Pennsylvania Senate Resolution 6 Report states that the number of volunteer firefighters has declined statewide from 300,000 in the 1970's, to about 60,000 in the early 2000's, and now to about 38,000 in 2018. As the numbers of volunteers available has declined, fire companies have had to be innovative in finding ways to continue to provide fire services. There is also reason to conclude that those innovations may have run their course, and new strategies must be found.

## **II. Staffing Models of Allegheny County Local Fire Departments**

In Allegheny County, we have identified four different staffing models of local fire departments:

### ***Type 1: All Volunteer Department***

A volunteer fire department is a fire department composed of volunteers who perform fire suppression and other related emergency services for a local jurisdiction. Volunteers can either respond by going to the fire station, gearing up, and then riding the response vehicles to the incident scene or by some volunteers going to the station and taking the response vehicles to the incident scene at the same time other volunteers are driving their own vehicles to the incident scene.

### ***Type 2: The Paid-Driver/Volunteer Department***

In this type of department there are full-time employees available to drive emergency response vehicles to the incident scene. Once on the scene, these drivers may act as the incident commander until a higher-ranking officer arrives. These type of staff usually cannot engage the fire until a sufficient complement of volunteers arrive. A minimum of three to five active firefighters per fire truck is required before the fire can be directly engaged.

### ***Type 3: The Full-Time Some of the Time Department***

In this type of department, there are a minimum of three to five firefighters per fire truck on duty who can respond, engage and resolve 95% of the emergency incidents on their own at

least at some time during a normal work week. During times when there are insufficient full time staff, the department must rely on volunteers or mutual aid.

#### ***Type 4. The Full-Time All of the Time Department***

In the fourth type of department, there are a minimum of three to five firefighters per fire truck who can respond, engage and resolve 95% of the emergency incidents on their own on a 24/7 basis.

To get an idea of the representation of these staffing models in Allegheny County, we surveyed the members of CONNECT to see which style of staffing their fire departments utilize. Out of 45 members of CONNECT, we received 21 responses. Nineteen responses were that the municipality had all volunteer personnel. Bellevue and Edgewood Boroughs responded that they fall into our second staffing model of having some full-time paid personnel some of the time, but are still reliant on volunteers. Additionally, even though Mount Lebanon and Pittsburgh did not respond to our survey, we were able to identify those municipalities as representing the full-time paid model.

### **III. Inventory of Fire Apparatus Allegheny County and CONNECT**

To conduct an analysis on the fire apparatus in the area, we referenced the work of Brian Chalfant, a GSPIA graduate who completed a comprehensive project in 2014 on Public Safety and Emergency Agencies. Additionally, to use for comparison with Allegheny County, we also gathered fire apparatus data from New York City and Mecklenburg County in North Carolina where the city of Charlotte is located. We identified Mecklenburg as a comparable county to Allegheny County regarding population size.

#### ***Definition of Fire Apparatus***

For the purpose of our project, we focused on three key fire apparatus:

- **Aerials and Quints:** A specialized fire apparatus equipped with an aerial ladder or elevated platform (*Aerial Apparatus*, 2013). A Quint is a smaller version of an aerial with a permanently mounted fire pump, a water tank, a hose storage area, an aerial ladder or elevating platform with a permanently mounted waterway, and a complement of ground ladders (*NFPA 1901*)
- **Engine/Pumper:** A vehicle designed primarily for fire suppression that delivers the ability to pump water at a specific rate, hose capacity, and assigned personnel (*Engine, Fire (Pumper)*, 2013)
- **Tanker:** A vehicle designed primarily for transporting (pickup, transporting, and delivering) water to fire emergency scenes to be applied by other vehicles or pumping equipment (*NFPA 1901*)

## *Fire Apparatus Inventory for Allegheny County*

Table 1: Number of Pieces of Major Fire Apparatus

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Number of Apparatus by Type					
Location	Population	Aerials	Engines	Tankers	Total
Allegheny County	1,200,000	137	425	21	583
New York City	8,600,000	143	197	0	340
Mecklenburg County	1,100,000	15	42	2	59

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From Table 1, we can see that Allegheny County, who serves a much smaller population than New York City, has a much higher number of fire apparatus. Mecklenburg County in North Carolina is comparable to Allegheny County in terms of population, and their apparatus is far less with a total of 59 fire apparatus for the entire county.

With the abundance of apparatus in the area, the question of it all being serviceable for a fire call arises. The NFPA 1901 recommends apparatus greater than 15 years old that are in serviceable condition be placed on “reserve status” and apparatus over 25 years should be replaced. According to the Allegheny County fire apparatus data, 88 apparatus should be replaced.

In Table 2, we calculated fleet value by utilizing the average costs of the three different types of fire equipment for which we collected data. Our average prices for the apparatus are as followed:

- Aerial: \$1.1 million
- Engine/Pumper: \$500,000
- Tanker: \$250,000

Table 2: Comparative Indicators of Major Fire Apparatus-Allegheny County

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Location	Population	Dollar Value in Million	Value in Millions per 10,000 People	Trucks per 10,000 people
Allegheny County	1,200,000	\$ 368	\$ 3.07	4.8
New York City	8,600,000	\$ 256	\$ 0.30	0.4
Mecklenburg County	1,100,000	\$ 38	\$ 0.35	0.5

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As detailed in Table 2, the cost of fire apparatus is \$3.07 million per 10,000 persons in Allegheny County. Also, per 10,000 people in Allegheny County there are 4.8 trucks as compared to the 0.4 and 0.5 trucks per 10,000 persons in New York City and Mecklenburg County. These calculations lead us to believe that there is redundancy of apparatus that is not entirely necessary in Allegheny County.

For the purpose of this project, we gathered and calculated data on only a few select types of fire apparatus. We understand that fire departments have other equipment, but this analysis was designed to provide a broad comparison. Additionally, we understand that geography and topography play a role when determining the quantity of fire apparatus necessary in an area. However, the values of fire apparatus noted for Allegheny County is beyond geography and topography concerns.

