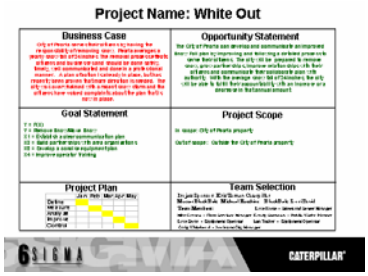
The following report includes all work performed by a 6 Sigma team that was organized by the City of Peoria and Caterpillar, Inc. This partnership was formed to collaborate and find an improved process for snow removal and suggest improvements in areas that will assist the city and their citizens. The information included in this report should be considered private and confidential until the City Manager deems it to be shared with anyone outside of the Peoria City Council and its members. The City of Peoria and Caterpillar own all information contained in this report. This report was completed May 2007.

The following report is broken down into six areas of improvements:

Communications
Planning
Equipment
Operators
Contractors
Partnerships

The Project Charter, Ishakawa Diagram, and Executive Summary, are included. Also, in addition to these, the team has included subjects or themes that are the greatest areas of concerns. The team agreed that these areas of concerns should be placed in the forefront and given attention if the City of Peoria wants to be successful with the implementation of delivering an improved snow plan. After reading this information, city personnel should prioritize what areas of improvements should be completed at reasonable speed and cost to the taxpayers of Peoria. The team elects not to prioritize their findings, giving all issues equal support in order to allow the Peoria City Council and the City Manager's Office to have a clear understanding of these issues and how they should or could be rectified.

Project Charter- White Out



This project was started in January 2007 between employees of the City of Peoria and Caterpillar, Inc. The city was investigating ways to improve their current snow-removing plan after a recent snowstorm crippled the city and stranded their residents. The team was made up of five city employees and a Black Belt from Caterpillar. Weekly meetings were held until the project was completed in May 2007. The following information is the result of that project.
The Project Charter highlights are below:

Business Case

City of Peoria serves their citizens with the responsibility of removing snow. Peoria averages a yearly snowfall of 19 inches. The average daily snowfall is 1.2 inches. The removal process affects citizens and businesses and should be done safely, timely, professionally and is well communicated. Due to the small increments of snowfall, the city is challenged when snow accumulation is large. The city has a snow plan in effect today, but the plan is inadequate for the city's needs. The city was overwhelmed with a snowstorm this past December, and the citizens have voiced complaints about the current process.

Opportunity Statement

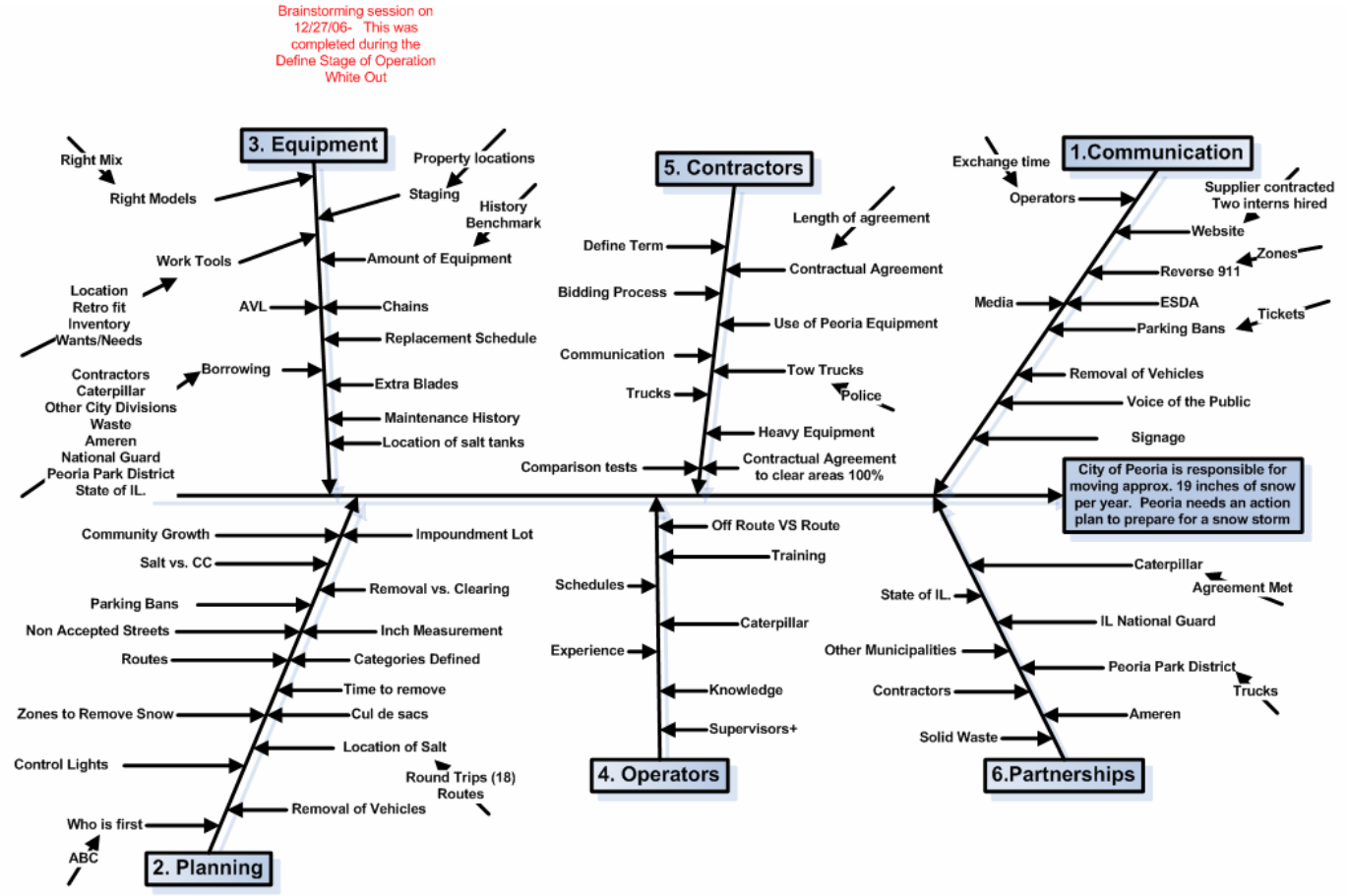
The City of Peoria can develop and communicate an enhanced snowfall plan by improving and following a detailed process to serve their citizens. The city will be prepared to remove snow, grow partnerships, improve relationships with their citizens, and communicate their collaborate plan with authority. The city receives an average snowfall of 19 inches per year and a new plan needs to be enforced that can adequately fulfill both the lower and higher spectrum of 19 inches of snow. Being prepared is the focus of this project.

Team Selection

Project Sponsor: Eric Turner- Caterpillar
Master Black Belt: Michael Hutchins- Caterpillar
Black Belt: Lori David- Caterpillar
City Employees:
Dave Haste - Street and Sewer Manager
Randy Swenson - Public Works Planner
Dave Zears - Equipment Operator
Lon Tucker - Equipment Operator
Craig Whitehead - Assistant City Manager

Team Direction and Root Causes

The following Ishikawa Diagram was used to find the root causes of the six sets of previously mentioned areas of improvement. An Ishikawa Diagram assists in reaching a common understanding of the problem and exposes the potential drivers of the problem. The team defined all possible causes of why these subjects should be studied and why they need to be defined. The team considers this design to be the overview of the project and a concrete plan to keep all root causes of the snow removal process in perspective during this 6 Sigma project.



Weather Data Collected

In order for the team to complete this 6 Sigma project, data had to be collected to understand the City of Peoria's past history of snow accumulation. Caterpillar purchased data from the following source, which has 99.9% accuracy rating. Weather Source is a weather warehouse that keeps a record of daily weather. The team used data from 10/1/90 through 12/7/06. No other information was used for snowfall accumulation in this 6 Sigma report.

This information is now the property of the City of Peoria.

Peoria Greater Peoria Airport, Peoria, IL 61641

Date	TmaxF	TminF	TmeanF	PrcpIn	SnowIn	CDD	HDD	GDD
10/1/1990	70	44	57.0	0.00	0.00	0.0	8.0	7.0
10/2/1990	78	42	60.0	0.00	0.00	0.0	5.0	10.0
10/3/1990	79	50	64.5	0.53	0.00	0.0	0.5	14.5
10/4/1990	73	45	59.0	0.00	0.00	0.0	6.0	9.0
10/5/1990	83	50	66.5	0.00	0.00	1.5	0.0	16.5
10/6/1990	83	60	71.5	0.00	0.00	6.5	0.0	21.5
10/7/1990	67	48	57.5	0.16	0.00	0.0	7.5	7.5
10/8/1990	53	45	49.0	0.59	0.00	0.0	16.0	0.0
10/9/1990	45	41	43.0	0.52	0.00	0.0	22.0	0.0
10/10/1990	44	35	39.5	0.70	T	0.0	25.5	0.0
10/11/1990	60	30	45.0	0.00	0.00	0.0	20.0	0.0
10/12/1990	65	32	48.5	0.00	0.00	0.0	16.5	0.0
10/13/1990	67	39	53.0	0.00	0.00	0.0	12.0	3.0
10/14/1990	67	44	55.5	T	0.00	0.0	9.5	5.5
10/15/1990	64	38	51.0	0.00	0.00	0.0	14.0	1.0
10/16/1990	71	49	60.0	0.00	0.00	0.0	5.0	10.0
10/17/1990	75	42	58.5	0.62	0.00	0.0	6.5	8.5
10/18/1990	49	33	41.0	T	0.00	0.0	24.0	0.0
10/19/1990	55	29	42.0	0.00	0.00	0.0	23.0	0.0
10/20/1990	68	44	56.0	T	0.00	0.0	9.0	6.0
10/21/1990	57	34	45.5	0.01	0.00	0.0	19.5	0.0
10/22/1990	57	28	42.5	0.00	0.00	0.0	22.5	0.0
10/23/1990	63	31	47.0	0.04	0.00	0.0	18.0	0.0
10/24/1990	55	35	45.0	0.00	0.00	0.0	20.0	0.0
10/25/1990	53	30	41.5	0.00	0.00	0.0	23.5	0.0
10/26/1990	57	29	43.0	0.00	0.00	0.0	22.0	0.0
10/27/1990	65	38	51.5	0.00	0.00	0.0	13.5	1.5
10/28/1990	54	31	42.5	0.00	0.00	0.0	22.5	0.0
10/29/1990	65	33	49.0	0.00	0.00	0.0	16.0	0.0
10/30/1990	76	45	60.5	0.00	0.00	0.0	4.5	10.5
10/31/1990	75	48	61.5	0.00	0.00	0.0	3.5	11.5
11/1/1990	73	49	61.0	0.00	0.00	0.0	4.0	11.0
11/2/1990	75	55	65.0	0.00	0.00	0.0	0.0	15.0
11/3/1990	73	46	59.5	0.02	0.00	0.0	5.5	9.5
11/4/1990	46	37	41.5	1.87	0.00	0.0	23.5	0.0

Executive Summary

This report is written with a common sense approach so an average citizen could understand and question the methodology used when reading this 6 Sigma report. This report could be shared with the public if the City Council and the City Manager deems to do so. Many ideas were generated during the compiling of information, some basic while others were very complicated. Even though the ideas may appear to have unrelated causes, they don't. All of these main ideas are interconnected and should be practiced in an overall strategy when removing snow.

Peoria City personnel can be very effective when removing six inches of snow or less. But, can be inefficient when tackling the larger storms greater than six inches. This is due to many reasons, some very plausible while others lack substance. A clear and concise process is the key to a successful plan. The current snow plan does not include 23 center lane miles of additional city growth that has been added in the past few years. An additional ten center lane miles will be added in late 2007, and these miles need to be captured and placed in a new snow plan for the 2007-2008 season. The northern area of the city is growing at a rapid pace, while the southern part of the city has stalled. If the current plan is not defined, the city will fail in all future snow operations.

The city budgets annually for snow accumulation ranging from one to two inches on any designated day during the winter months. When faced with larger amounts of snow, the city is unprepared to remove snow effectively. This is where assistance from contractors is needed. There is a current process asking contractors to bid their services but the process is outdated and not very successful. Since 2000, a contractor bid process has been lacking substance or creativity to capture the right contractors for the city's use. It would be advantageous for the city to improve their current plan, employ contractors, which could counterbalance city expenses that include manpower wages, fuel costs, and overall vehicle maintenance.

Having trained operators who provide flexibility with using other pieces of equipment other than a snowplow needs to be instituted. The city has machines sitting idle when they should be utilized. The city currently owns only four pieces of equipment that would be available for snow removal. The opportunity to increase these units for better efficiency with the snow removal process needs to be considered. Adjusting outdated methods with equipment, operator training, and existing street department methods are in need of renovation.

Good communication is also lacking for the residents of the city. The snow plan should be available for all residents and any information they need should be supplied to them since they are also a key to the success of the plan. The residents need to be aware of the hour limits to complete street clearing, when a parking ban will be enforced, and how the city is subdivided into primary, secondary, and residential routes. Once armed with this information, residents' phone calls would be minimum, therefore allowing the plan to be completed. If residents do call city departments, all calls must be recorded in a database and prioritized after the snow plan time limits have expired.

If the City of Peoria wants to be successful with their snow operation and have in place an effective plan for their residents, steps need to be introduced to actively seek out where the benefits lie in this report. By opening communications of the plan, working with contractors, and having trained operators the plan is ready to be executed. If the residents of the City of Peoria want improved service when snow starts to fall later this year, enactment of this plan will have to be completed.

The team agrees that direction needs to be given to the following subjects, and the city will benefit by placing these ideas into the forefront of their thinking process. Although there are many subjects or themes that need to be initiated, the following should be warranted for a quick resolution.

New parking ban of four inches should be issued- The team could not find any reasons why two inches of snowfall warrants the issuance of a parking ban. A four-inch plan should be put into place since operators claim four inches of snow creates a diversion for the plow operators.

A communication process for residents when calling for snow information- Time and resources are wasted every time residents call to complain about their streets not being plowed. The city is not effective on giving residents clear and concise information on how many hours it may take to have the streets cleared of snow/ice. City Council members must also assist with this process and not interrupt the street department for immediate actions when a resident calls them directly to complain about the snow removal process. Members should allow city personnel to work the plan, not allowing residents to work the plan for them.

Make the snow plan available for the residents- Over communication is the key when working with residents and informing them what their actions needs to be during inclement weather. Residents don't understand the city's plan because the plan is not shared with the community. Placing the plan on the website will assist with this process.

A contractor strategy to assist with snow clearing- Today, the city is inadequate in their snow removal planning because the current contractor process is outdated and should be improved. The current plan collects names of contractors and their bid offerings but excludes how much equipment they may own or the size of that equipment. Having a preparedness plan that includes a strategy to use contractors is a must to be successful when removing snow accumulation of four inches or more. Contractors will then be able to assist with both manpower and equipment needs. Along with this, a cul-de-sac strategy needs to be executed. Cul-de-sacs can take up to eight times longer to clear than a through street. At the current time, the city has over 900 cul-de-sacs and dead end streets, and new subdivisions are developing these in to their neighborhood planning processes. Direction is needed now and budgets must be available to acquire exceptional contractors for the future snow season.

Operator training needs more focus- Operators receive many hours of simulated snow removal training and snowplow operation. But, lacks training with other equipment in their fleet to move snow. Operators do not have the skills to operate the city's machines effectively in the snow clearing process. This includes motor graders, wheel loaders, and skid steers that the city currently owns. At the present time, training is becoming watered down due to operators being trained by other operators who lack the necessary skills. A qualified "Train the Trainer" process needs to be implemented. Sending a few operators through a certified course would keep accountability along with training and safety in the forefront of the city's responsibility. By not having adequate training, the city has idle machinery parked during snow accumulation. This includes motor graders, wheel loaders and skid steers.

Communications

The city has many communication tools at their disposal but have no clear direction on when to use these tools or how effective they may be. Citizens must rely on a proven communication system that can be useful to the masses. For example, should the ESDA siren be activated versus a reverse 9-1-1 system to inform citizens that a State of Emergency has been issued? Is the local media the best way to communicate with the citizens, or should the city's internet site be used? The city is lacking an effective communication process because they have nothing in place to measure if one communication vehicle is more effective than another. Therefore the team decided to look at all communications being used and how it benefits both the residents and the City of Peoria.

Informal Communications

The city has an internet site already established, but the site is not easy to maneuver around by the average user. By improving this site and placing specific snow information on the site, residents will become aware of the snow plan and understand what is needed from them to assist the city.

The city currently has approximately 4,000 signs informing drivers where not to park during a snow-parking ban. Drivers should be aware of these routes and the city must enforce this no parking policy in order to clear the streets successfully.

The city also communicates to the residents by issuing a newsletter twice a year called River City Review.

Formal Communications

The city has given their residents a right to voice their concerns about the snow removal process. Residents calling city departments complaining about the same incidents are creating a communications nightmare. Residents can place as many calls as they want, wherever they want. Phone calls are being handled numerous times because there isn't a process on how to direct or prioritize these calls. This creates a manpower constraint on effective communications for the residents of the city.

The city has many communication aides they can use, including Reverse 911 (Communication Messaging System) where the city can call their residents, the power to use ESDA (Office of Emergency Assistance) to sound the sirens in a snow emergency (which is practiced by other cities), and a written ordinance to place the city into a State of Emergency. All of these communication aides are at the city's disposal to use. The city would be more effective if these tools are used and practiced by the community so residents understand what is needed from them to make the snow removing process a success.

Snowplow operators also have a formal communication process they use but many times it is ineffective during a large snowstorm due to time constraints during shift changes.

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Communication 6 Sigma Findings and Processes

Communication Messaging System- (Reverse 911)

The city can use this system for alerting citizens about snowstorms, parking bans or any other communication that needs to be filtered to the their citizens. Using this communication process alerts citizens the quickest way feasible. There are over 77,000 current phone numbers, and each call costs 16 cents apiece. The city can separate the database into zones so that not every number would need to be called. A recorded message can be used so citizens in different areas receive different messages. However, cell phone numbers cannot be called at this time due to technology offerings. There are many other ways the city can use this service: reporting sex offenders move into the area, missing person alert, or informing a neighborhood about a dangerous dog in the area. The city may be looking at a new contractual service since the current supplier's contract will expire later this year. The negative side of this service is that it can slow the system down when an excessive amount of phone calls are made at one time. A plan could be initiated to call a large amount of numbers at a specific time, thereby reducing the number of calls going out all at once. This would take planning beforehand, but would be easy to complete and maintain. Phone calls may increase back to the city since if the residents are confused by the message. A clear, concise message would alleviate that problem. During an approaching large snowstorm, this tool would be executed since the service is inexpensive and easy to maintain. This system is also budgeted with the Peoria County Sheriffs Department who pays for 38% of the costs.