### ***Fire Apparatus Inventory for CONNECT***

In addition to the Allegheny County major fire apparatus information, we broke down the equipment into the CONNECT communities. The data did not include information for Bellevue or Wilkinsburg, but the numbers in Table 3 are representative of all other CONNECT members including the City of Pittsburgh. As Table 3 illustrates, CONNECT communities possess nearly 200 more pieces of major fire apparatuses than Mecklenburg County.

Table 3: Number of Pieces of Major Fire Apparatus - CONNECT

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Location	Population	Number of Apparatus by Type			
		Aerials	Engines	Tankers	Total

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CONNECT	725,000	69	181	2	252
New York City	8,600,000	143	197	0	340
Mecklenburg County	1,100,000	15	42	2	59

Further, Table 4 takes the same approach as with Allegheny County regarding comparative indicators of the major fire apparatuses. As in Table 2, we calculated the fleet value by utilizing the average costs of the three different types of fire equipment. The costs remain the same as used in Table 2 and are as follows:

- Aerial: \$1.1 million
- Engine/Pumper: \$500,000
- Tanker: \$250,000

As Table 4 indicates, therefore, with only the CONNECT communities, the cost of the major fire apparatuses is \$2.3 million per 10,000 CONNECT persons. Further, there are 3.5 trucks per 10,000 persons in CONNECT communities as compared to the .4 and .5 trucks per 10,000 persons in New York City and Mecklenburg County, respectively. We posit that the collection of major fire apparatuses is likely duplicative without significant need in the CONNECT communities as it is in Allegheny County as a whole.

Table 4: Comparative Indicators of Major Fire Apparatus - CONNECT

Location	Population	Dollar Value in Million	Value in million per 10,000 Persons	Trucks per 10,000 Persons
CONNECT	725,000	\$167	\$2.30	3.5
New York City	8,600,000	\$256	\$0.03	0.4
Mecklenburg County	1,100,000	\$38	\$0.35	0.5

As we indicated with the Allegheny County information, the overabundance of major fire apparatuses causes questions of duplication and cost effectiveness. While the volunteer fire department crisis continues and affects our CONNECT communities, the cost of duplicative

equipment could mitigate issues of staffing within the CONNECT fire stations. Additionally, there are forty pieces of CONNECT equipment considered obsolete (at 25 years or older). Therefore, there is a combination of duplicative equipment in addition to a fleet of obsolete pieces within the CONNECT communities.

### **Distribution of Fire Companies**

To further illustrate the status of CONNECT communities and their fire services and equipment, we utilized the same data as previously mentioned from the work of Brian Chalfant. Utilizing ArcGIS software and data provided by the Allegheny County GIS Data online resources, the following maps were created:

- CONNECT Communities (Map A). CONNECT is comprised of the following members: Allegheny County, Aspinwall, Baldwin Borough, Baldwin Township, Bellevue, Blawnox, Brentwood, Carnegie, Castle Shannon, Churchill, City of Clairton, Crafton, Dormont, City of Duquesne, Edgewood, Etna, Forest Hills, Green Tree, Heidelberg, Homestead, Ingram, Kennedy, McKees Rocks, Millvale, Mount Lebanon, Mount Oliver, Munhall, O'Hara, Penn Hills, City of Pittsburgh, Reserve, Robinson, Ross, Rosslyn Farms, Scott, Shaler, Sharpsburg, Stowe, Swissvale, West Homestead, West Mifflin, West View, Whitehall, and Wilkinsburg. For the purposes of our project, we did not include Allegheny County, the City of Pittsburgh, or Wilkinsburg in GIS mapping.
- CONNECT Fire Stations (Map B). We collected the addresses of each fire station within the CONNECT communities and geocoded the stations to produce the CONNECT Fire Stations maps.
- CONNECT Major Fire Apparatuses per community broken down by total Engines (Map C), total Aerials (Map D), total Tankers (Map E), total equipment (Map F), and obsolete equipment (Map G). The data provided through Brian Chalfant's project did not include equipment information for the Bellevue Fire Department; and therefore, the maps do not account for Bellevue equipment nor Allegheny County, the City of Pittsburgh, or Wilkinsburg. The obsolete equipment illustrated in Map G is defined as being over 25 years old. The data in Map G is also entirely dependent on available data. Each station does not have declared years on their equipment models, so the data is skewed to represent only the available data.

As seen in Map C, there are a total of 156 engines within the CONNECT fire departments with the previously defined confines. Penn Hills, Ross, and Shaler have over 10 engines each, and Edgewood, Etna, and the City of Duquesne have the least amount of engines with 1 each.

Map D illustrates that there are a total of 47 aerials within the confines of our data. Of the CONNECT communities, Shaler has the most with 5 aerials. 21 of the communities have 1 each while 8 of the communities have no aerials.

As illustrated in Map E, there are only 2 reported tankers within the data and are located in Robinson and Reserve.

The total equipment documented for the CONNECT communities within this study is shown in Map F. There is a total of 209 major fire apparatus as defined by the given data. Of the 209, Penn Hills (22), Robinson (10), Ross (16), Shaler (16), and West Mifflin (10) each have 10 or more total fire apparatus. Each community has at least 1 piece of equipment with Edgewood and Etna maintaining the smallest fleet at 1 engine each.

- CONNECT Fire Stations 2018 Emergency Fire Call Volumes by communities (Map H). The data utilized was provided by Chief Matt Brown of Allegheny County Department of Emergency. Map H, therefore, serves to show where there is the greatest utilization of services need with Ross Township followed by Mount Lebanon and Penn Hills having the most emergency fire calls in 2018. Comparatively, those communities also have the highest number of total major fire apparatuses as depicted in Map F.
- CONNECT Fire Stations Response Radius at a 1-mile (Map I), 2.5 mile (Map J), and 5 mile (Map K) radius. While there is no standard for response radius responsibility of a particular fire department, Maps I, J, and K illustrate the potential for duplication of services through response radii of 1, 2.5, and 5 miles, respectively.