Website

The city currently has hired two Bradley University student interns to be their webmasters to keep their website current. The city should plan on the citizens going to this site as their first line of information. If the site is up-to-date and interesting to the viewer, the city will get more users on the site. This would be the most effective way to give the citizens current information. The city is already planning on sending emails to the media so they will get timely updates and be able to pass information to the public as quickly as possible. Also, a database of Presidents of Neighborhood Associations is being formed so information can be sent to them. The city should also discuss placing a direct link from the AVL process so citizens can view the snow removal progress as it is taking place. The actual snow plan would have to be available to be accessed by the citizens. This will clarify how the process works and educate the residents on how the city is divided into their corresponding snow routes. The city should issue their parking ban on this website. Also, developing a flyer in a PDF format for the Neighborhood Association Presidents would allow them to download the flyer and tag cars in their neighborhood. This would be an easy reminder for citizens to move their cars prior to a storm. A voice of the customer meeting with the Upland residents reported they would be willing to do this during street sweeping weeks to remind their neighbors to move their cars. The internet site will not reach all of the citizens but will reach a large portion of the population due to the popularity of the internet.

Below is an example of how Aurora, IL, informs their citizens about their snow procedures and answers questions residents may have concerning the removal process. This is an excellent tool that Aurora finds it is successful for their community. They feel over communicating their plan is the best execution they have.

Snow Plowing

How many snow routes are there?

There are a total of 31 (thirty one) snow routes, evenly distributing equipment and manpower throughout the City of Aurora. Several City departments and private contractors each have assigned snow routes. There are 16 routes in the Street Department, 6 routes in the Water & Sewer Maintenance Department, 4 routes in the Parks Department and 5 routes by private contractors.

When do City crews begin snow operations?

The City of Aurora begins snow operations at the onset of any icing of roadways or accumulated snow. During the winter season, we staff three shifts during the week to better respond to any incidents of snow or ice. The City's goal is to clear all streets within 12 hours after the snow stops falling during an average winter storm. Heavier snows take longer to clear.

Which streets are plowed first?

There are approximately 1200 lane miles of roadway in the City. Of these, about 700 lane miles of roadway are designated as primary streets which have the highest volume of traffic and are designated as arterial or collector streets. The remaining 500 lane miles of roadway are designated as residential streets. Primary streets are plowed and/or salted first and during periods of heavy snow fall may be the only streets serviced until it completely stops snowing. Once its stops snowing, we move into the residential portion of the snow route.

What about plowing cul-de-sacs?

Cul-de-sacs are the most time-consuming streets to plow. It can take up to eight times longer to plow a cul-de-sac than it takes to plow a through street of the same size. Cul-de-sacs are also more difficult to clear and generate the most complaints because of the limited space to dump snow without burying driveways, mailboxes, and fire hydrants.

Are there parking restrictions during periods of snowfall?

Motorists are encouraged to move their vehicles off-street to facilitate plowing efforts during any snow storm. For snow accumulations of 2" or more, residents are prohibited from parking on any City street until the snow has been cleared to the curb or road edge. Per City Ordinance 27-171, Violators will be ticketed and towed.

How do I learn the status of snow plowing efforts?

For the latest information on the status of snow plowing efforts, call the Street Maintenance Department at (630) 801-5240.

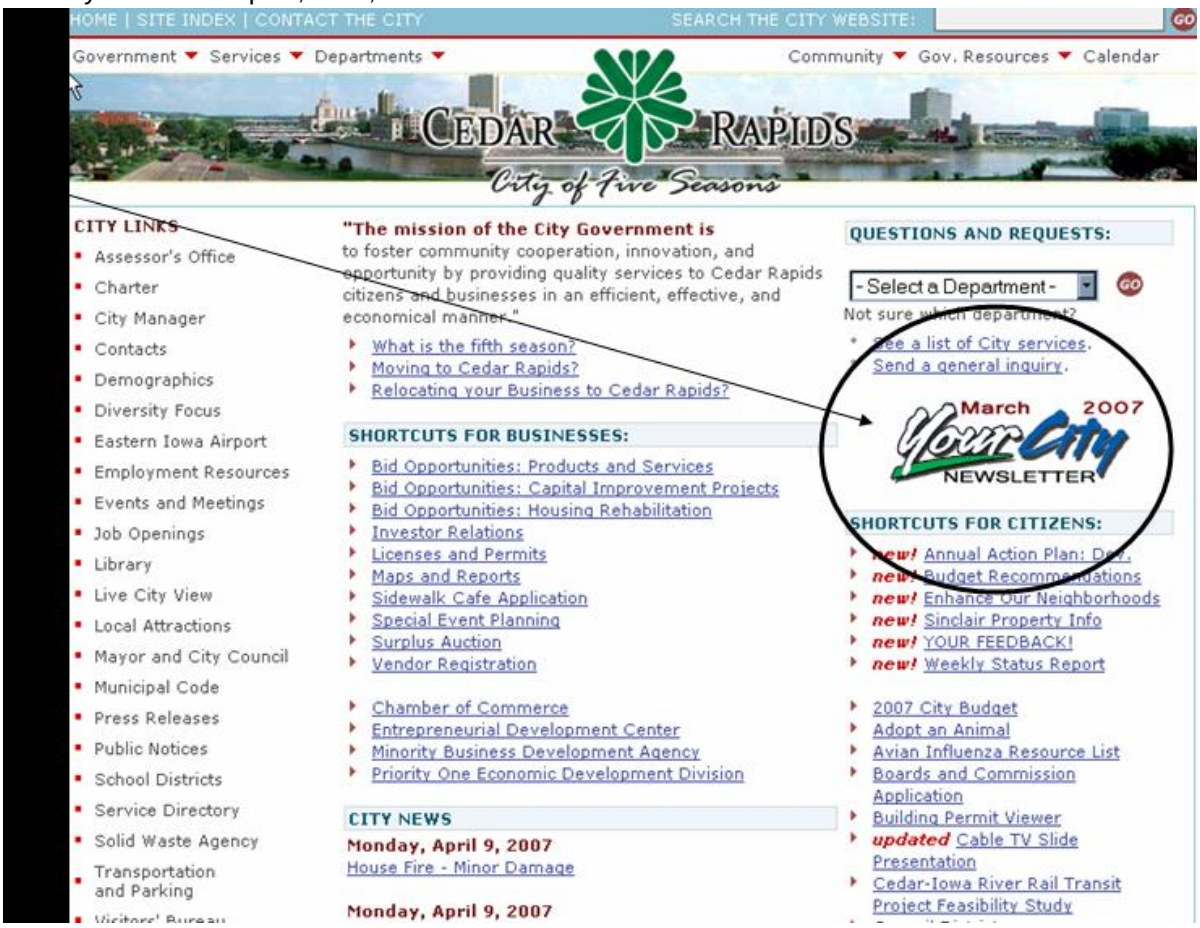
Obstructions of public right of ways

City Ordinance 42-6 requires the removal of any obstruction from any city street, such as garbage cans or basketball hoops. Not only does this impede snow removal but can cause damage to city plow trucks. Additionally, City Ordinance 42-22 requires all mail boxes to be installed according to United States Postal Service Standards (see PS Form 4056).

River City Review

The River City Review Newsletter is only sent twice a year due to budget constraints but it could be placed into a PDF format and added to the website, mailers would not have to be prepared, so mailings could be done more than twice a year. A mailing list could be collected to send to residents who don't have access to the internet. Right now, the city is sending mailers via postal code, but those citizens living outside the city limits do not receive them. Having a specific process that does not include these non-residential communities will save the city time and energy with mailing costs.

The city of Cedar Rapids, Iowa, includes their newsletters in this format.



ESDA (Office of Emergency Assistance)

With a snowstorm approaching, the city can have this department sound the warning sirens throughout the city. After the siren, the city would follow with an emergency broadcast through the television and radio if warranted. The National Weather Service is testing a system that would allow the same message to be linked to all weather band radios so listeners would receive the message. There is also another national program being investigated that would send an automatic message thru Washington, D.C., then on to Lincoln, IL, and then to the residents of Peoria. Both of these systems are in the infancy stage, but if approved, they would have the advantage of high velocity of that emergency message being sent immediately. Extensive education would be needed to train citizens on what to do if they hear the siren during winter months. Right now, residents hear the ESDA siren during non-snow months, which may add confusion. A State of Emergency may be a good link to this system. It should also be noted that ESDA is going to put two new sirens with PA capabilities in the city. One location being looked at is the Peoria Riverfront. Caterpillar uses the riverfront as a holding area for their employees if they have to clear the AB building (corporate headquarters). The city and Caterpillar could work together to use this system, as it would be advantageous for both of them.

State of Emergency

Section 7-35 of the Peoria Code gives authorization to the City Manager to enforce this declaration. This is not used and history has shown it may have never been used. This should not be an excuse. Due to approaching storms or storms that have taken place, this message directs residents on what to do and what is needed from them. The city should put a practice in place -or inform residents with a written statement- on what is expected from them if a State of Emergency was to be issued. Currently, most residents are unaware that this code is on the books.

Sec. 7-35. Local disaster or limited emergency declarations.

(a) A limited emergency may be declared by the city manager, or his designee upon the recommendation of the ESDA director, superintendent of police, fire marshal or director of public works.

(b) The mayor or his designee, as provided in section 7 of the Emergency Interim Executive Succession Act (5 ILCS 275/7), shall be empowered to declare a disaster when such a declaration is required by state or federal law.

(c) A disaster or limited emergency declaration shall not be continued or renewed for a period in excess of seven days except by or with the consent of the city council. Any order or proclamation declaring, continuing or terminating a disaster or limited emergency shall be given prompt and general publicity and shall be filed promptly with the city clerk.

(d) The effect of a declaration of a disaster or limited emergency is to activate the emergency operations plan of the city and to authorize the emergency operations plan of the city and to authorize the furnishing of aid and assistance thereunder.

(Code 1957, § 10-10; Ord. No. 14551, § 1, 8-18-98)

State law reference—Similar provisions, 20 ILCS 3305/11.

Signage

There are currently 3,852-snow route “No Parking” signs in the city. A large number of these are located on no parking routes where a sign does not need to be placed. Residents can be very confused when seeing a regular “No Parking” sign placed right below a “No Parking Snow Route” sign. Residents may believe they are allowed to park there during times when snow is not evident. A simple no parking ordinance, stating a $200 fine in all no parking zones when the parking ban is issued, should be sufficient. Rockford, IL, uses this practice and claims it is successful. Signs or replacement signs would not be needed, therefore decreasing costs to the city. The team feels the two-inch parking ban should be removed and put a four-inch parking ban in its place (this information is included in the Planning section of this report). To do this, signs will have to be refaced. The signs that have the actual inch measurement is 3,351, and these could be refaced at a very reasonable cost, less than $10 a sign.

Primary Signs:	1789
Secondary Signs:	1360
Downtown Signs:	202
Total Signs:	**3351**

Parking Bans

Residents must move their cars and not abandon them. The $200 fee should keep them from leaving their cars on a snow route during snowfall. Residents will have to be trained to understand that the city will issue a ticket or tow the cars. The neighborhoods that have this problem need to heed the warnings once they are issued. The city has an ordinance already in place that directs residents to move their cars from one side of the street to the other at a designated time so plows can clear the street. The city has been ineffective in authorizing this ordinance and allowing residents to disobey the written policy. The city could work with the older neighborhoods on a specific parking ban for them so the larger plows can travel down their streets. Currently, the larger plows cannot clear some of the smaller residential streets when cars are parked on both sides of the street. The city then uses a smaller plow, which cannot push a large amount of snow, causing greater safety concerns and slowing down the snow removing process. Neighborhoods should be allowed to partner with the city and be invited to develop an action plan that would suite their needs. This could include no parking, parking only on designated streets, parking on one side of the street at designated times, and/or other strategies that neighborhoods may develop.

Voice of the Public

A productive neighborhood meeting was held with The Uplands and their residents, which was very proactive. They feel the city should enforce the parking ban and tow cars before it snows. It was suggested that the city should put a $200 ticket on the cars as soon as police officers arrive in the area. By doing this, the city recoups all fines before residents are allowed to move their vehicles, and the police officer does not have to wait for a tow truck. The current plan practiced today is once the tow truck arrives, the snowplow has to wait until the car is towed. This creates a safety hazard. Many times, residents can see a tow truck in their neighborhood and they move their vehicle before the tow truck arrives in front of their residence. This practice allows many residents to disobey the law and not be penalized for leaving their vehicle on the street before snow arrives. By ticketing immediately, the city collects all fees. The team agrees with this idea and supports the city on early ticketing before snowfall is detected.

Operators

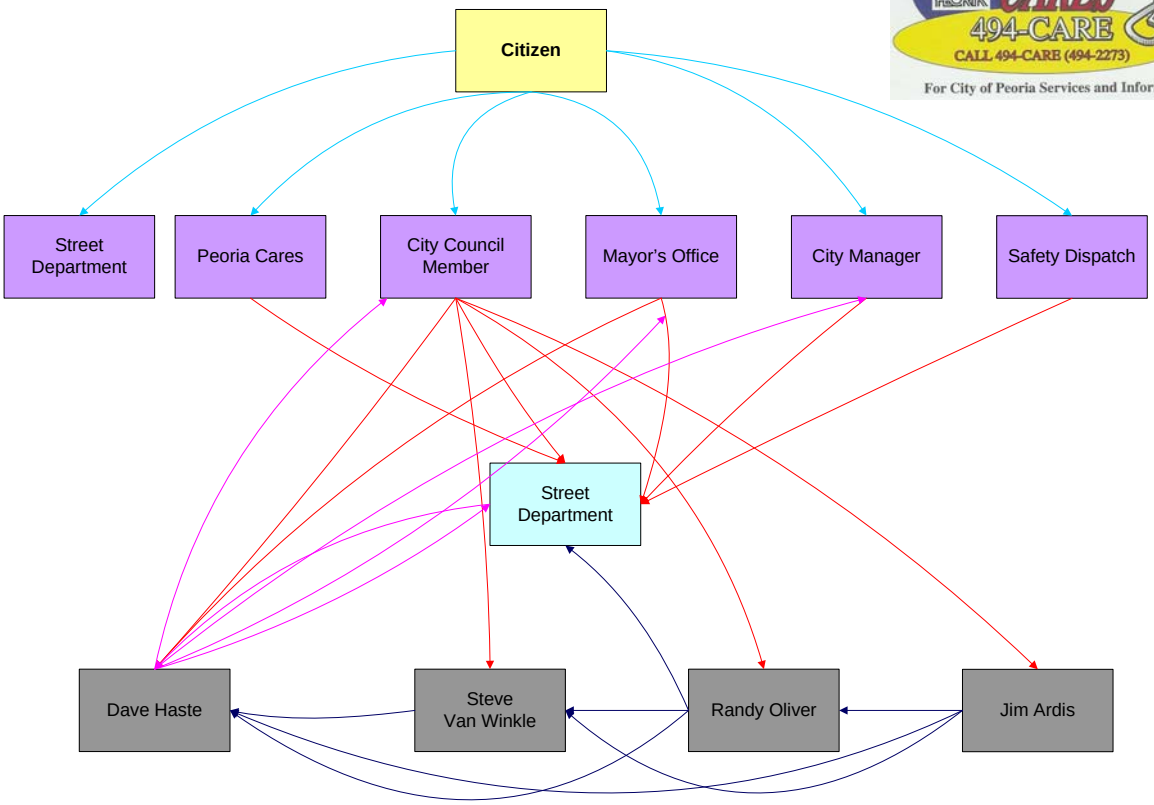
The operators need an improved intercommunication plan. Right now, operators must physically see each other before exchanging information before a shift change. Due to the weather, operators may not be able to arrive at work at the designated time, and the operators coming off a shift don't want to wait for them because of the long hours they have just completed. Operators find little time to debrief the next operator coming on shift so simple ways of communicating needs to be implemented. Today, the operators shade in sections of a master map, which is somewhat effective. This is a subject that can be completed without much input, but the operators must have clear communication with each other and their management during their extended working hours. It was suggested that an employee be a project manager during each shift to make sure all communications get relayed. This same person may watch the AVL screen and communicate with the operators or even assist with phone calls when dispatchers are overwhelmed. They would be the main contact for operators and would be able to decipher much of the non-important information. The only time this would be needed is during a large snowstorm.

Media

The city already has a plan in place, which allows the media up-to-date information on quick news releases. The city does partake in an annual meeting one month prior to the snow season starting, so the media can be informed on how the processes may work during a substantial snowfall. Allowing open communications and direct knowledge of the process would help the public understand what actions are needed from them. The media is one of the best sources the city can use to pass this information on to their residents. The media will also be getting up to date reports due to a database being formed that will email current information directly to them.

Phone Calls from the Public

The public has numerous ways to communicate with city personnel during a snowstorm. An example of this process appears below. Often a citizen will call the street department with a request, and if not satisfied with the answer, they can call their city council representative, the City Managers office, or even the Mayors office. It has been reported that every phone call received is handled three to four times due to this process. The street department will receive over 100 phone calls during a small storm. By looking at the below example, the 100 phone calls are now in the 300-400 range due to how the calls are handled. The city should develop one phone number for snow removal and direct all calls to that center, similar to Naperville and Aurora, IL. This includes all city council members and city hall personnel sending citizens to that phone number. If a person of political power assists a citizen, this would set precedent for all future calls. Even though council members serve their residents, taking snowplows off of their assigned routes, causes bottlenecks in the snow removal process. The city should keep an electronic database (somewhat like Peoria Cares) so they can record complaints and document how the complaints are handled, thus alleviating any future phone calls concerning the same incident. At the present time, residents have too many directions to go with no direct process to have the phone call handled correctly or incorrectly. Nor is there a way to prioritize the calls when the complaints arrive into the street department. Snowplows are being sent in many different directions off of their routes to areas that are not assigned to them. This inadequate process is both timely and costly. A better system has to be implemented.



Street Department Dispatchers

The dispatchers receive no current training on how to answer the public's concerns when they call to voice a complaint. No log is kept of the calls, and often managers do not inform the dispatchers how many hours it may take to clear the streets of snow. Dispatchers need to be told what category the storm is in so they can have effective communication to the residents. The team could not collect any voice of the customer complaints from past storms due to the non-collection of these calls. Citizens are unhappy with the current way calls are being handled. This is apparent since numerous calls are being placed to other individuals/departments. Dispatchers receive an abundance of calls where the caller states that it is an emergency. Even though it is not an emergency, the street department dispatcher takes the call. This process slows them down immensely. During larger snowstorms, a street dispatcher can take up to over 500 calls in a twelve-hour shift. Many of these calls are then transferred into a manager's voice mail to where the call may not be handled in a 24-hour period. These backlogs are enormous. These managers need a process that they can be effective and keep up with their daily work. Also, there is no policy on how many street dispatchers are needed to handle calls during snowstorms. The city can be better prepared if management gave them backup on the calls before it gets to the point of chaos, which happens today. Backup is only provided after dispatchers complain that they cannot handle the numerous amounts of phone calls. A training process needs to be implemented.

Here is a potential draft of that process.