#### **IV. Macro Causes of the Decline in Numbers of Volunteers Available to Serve as Firefighters**

- There are a number of changes that have occurred which make it more difficult to attract, recruit, and retain firefighters including:
  - a. There are many more ways in which citizens can choose to volunteer in support of a wide variety of public services locally, regionally, and nationally.
  - b. As our economy has shifted from a manufacturing base with shift work that spanned all times of the day, fewer volunteers are available around the clock, particularly in the daytime work cycle.
  - c. The training required to be a firefighter has significantly expanded making the investment a volunteer has to make substantially more time consuming.
  - d. Fire departments are responding to a broad array of emergencies such that the frequency of demand for response has increased dramatically placing greater time commitment on the part of the volunteer.

- Fire departments have been able to compensate for the reduction in available pool of volunteers by entering into mutual aid agreements. Most of the agreements that can be made with close by companies have been made. Further mutual aid agreements would require entering into agreements with more distant companies with a corresponding increase in the response time of those companies.
- Most solutions recommended by numerous blue ribbon commissions to address the problem of the decrease in volunteers conducted rely on increasing the volunteers or expanding mutual aid. Such approaches although well-intentioned have not produced desired results.
- Our assumption is that we must go beyond those recommendations that are no longer valid, and the step necessary to solve the current crisis is to increase full-time presence in fire departments.

## **V. Strategies for Volunteer Companies**

Any solution will require additional public resources. It is no doubt that utilizing any possible public resources will help to find proper alternatives in the research process. In our fire department project, we are trying to incorporate with additional public resources, such as the municipal employee who is working in the municipal buildings and local companies who might enter into an agreement with local fire stations.

Any solution might create more outstanding output if maximize the use of public resources. Public resources might make up for the shortage of current fire stations, such as human and time resource. The use of public resources might also reduce costs compared with non-public resources, such as hiring full time firefighters or drivers in this project.

On the other hand, when we take a literature review task, the data resources are really difficult to be obtained. The shortage of available data information, such as equipment in fire stations and an annual wage for fire station staff, bring quite challenge in the process of finding solutions.

As a part of our analysis, we are providing three strategies to increase the presence of full-time personnel in the local volunteer fire departments:

- Having a paid fire engine driver
- Subsidizing municipal or local workers
- Implementing a pool of county firefighters

We will discuss these strategies in terms of description, utility, cost, weakness and benefits, as well as providing recommendations to maintain the sustainable development of the fire department in Allegheny County in Pennsylvania.

### ***Strategy 1: Supplement the Volunteers with Paid Drivers***

Our paid driver suggestion involves volunteer fire departments transiting into a department with paid fire engine driver. This would be a full time paid employee who is a firefighter and

has the duty of driving the fire engine to the scene. The paid driver can respond to an incident with the apparatus, but is unable handle an incident on their own until additional personnel arrive.

#### *Estimating the Cost*

As of Mar 24, 2019, the average annual pay for a Fire Engine Driver in the United States is \$52,447 a year. The annual salaries as high as \$76,500 and as low as \$21,500, the majority of Fire Engine Driver salaries currently range between \$38,500 (25th percentile) to \$62,000 (75th percentile) across the United States. The average pay range for a Fire Engine Driver varies little (about \$23,500), which suggests that regardless of location, there are not many opportunities for increased pay or advancement, even with several years of experience.

Based on recent job postings on ZipRecruiter, the Fire Engine Driver job market in both Pittsburgh, Pennsylvania and the surrounding area is very active. People working as a Fire Engine Driver are making on average \$50,391 per year or \$2,056 (4%) less than the national average annual salary of \$52,447. Pennsylvania ranks number 23 out of 50 states nationwide for Fire Engine Driver salaries. Thus, the salary of the driver can be reference as budget if a transition will be launched (ZipRecruiter).

The Fair Labor Standards Act allows for firefighters to work up to 53 hours of work a week. A typical shift schedule calls for a firefighter to work a 24 hour shift followed by 48 hours off. Assuming such a schedule it would require approximately 3.5 personnel to cover one FT position 24/7. With benefits, such a staffing level would cost between \$350,000 to \$400,000 annually.

#### *Benefit*

It is the most acceptable solution. First, the paid driver model has already been applied in the United States. For example, the Bellevue fire department in Pennsylvania has a paid driver.

Second, the response time to incidents will be improved. In the event of a fire, the driver will be the first person to arrive at the scene, followed by volunteer firefighters which will shorten the response time.

Third, this is the least expensive solution since only drivers in the department will be getting paid. The financial pressure is lower compared to full paid department. Thus, in many cases of fire department transformation, the paid driver model is considered a first-step transitional measure.

#### *Weakness*

The paid driver suggestion also has its shortcomings. First, having a paid driver still cannot solve the problem of efficiency. It increases efficiency, compared to the volunteer fire department model, but because of the limited response personnel, the full-time paid driver cannot handle an average incident alone. Response at the incident will still need to be supplemented by the department's volunteers or mutual aid.

Second, with implementing a paid driver, there will be an increase in potential costs. The transition from volunteer fire department to paid fire department will require a transition to more professional service. In California, for example, fire engine drivers, including those who drive the tiller, or back end of the fire truck, need a special license designed for fire truck drivers. Qualifications for the endorsement include proof of current employment as a firefighter in the form of a letter from the fire chief or representative, completion of fire apparatus driver training, successful completion of medical exam, and successful completion of a special state firefighter exam. Thus, except the salary and the training fee may become a potential cost for the fire department.

### ***Strategy 2: Create Programs to Subsidize Municipal or Local Workers to Serve as Paid Drivers***

The main goal of this strategy is to increase the full-time equivalent through hiring municipal employees or local other workers. They can take the responsibility of firefighters, or paid drivers, to fire callings working as the full-time equivalent members when the fire occurs.

#### *Utilization*

##### 1. Company enters into agreement

Local company can take an agreement with fire departments to let their selected employees to be paid drivers or firefighters. In this situation, the fire department can pay the company directly or pay the individuals. Companies can create the equivalent full-time jobs for their employees as firefighters. They can respond when fire occurs, prevent the waste of time when waiting the fire to occur. On the spare time, they can act as normal workers in company taking other kinds of work.