Phone Training for City Personnel During a Snow Storm

- Ask if this is an emergency- If so, the call should be directed thru the 911 system (many calls that come into the street department claim they have an emergency, this should slow some calls down)
- Dispatcher should know what category the snow storm is in and be able to inform the caller on how many hours the city has to clear the roadways
- A manager should make sure the dispatcher has the correct storm information and know what category the storm is in.
- The dispatcher should be able to note the date, time, name and address of the caller
- There should be an hourly update from a manager to inform the dispatchers where they are at in the storm along with any other information that would assist the public.
- The dispatcher should inform the caller to move their vehicle off the street in order to keep the plows moving quicker.
- The dispatchers should have some form of formal training on how to answer phone calls, how to speak with the public, and phone etiquette. A database should be kept on all phone calls so the calls can be tracked as well as how the city rectified the problem

Below is an example of using a process for recording calls either on paper or a possible electronic database format.

Snow Removal Call Sheet for Dispatchers- Draft only

Date _____ Dispatcher _____

Time _____

Is this an emergency? N Y (please transfer to 911)

Name of caller _____

Address _____

Phone number _____

Reason for calling
_____
_____
_____
_____
_____
_____

We are currently in a Category_____ Snow Plan.
The city has _____ hours after the storm ended to clear all primary and secondary streets. Residential streets will be cleared once those streets are completed. Please be patient.

Caller could then be directed to the City's website if the caller would want up to date information concerning the storm and clean up process.

Planning

The city currently has many obstacles concerning the planning process of their snow plan.

- Small increments of snowfall are the norm for the city
- Large storms are few and far between
- Citizens don't understand all snowstorms are different
- Weather cannot be predicted
- Ice and wind change the strategy of attacking the snow removal process
- Citizens must understand the snow plan so it can be effective
- Everyone must treat the snow plan as a plan or as a guide

The team studied many different areas of the planning process. The area the team spent the most time on was the current policy concerning the two-inch parking ban. Much consideration was given to this policy, and the team was challenged to find the pros and cons of why the limit should be set on two inches. **The team has agreed to move the ban to four inches**. All documentation is given why this decision was reached. The actual snow plan will be changed to show this policy recognition if it is agreed to by the City Council and City Managers office.

Having a clear direction on the total hours it will take to clear the streets of Peoria was another concern for the team. There was much debate but again, this is a plan that does not consider manpower or equipment shortages. Hourly totals should only be used as a guide. The city may not be able to fulfill these guidelines unless all manpower and snowplows are available.

Snow routes were also discussed. Later this year, the snow routes will be changed to fit the needs of the citizens. The city has grown over 26 center lane miles in recent years and no thought of this has been incorporated in the current plan. Additionally ten more center lane miles will be added later this year. Some route operators are finishing primary and secondary streets while other operators are still tackling their primary routes. Along with these routes, cul-de-sacs have to have a new strategy. Newer subdivisions are including these throughout their planning processes. These leave tremendous headaches for the plow operators and to the residents.

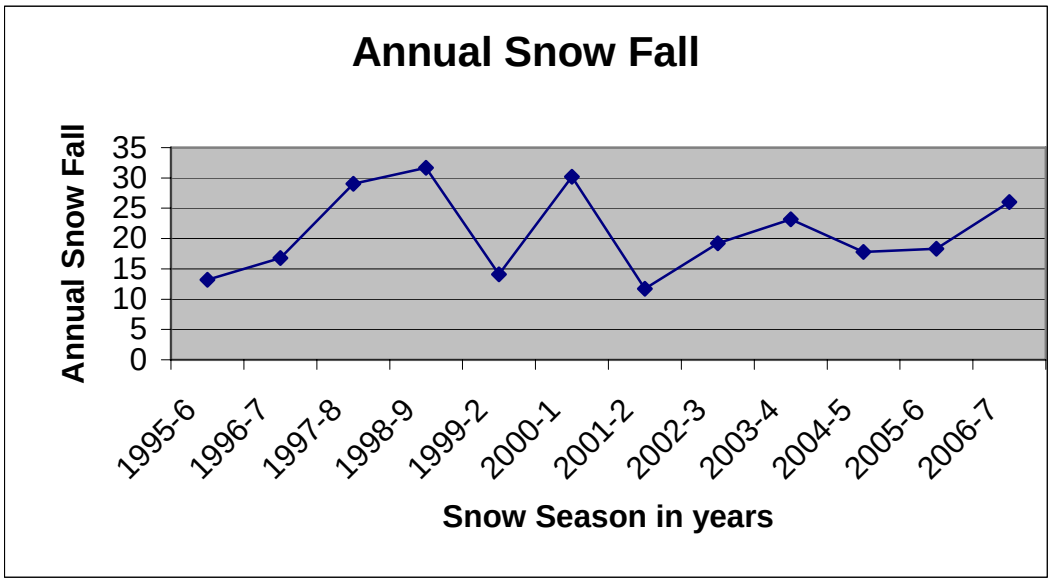
A strategy should also be considered for non-accepted streets since often tax-paying citizens are left out of the snow route planning process. Operators may clean the streets, but the city would be held liable for any damages that may occur.

It should be noted that all cities have different plans that work best for them. Peoria needs to find theirs and practice the plan. The team heard about a city that doesn't plow at night no matter what the circumstances (this means keeping overtime to a minimum); a city that will not spread salt in residential areas (again cost savings); a city that will not plow if snow is less than two inches (fuel cost savings) and a city that will not let the plows work until the snow has completely stopped (safety concerns). Like every municipal group, citizens and their council members will have to face the issues if their taxes should be raised to support more salt, trucks, fuel, and manpower.

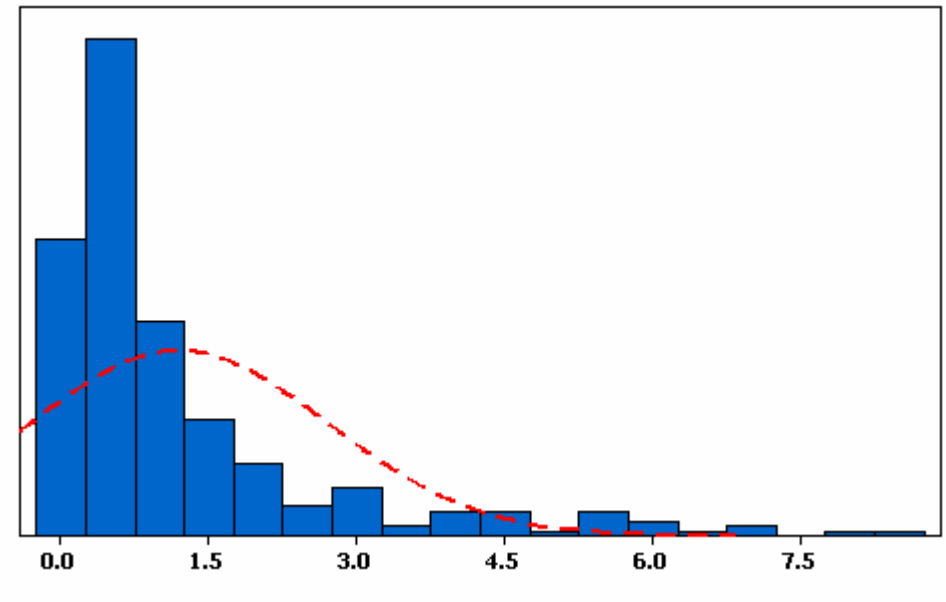
Planning/Operations 6 Sigma Findings and Processes

Inch Measurement- Change in Plan- Current Two Inches to Four Inches in 2007-2008

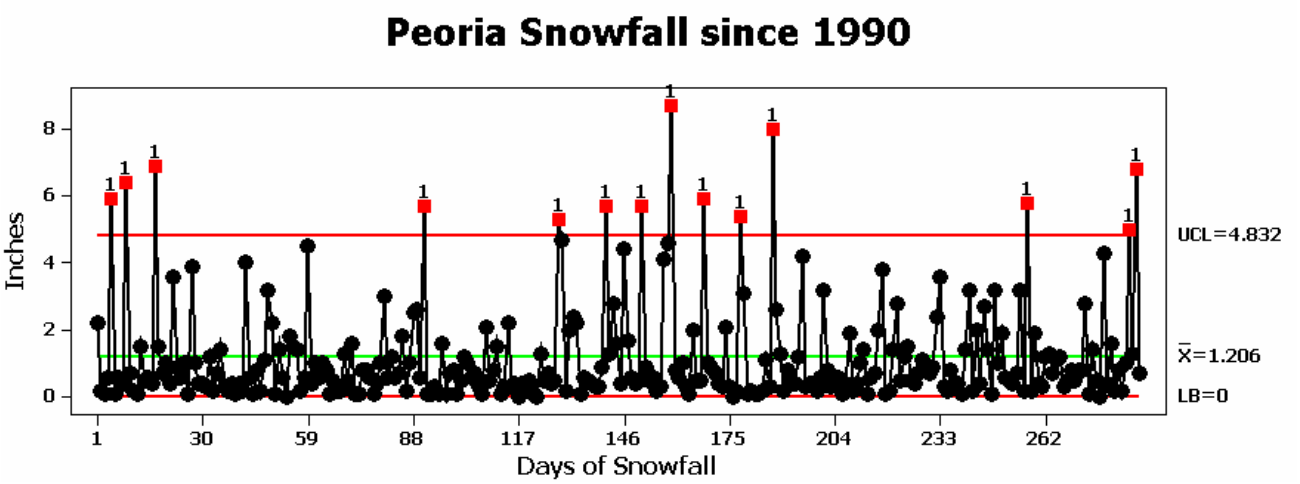
The City of Peoria has experienced some decline in snow activity these past few winter seasons. The current season is starting to increase these numbers. Even though the numbers may seem random, they are quite consistent for the past five winter seasons. With snow increments being so volatile and unpredictable, the city can only plan for the average snowfall in a given season. This will only start the thinking process on how much manpower will be needed and what type of equipment should be on hand. Again, this is just a reference of past history snowfall. The team is looking for consistency while developing a potential plan of action, much like snow seasons from 2001 to 2006. A small trend can be found in the 20-inch measurement within these years.



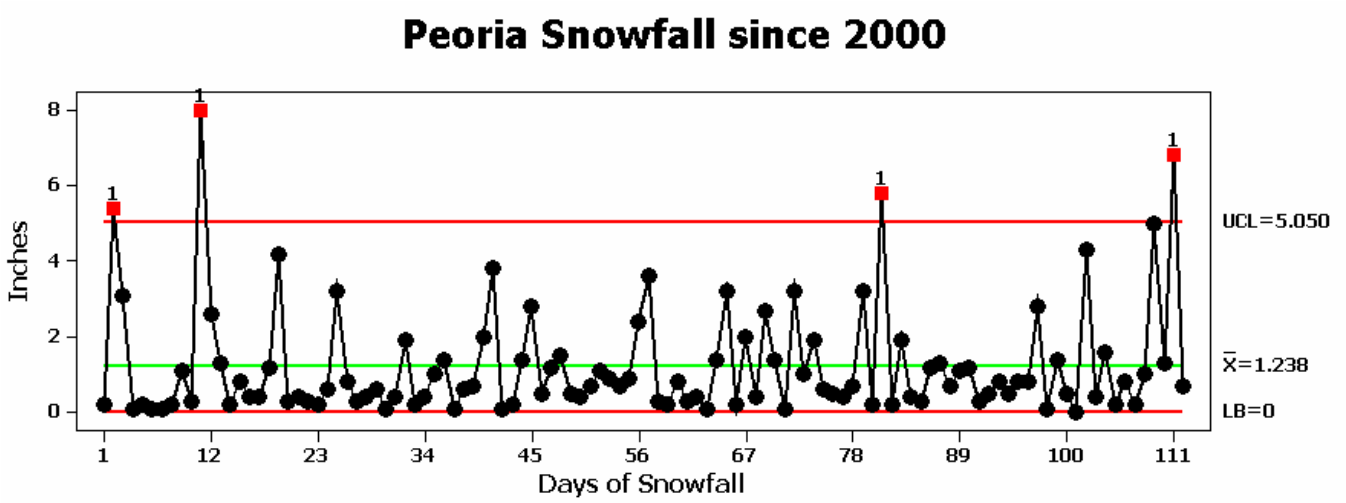
The average snowfall is listed in the graph below from 12/2/90 to 12/7/06. Looking at the blue bars, it shows that predominately most snow measurements for the city are well below 1.5 inches. The size of the bar will add up the days of any accumulation that fell in the above date timeframe. The numbers at the bottom are in inches. It also points to the fact that larger snowfalls over three inches have rarely fallen since 1990 when compared to the total accumulation for a one-day occurrence. The red dotted line curve (Bell Curve) shows what a normal accumulation should look like with the highest point of that curve being the average incremental snowfall for a given day. In other words, Peoria's daily snowfall is most commonly measured in very small amounts. Again, this goes back to the cities planning process. The city currently plans for small increments of snowfall and finds they are unprepared for the larger increments of four or more inches. The city also plans their yearly budgets on smaller increments of snow accumulation. When a larger snowfall of four inches or more takes place, the city does not have the funding to complete the clean up in a reasonable timeframe.



The graph below is a control chart of every snowfall registered in the city from 12/2/90 to 12/7/06. The black dots represent a day of measurable snowfall. This graph displays that over 262 days of accumulation were measured in that time span (288 is the actual days counted). In other words, since 1990, the city experienced 288 incidents of snowfall. The numbers on the right of the graph show that the average accumulation is 1.2 inches for the city during this time, which is represented by the x bar value. The green line shows this amount across the graph. The graph also states that the Upper Control Limit is 4.83 inches; in other words, the team is 95% confident that the city will have a snowfall less than five inches any time there is a measurable snowfall. The number one with the red squares references every time the city received a snowfall greater than the 4.83 inches. This totals just 14 times (days).



The graph below is a control chart of every snowfall registered in the city from 1/3/00 to 12/7/06. It's just like the previous chart but in a shorter time span. The black dots represent the snowfall, which show 111 days of accumulation. The numbers on the right of the graph show that the average accumulation is 1.2 inches for the city during this time- almost the exact amount since the 1990 average. The green line shows this amount across the graph. The graph also states that the Upper Control Limit is 5.05 inches, in other words the team is 95% confident that the city will have a snowfall of five inches or less using just these measurements since 2000. This is similar to the 4.83 inches that was found in the previous chart. The number one with the red squares points out every time the city received a snowfall greater than the 5.05 inches. This totals four times in that timeframe. Both of these control charts are almost identical showing Peoria's weather patterns to be somewhat predictable.



The City of Peoria has a policy that residents cannot park on snow routes if two or more inches of snow are being predicted. Since 1990, the average snowfall for the city is 1.2 inches of snow- almost identical to the average snowfall since 2000. The city has only experienced two or more inches of snow approximately 21 times since 2000, making residents move their cars or being fined for not moving their cars 21 times. This on average is three times per snow season. If the city moves the inch measurement to four inches, the residents would move their cars only seven times over this same period for an average of nearly once a season. The reason for this change is two-fold:

1. City snowplow operators have communicated that two inches of snow does not affect their pushing or removing snow abilities. Having cars parked on the side of the street does not hamper their work. The four-inch measurement is where the operators find cars must be moved in order to do their work safely and successfully.

2. Residents have been given stiff no parking fines since the fee was increased from $40 to $200 dollars. The team agrees with this philosophy and does recognize that some residents don't have driveways or they may be too elderly to move their car when the city is predicting a two-inch snowfall. The new four-inch policy may be a happy trade off with those residents.

The city does have over 3,800 snow signs but the signs stating the actual snowfall measurement would be the only signs that would need the number measurement changed. These particular signs total 3,351 and labor will be have to be included in changing these signs.

Impoundment Lot, Parking Bans, Removal of Vehicles

All three of these are already being answered. By issuing tickets upfront, there is no need to have an impoundment lot. Parking Ban communication is going very well since the communication 6 Sigma piece was completed. Removal of vehicles should be addressed when the vehicles hamper snowplows.

Snow Plan for the City

The team is rewriting clarity into the categories containing the snow inch measurements. These will be defined in the 2007-8 planning process. The team agreed the hours needed to clear the city streets should be adjusted. The team also felt that the snowfall planning execution should be revisited. The new parking ban will be issued with four inches and above. Four inches will also trigger alley clean up and use contractors to fulfill their agreed upon requirements of clearing streets. Category six would allow a State of Emergency to be issued as well as seeking assistance from Caterpillar.

Below is an example;

	Cat 1	**Cat 2**	**Cat 3**	**Cat 4**	**Cat 5**	**Cat 6**
Inches	Ice	< 2 inches	2-4 inches	4-6 inches	6-8 inches	>8 inches
Parking ban				Yes	Yes	Yes
Hours	4-12 hours	4-12 hours	10-24 hours	24-36 hours	36-48 hours	48-72 hours
Alleys				Yes	Yes	Yes
State of Emergency						Yes
Contractors				Yes	Yes	Yes
Caterpillar						Yes
Sidewalks				Yes	Yes	Yes

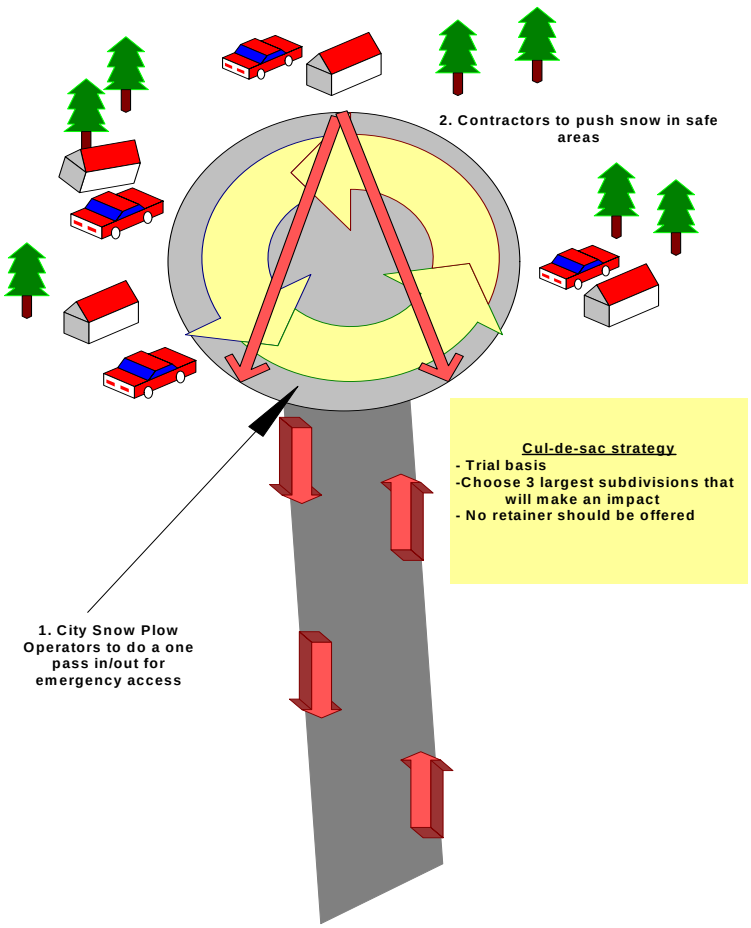
Snow Routes

The team understands that more snow routes should be added due to city growth of over 26 center lane miles within the past few years. The City Street Department will be looking at this over Spring/Summer 2007 and will institute better action plans with these routes and possibly develop routes within routes to even out the growth of those zones. The city currently has 25 snow routes and more routes will be added at a later date.