###### a. Pay the company

When a company enters into an agreement with the fire department, it can get annual salary according to the content of contract as an internal income. Cooperated company need to provide enough employees as firefighters or drivers to maintain the daily work request from the fire departments.

###### b. Pay the individual employee. The salary can also be paid directly to the individual employee in the local companies.

##### 2. For municipality

Municipal employees have the legal authority and responsibility to engage in fire suppression and is employed by a fire department of a municipality, county, fire district, or State, and is engaged in the prevention, control, and extinguishment of fires or response to emergency medical situations where life, property, or the environment is at risk.

Municipal agencies could be either cities, districts, counties or state agencies. As in the Allegheny county municipalities that have similar control over and provide wages to firefighters classified as full time equivalent.

Municipal employees take the role of paid drivers or firefighters will be another good method to enlarge the firefighter group in Allegheny county. They normally work in the municipal buildings around the fire station or someplace occurs fire frequently, so they can react to the fire callings as soon as possible, they may drive a truck to the scene or go to fight fire.

In Allegheny County, firefighters need to attend fire department training program before they engage into work. These programs are a series of "stand alone" courses to be delivered at local fire stations as an evening or weekend training session. Training program will create amount of cost, including training used equipment.

These municipal employees can work a 56-hour work week, rotating 24- or 48-hour shifts. When they out of driver or firefighter work, they still participate in the public works.

#### *Cost*

There are two levels of compensation either to the employer or the employee. The first one is for a municipality and local company employer, if a local employer is going to agree to release an employee working for fire responding, even though can't totally reimburse the employer for its lost wages but there ought to determine what that compensation should be.

The second compensation should be negotiated with employees relative to what they're going to be compensated for their firefighting and driving works. That is going to a part of budget. The total compensation might not be very high for in order to control the total budget.

#### *Benefit*

When a fire breaks out in a recent area, municipal employees and other employees of the local company can respond as quickly as possible. Rapid response will directly reduce death and property damage. On the other hand, letting the surrounding personnel carry out the fire fighting work, rather than those fire stations come to, especially far away from scene.

#### *Weakness*

Municipal employees and corporate employees normally stay in the office for their normal work outside of acting as paid drivers and firefighters. How to clearly divide the daily working hours and the time of participating in the firefighting work need to be properly arranged. There is also possible situation that those employees cannot go to the fire scene because of unexpected situation.

### ***Strategy 3: Create a Pool of Paid Drivers who Could be Made Available to Local Fire Departments***

In this strategy a group of municipalities or Allegheny County could create a pool of firefighter/drivers that individual fire departments could access on an as-needed basis to serve in that department for an agreed upon period of time. Allegheny County's Department of Emergency Services already provides crucial support to the local fire departments in the county such as Emergency Management, 911 Communications, Emergency Medical Services (EMS), Office of the Fire Marshal, and the Fire Training Academy. As such the county serves as a vital support institution in fire services and for the county to operate the firefighter pool could be viewed as a logical next step in its role. A more localized option might be for a set of municipalities, maybe at the county government level, to create a pool within themselves.

Having a pool of firefighters has been successfully implemented and used in Washington County, Maryland. Like in Washington County, Allegheny County municipalities can use the county pool firefighters to help volunteer fire department cover hours/shifts if needed. The county pool method would be useful too, for at least ensuring that a fire engine driver is available to respond to an incident. Washington County is utilizing this method as a way to eventually transition into the county providing enough full-time paid firefighters so each volunteer department can have at least one full-time paid firefighter 24/7.

#### *Use of the Pool Structure*

1. A large organization (Allegheny County) has as pool of firefighters available for use (e.g. fire engine drivers)
2. The fire chief request a firefighter (e.g. driver) from the pool for a particular set of shifts.
3. Drivers are then provided by the county to the municipality.
4. Some form of reimbursement will need to be paid by the municipality to the county for the use of the firefighters from the county pool.

#### *Costing of Pool*

Let us assume the annual cost of having 100 firefighter or drivers available in a county pool would be an estimated \$8 million (include salaries, welfare, fringe, overhead, administration).

If a firefighter worked a 48-hour week on a 24 hour shift each firefighter would have approximately 100 shifts a year (A typical shift schedule calls for a firefighter to work a 24-hour shift followed by 48 hours off). Discounting for vacation and sick days, each of the 100 firefighters would have approximately have 90 shifts per. The cost for each of those shifts to the requesting fire department would need to be negotiated between the organization managing the pool and the individual fire departments.

Using the annual cost for 100 firefighters of \$8,000,000 divided by the total number of shifts for all 100 firefighters, the rough estimate of cost per shift is about \$900 per day.

If a municipal fire department utilized a firefighter from the county pool for a full year at a price of \$900 per 24-hour shift, it would cost approximately \$328,500 per year.

### *Issues*

It is unclear how the municipality will reimburse the county for the use of the firefighters from the county pool. Allegheny County firefighters are trained by the county and then local fire chiefs can call the county and ask to have a firefighter for their station for a certain amount of time. The main question from this strategy, however, is how municipalities will pay the county back for utilizing the pool of fire fighters.

### *Summary of County Pool*

The problem of adequate staffing of volunteer fire departments will require those departments to be supplemented with some full-time personnel most likely in the form of driver/firefighters. Such a transition to departments utilizing full time personnel more so than currently is not unlike the transition of EMS personnel from volunteer to full time personnel. Such a move will probably be more modest than has been the conversion of EMS departments but will nonetheless require additional financial resources. We have included the information on fire equipment to provide a potential source of funding. It is clear that our region has a surplus of equipment and a deficit of staff to address our current needs. Perhaps a more centralized purchasing and allocation of firefighting equipment could reduce our costs enough to help finance the needed staff.

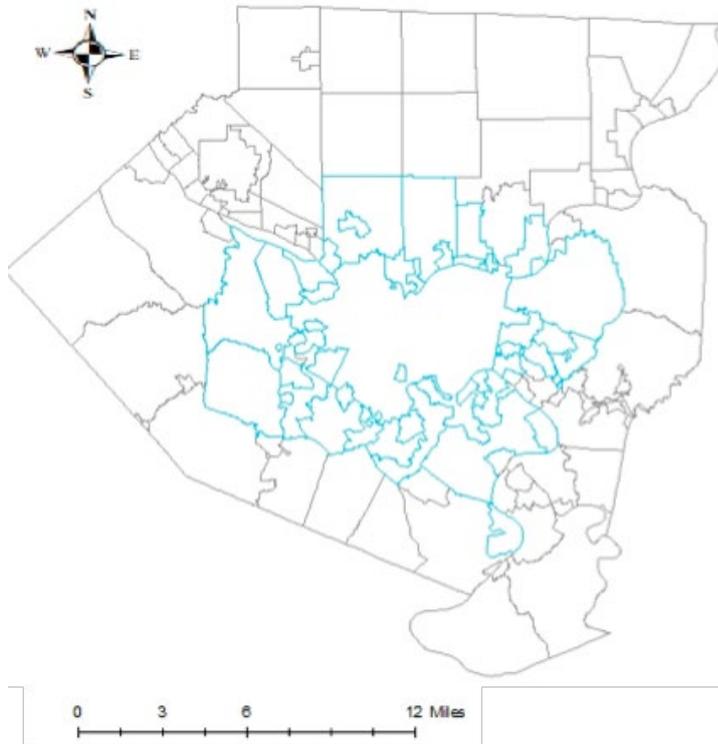
## **VI. Conclusion**

Through the course of the project, our recommendation is that CONNECT communities and Allegheny County must look at new strategies for staffing fire departments. We recognize that fire departments are often 501(c)(3) organizations, but conversations must also occur on the municipal level. The data clearly notes a decrease in volunteer firefighters despite great efforts to recruit new volunteers.

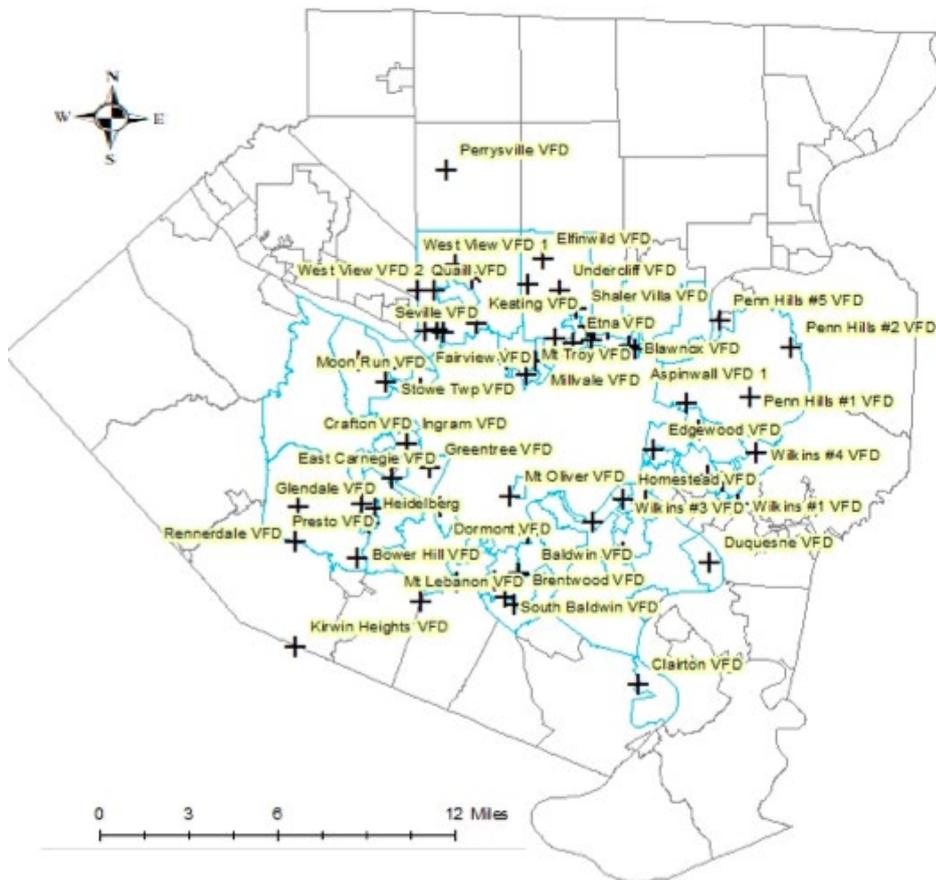
It is in our opinion that the best next action to take is to increase a full-time presence in fire departments as deemed necessary. Without efforts to increase full-time staff, the volunteer firefighter crisis will continue to increase. While we do not recommend any one strategy, we urge elected officials to consider which strategy may best suit the CONNECT communities and Allegheny County. Through our research on Allegheny County and CONNECT fire apparatus and fire stations, it is our opinion that there is redundancy and an unnecessary surplus of expensive equipment. As such, funding for full-time positions may be possible through a decrease in unnecessary equipment and stations.

Regardless of how the CONNECT communities determine to move forward, we urge the conversations to continue toward a solution appropriate and feasible for the communities.