Cul-de-sac Strategy

The team agrees that cul-de-sacs and dead end streets change the strategy of the snow removal process. The city has over 900 cul-de-sacs and/or dead end streets that they are responsible for. These slow the snow removal process down immensely. The team feels that the city plow operators should do an in/out procedure. This would be where the snowplow simply goes into the cul-de-sac and only does one large circular sweep (this would allow for emergency personnel to travel down the street if needed). Once this is completed, the operator can come back at a later time during the shift and clear the rest of the street.

With a proper budget, the team decided that a cul-de-sac strategy team should be implemented, much like what Naperville, IL, practices. This would be a team with one or two of the following equipment: four by four truck with plow, skid steer loader, wheel loader or other exact like equipment. These teams would then clear all cul-de-sacs in a designated neighborhood. This method would be safer and would decrease time needed to clear the area of snow. The strategy team would only work one subdivision at a time. Equipment should not be loaded on and off a flat bed due to safety and time consumption. Once the team gets to their location, they would stay there until the job is completed. This would allow the snowplow operator more time in the primary routes and spend less time on the residential streets. The city could start with a few local outside contractors to fulfill this need. The city could adapt this strategy for their own use by purchasing new, smaller equipment or by renting the equipment from local equipment dealers. However, the city has manpower issues that may not assist them with fulfilling this strategy unless they use a contractor. The city should decide which neighborhoods could use this strategy prior to the snow season starting. This strategy was used once during this current snow season and was successful.



Community Growth

The community has grown over 26 center lane miles in the past seven years and will be growing another ten center lane miles later this year due to new neighborhoods being developed. No consideration has been given for equipment or manpower needed to clear the streets. This team is taking that strategy forward as we move along with the planning process.

Non-Accepted Streets

The city may find that they have non-accepted streets due to subdivisions being developed and having residents move in before the actual development has been completed. This process is leaving some residents without snow removal procedures. The residents pay taxes to the city, have the city pick up their refuse, and also have emergency personnel aid them, but they are not allowed city street services. If the city would damage the pavement prior to becoming an accepted street, the city could be held liable. The city needs to find a way to communicate with these residents so they understand that the city is not holding them back from getting the service they need and deserve. Developers have to be informed that it is their responsibility to get these roads accepted before street service will begin. This communication can be done thru the city website and the media. The team has also stated that a sign posting could be developed to inform residents that their street is a non-accepted street and what steps are needed to get the street in acceptance manner.

Street Clearing Rotation Method

The street department uses a well-developed and excellent process with flipping their street schedules so residents are not always first or last on getting their streets cleared. The communication process should be given to residents because they may not understand it. Many calls will come to the city where residents feel they are being slighted due to this schedule. Residents forget about the smaller snowfalls in-between the larger ones and may not understand where they are in the cycling process. Communication with residents so they understand the snow plan will alleviate this confusion. This rotation process works and has proved itself as very satisfactory with the residents.

Location of Salt Piles

The city has to have a third salt pile location. Currently, the city has one on Washington Street (green) and another on Dries Lane (red). Both of these were adequate before the city had grown larger in the northern quadrant. Operators on average have to make an 18-mile roundtrip to get salt for their routes. Trucks would like to stay at 50% salt capacity in order to have weight on the axles so the truck does not become stuck when traveling in the snow/ice. This roundtrip creates much wasted time on the back and forth travels and is added waste to the city in fuel costs and safety. At the beginning of the snow season, the State of Illinois did agree to have the City of Peoria use their salt pile when needed. Since this time, the state has taken that offer off the table due to state property and accounting procedures. Peoria offered to put salt back on the pile in an agreeable timeframe but this did not constitute an agreement with the state. The city has been meeting with Mt. Hawley Airport personnel and trying to unify an agreement in that location, which would be a greater asset to the city than the earlier state location mentioned.

Control Lights

Having the snowplow operators in command of changing the city lights from red to green to keep traffic flowing and the snowplows moving at a desirable rate of speed may not be needed. The operators see this as little or no benefit at this point. Operators feel parked cars on non-parking routes should be given more time and resources since this is their largest obstacle on keeping the streets cleared of snow.

Planning for the Disabled

The team met with Dawn Weber and Roger Sparks who are on the Mayor's Advisory Commission for the Disabled. They were representing the voice of the customer for the disabled. Dawn and Roger would like to see a city ordinance that requests residents to clear their sidewalks or be fined. They did offer information on two other cities that enforce this practice, Napoleon and Toledo, OH. The team understands their complaint but can't agree with the reasoning. This practice may be unfair to other disabled people and to the elderly because they are not able to clear their own sidewalks. There is a group of volunteers that will come and clean

the sidewalks for the disabled, but the volunteers may not be able to fulfill every call, leaving many people with fines levied against them. The team would like the city to find another plan if at all possible. Both Dawn and Roger would like to see more focus on curb cuts since it may take weeks before they are cleared of ice and snow. Even when a handicapped person may be able to take the bus, the sidewalks are not cleared to get to the bus or the bus stop is not cleared for a wheelchair. The city needs to work with City Link on finding a better proposal to this problem. This includes the snowplow operators being more concerned on their curb cuts or the city being more involved with understanding what obstacles a handicapped person may endure in the city. Having City Council members spend a day in a wheelchair may assist with these thoughts. This is only one idea in the gamut of potential solutions.

Equipment

The team had a poor cooperation process for this part of the 6 Sigma project with no fault to them. Information was requested but never supplied. Even though the information is lacking and sub par, it should not be dismissed.

The city currently has enough trucks/plows to participate in the current snow plan, but it lacks in supporting equipment on the construction side. The city should take advantage of all equipment they own and plan to have them in operation during the winter seasons. Currently, the city has only one motor grader, two skid steer loaders and three wheel loaders. Two of the wheel loaders are used for loading salt during the storm, but the other machines are kept idle. Motor graders and skid steers are the preferred choice of equipment when clearing residential areas and cul-de-sacs.

The city has recently purchased new snowplows and the trucks are outfitted with new side calcium chloride tanks so the trucks can be used for other city work during the snow season. The older plows had to have these tanks put on and then taken off so they can be used in other applications.

The purchasing of chains for tires was also discussed. This should be left up to the experts on both the safety and cost before a purchase would be made.

The team did discuss the staging of equipment to help with battling larger storms and getting the plows out on the street quicker. By showing storm preparedness, the plan can be completed in a much smoother cycle.

The cost of snow removal equipment, labor, and the snow plan is expensive for a city to maintain. Information is included on those expenses as well what residents should consider when looking at the true costs of removing and clearing snow.

Equipment 6 Sigma Findings and Processes

Equipment Owned

The city currently owns 43 trucks, 31 ten-foot plows, and 12 eight-foot plows. The average age for these trucks is approximately eight years old. The city also owns two snow wings that are rarely used. The construction equipment owned is included in the following chart. The city has a very old fleet and the hours of the units could not be collected. The other information that was not given was the value and the current liability these units may be costing the city. The team was informed that many years ago, a financial report was given on a monthly business cycle that would track how much these machines were costing the city in real dollars. Example- the two rubber tire roller units are costing the city more money by keeping them operating since the city cannot get parts for them because the manufacture is out of business. The city currently does not keep track of used equipment pricing to see if selling a unit at the appropriate time may be more beneficial to the city than keeping it and selling years later. The city missed a great opportunity with this procedure in 2005 and 2006 when used iron was at a premium. There are many eager buyers for municipality equipment due to low hours being accumulated on the machines and the care that they experience.

Identifier	Make	Type	Age in years
280	Cat	Skid steer Loader	2
281	Case	Skid steer Loader	4
207	Cat	914IT WHL	15
208	Cat	928 WHL	8
228	Cat	938 WHL	10
243	Case	BHL	18
233	Case	BHL	6
240	John Deere	BHL	10
226	Cat	M318	18
211	Cat	12 Motor Grader	18
220	Altech	Rubber Tire Roller	Old- no parts available
232	Altech	Rubber Tire Roller	Old- no parts available
229	Cat	Steel Wheel Roller	?
203	Cat	Steel Wheel Roller	?
200	Bitelli	Grinder	8

Replacement Schedule

No replacement schedule is given to management concerning when equipment should be replaced. This needs to be developed as soon as possible for the city and their taxpayers. Below is a copy of another municipality's schedule and how they plan ahead on their replacement costs so they can be prepared for budgetary concerns. The team would have been able to fulfill this requirement and produce a report for the city, but the information was either lacking or not given to the team.