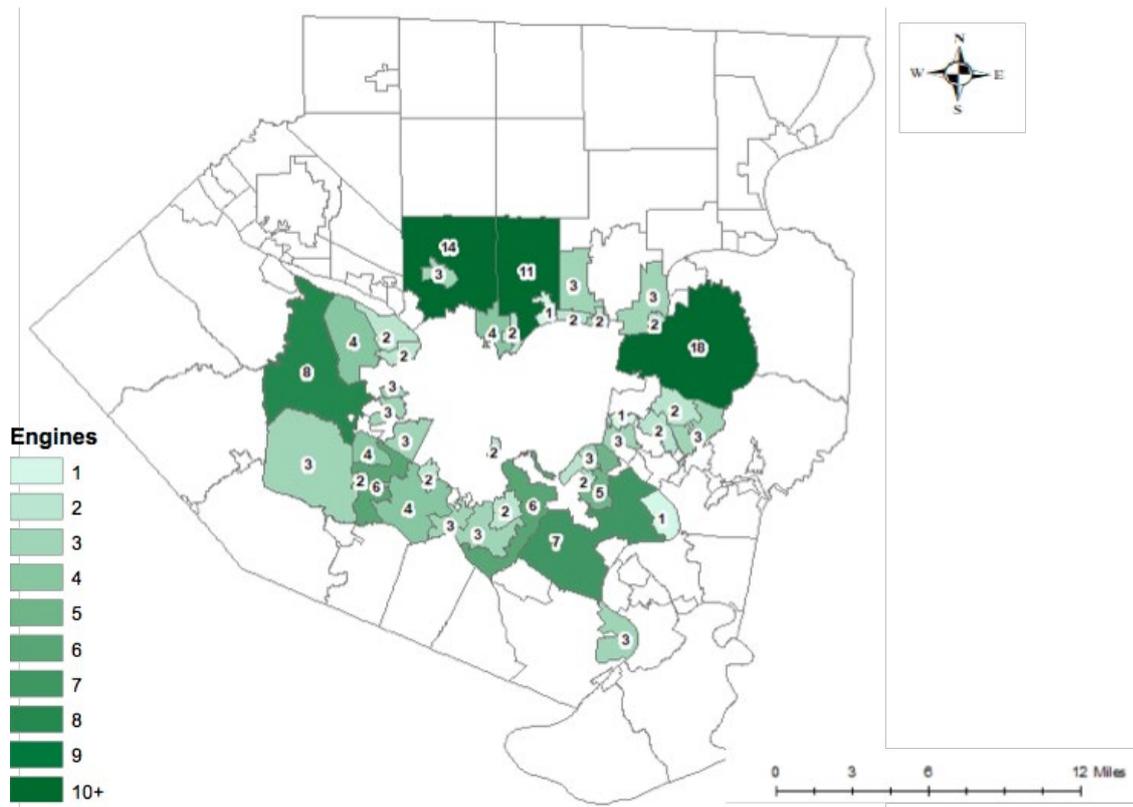
Map A: CONNECT Communities



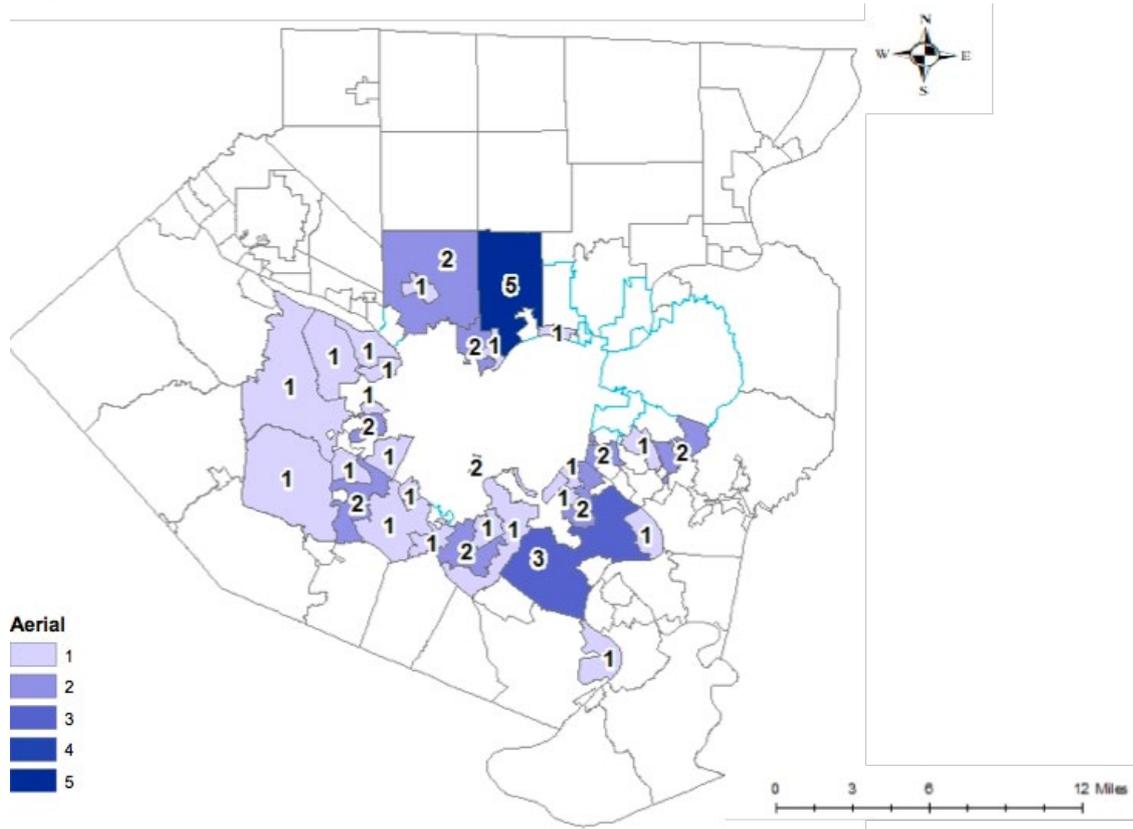
Map B: CONNECT Fire Stations



Map C: CONNECT Engines



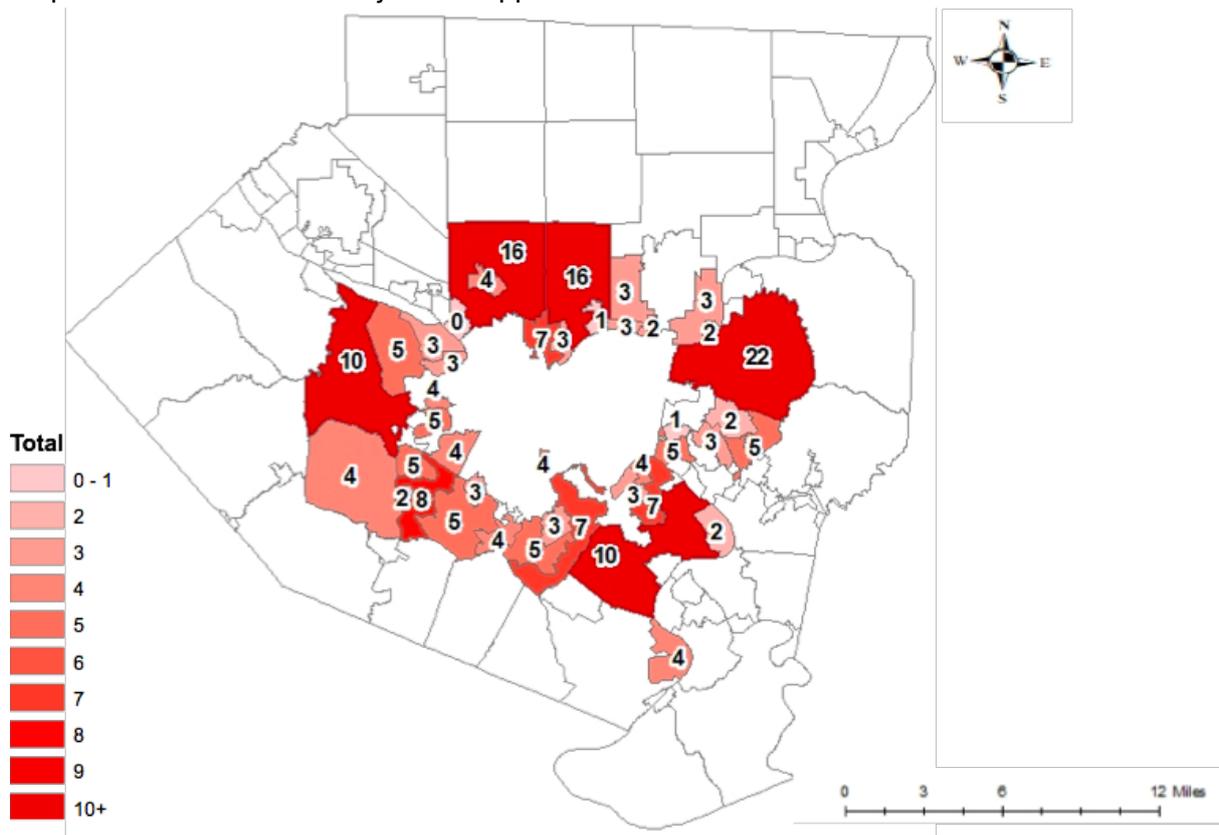
Map D: CONNECT Aerials



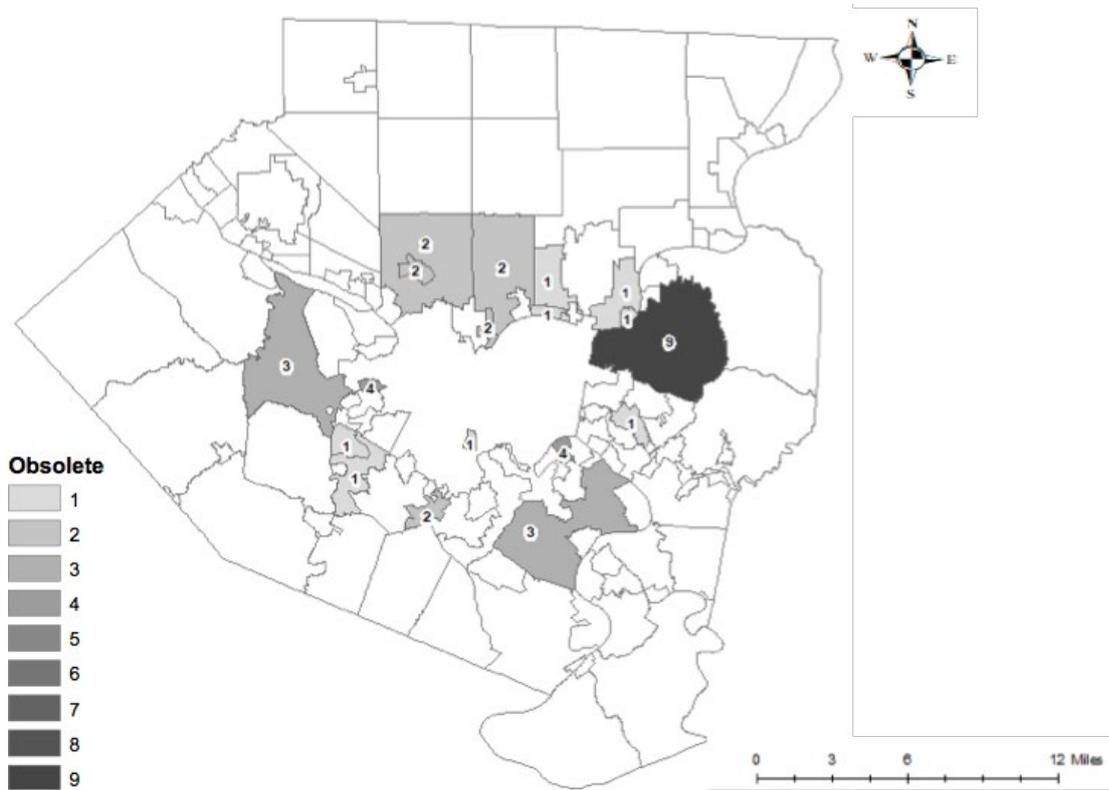
Map E: CONNECT Tankers



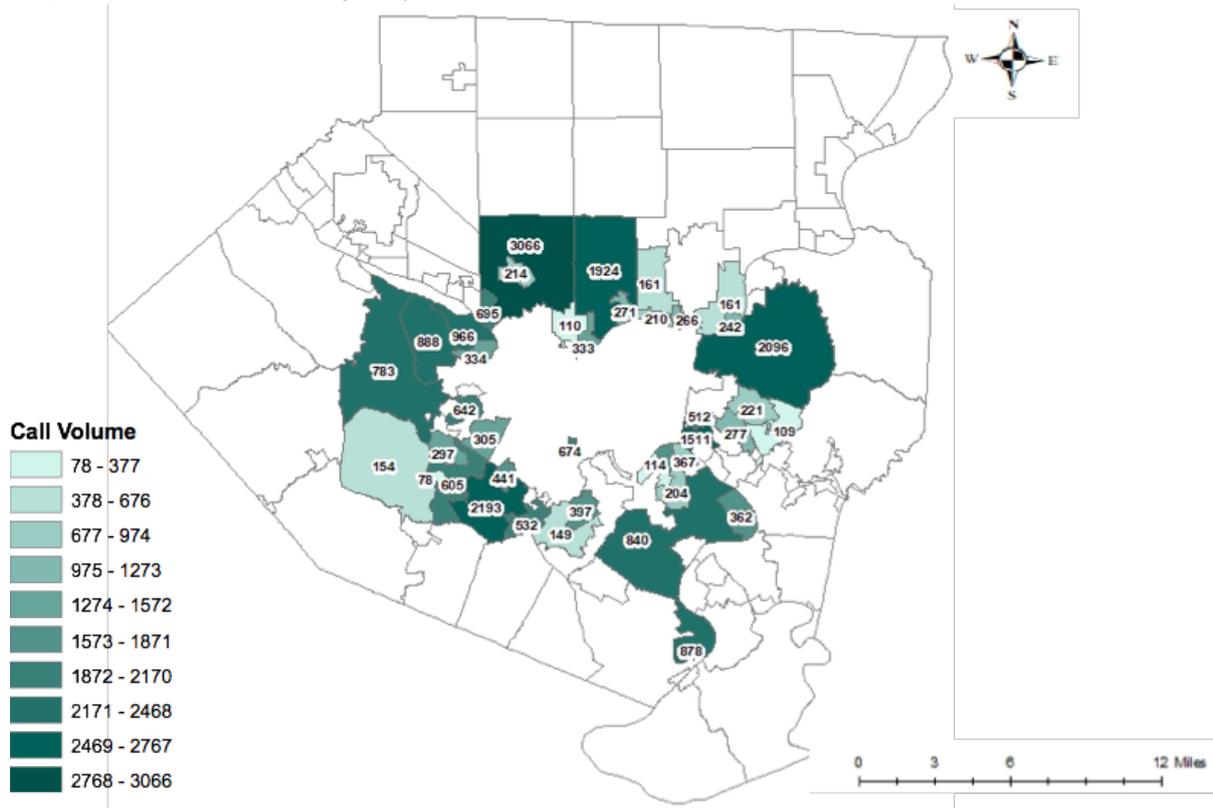
Map F: CONNECT Total Major Fire Apparatuses



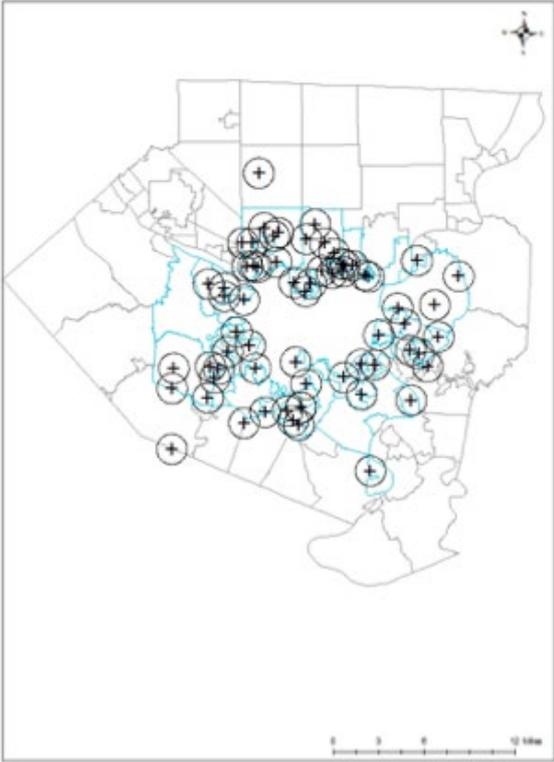
Map G: CONNECT Obsolete Fire Apparatuses



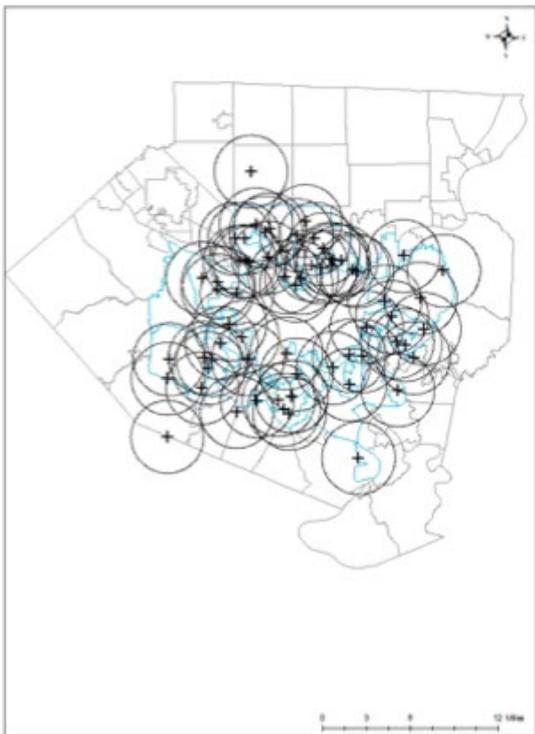
Map H: CONECT Emergency Fire Calls 2018



Map I: CONECT Fire Stations, 1 Mile Response Radius



Map J: CONNECT Fire Stations, 2.5 Mile Response Radius



Map K: CONNECT Fire Stations, 5 Mile Response Radius