TABLE 3.2
SOLID WASTE EQUIPMENT REPLACEMENT SCHEDULE

Equipment	Age	Replacement Year	Cost to replace	Issues
1977 Dodge ¾ ton pickup (#4)	26	2004	$20,000	Used for dead animal pickup and miscellaneous, used daily
1980 Dodge ½ ton pickup(#9)	23	2005	$20,000	Used for miscellaneous, used daily
1976 Ford LN9000 (#11)	27	2005	$25,000	Switch Tractor for transfer station
1995 IHC Roll off truck (#5)	8	2012		
1995 IHC Roll off truck (#5)	8	2012		
1997 Ford F150 (#3)	6			
1995 IHC F8200 (#8)	8			Switch Tractor for transfer station
CAT ITF28 1994 (#7)	9	2009	$135,000	Used to move and compact trash in transfer station
John Deere 1982 (#10)	21	2004	$135,000	Used to move and compact trash in transfer station
Bobcat 1995 (#12uk)	8	2010		
Can Crusher	8	2010		
Bailer	8	2004	$75,000	
Compactors-Air, SC,Gold,Nu,Sar., Reed Crk (6)	9	2008	$6,500 ea ($39,000)	
Compactor-Hickory C.	7	2010	$6,500	
Compactor-Hartwell	6	2011	$6,500	

Extra Equipment

The city has extra trucks and snowplows in case they are needed during a larger storm. Currently, four to five trucks are being maintained. Since the trade in value is low on these vehicles, it would benefit the city to keep the trucks on hand and fill them with the needed manpower. The trucks are used when needed or when other trucks may be down for maintenance problems. The city should enact a plan to use all the trucks during a storm and fill the seat with a qualified person. Having a current database that collects other city employee's names that are qualified to operate snowplows should be maintained. By giving these employees an opportunity to work overtime and having no idle equipment, the city would be more effective with clearing the roadways.

Location of Equipment

The city currently has only one location where they store all snowplows. When a shift starts, the snow usually has not started so there is no problem for operators getting to their respective trucks. When the next shift arrives, problems do arise. Many operators cannot make it into the one location and/or it becomes chaos when everyone leaves/arrives at the same time. The city could stage their trucks before a snowstorm by keeping trucks down in the southern part of the city using Washington St., using Dries Lane for the middle of the city, and using another spot up North to store trucks for those areas. Operators would pick up their truck at this location and return them in the same location for the next driver. This would alleviate logistical problems by thinking the plan through and communicating the plan to the operators so they know where they need to begin their route. This plan could be adapted to be used in heavy snowfall only.

Location of Salt Tanks on the Trucks

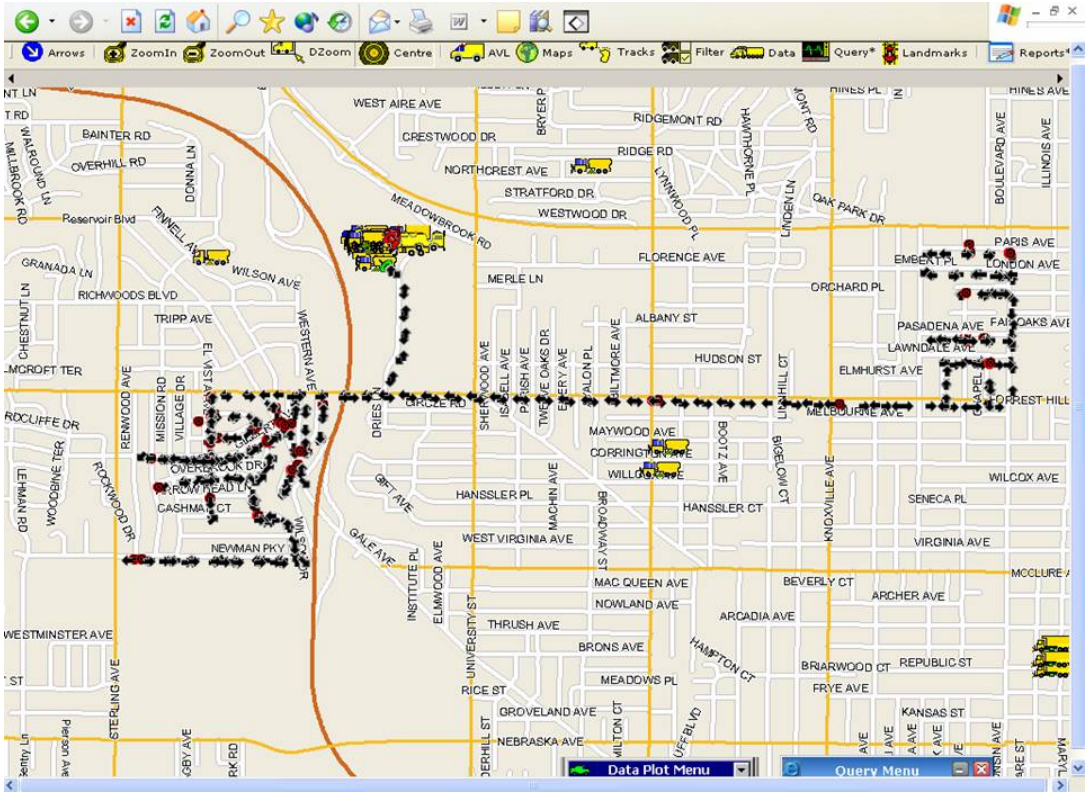
The team studied where the current salt tanks are located on the older trucks. Once the tanks are placed on the truck, the truck cannot be used for other purposes. Due to costs of adapting a new design or designing a coupler, this is not cost efficient. All new trucks are being purchased with side tanks so this subject will not be discussed.

Chains

The team has discussed using chains on the tires of snowplows to assist with traction during a storm. The city needs to discuss safety, cost, and maintenance before a purchase. Discussion on newer designs like nylon chains was also presented. This team feels they are not the true experts on whether or not chains should be purchased.

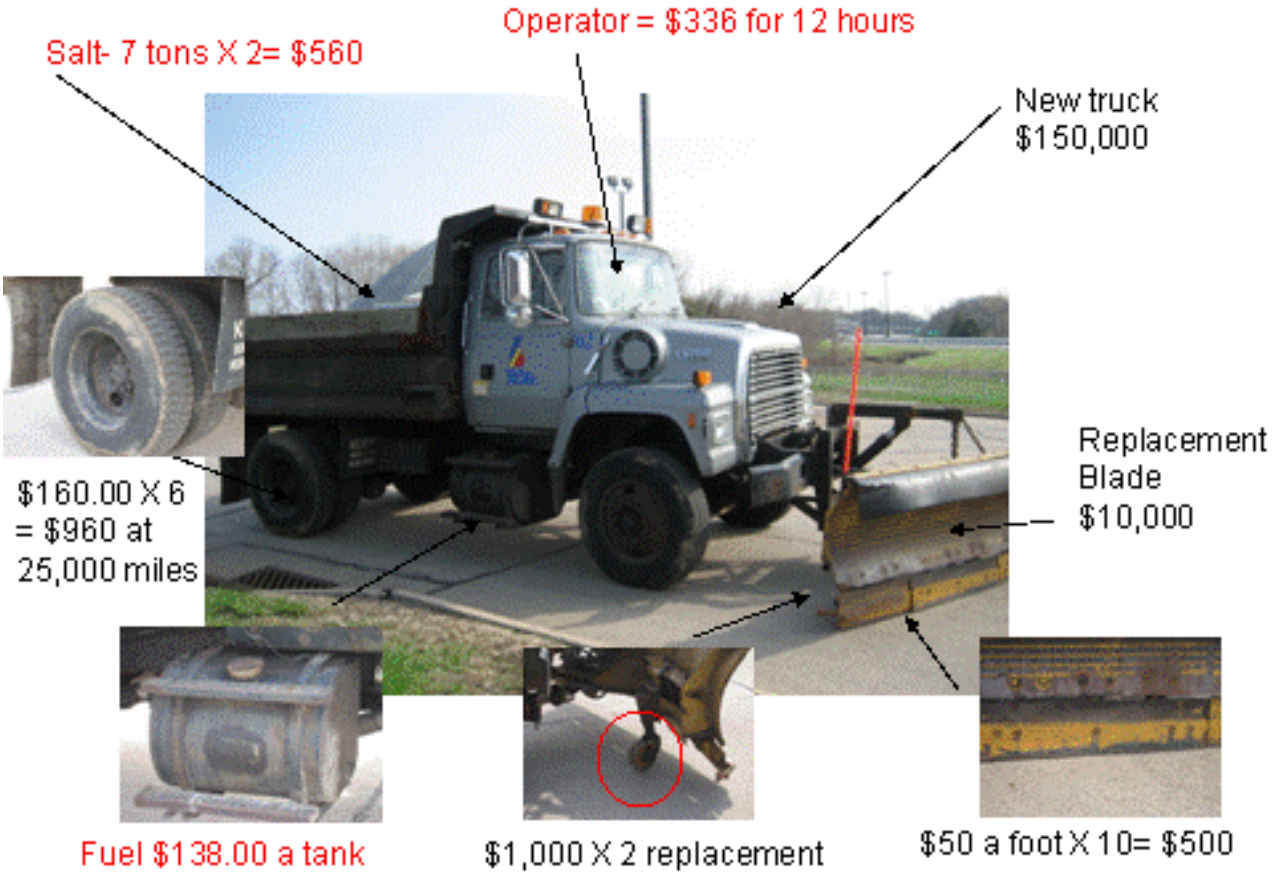
Automated Vehicle Locator (AVL)

The city introduced AVL to their drivers in the first quarter of this year. At the current time, the managers feel the system adds common sense into their planning purposes. It can inform the viewer what streets have been cleared or have not been cleared. It also feeds back information on the current location of the plow so citizens can get quicker information when their neighborhood may be cleared. The only fallback to this system is that someone has to view the screen for instant response. This equates to extra manpower since the city does not keep an individual inside headquarters to man the system. This could be a project manager during a larger storm. The city needs to find all the value that this system can bring to them and use that information to fight larger storms. This is an excellent way to find out how successful the current snow plan is or where it lacks direction.



Cost of Doing Business

The City of Peoria incurs incredible cost when fighting a snowstorm. The following picture puts those costs in perspective during a basic twelve-hour shift, which is the common practice for the city during snowfall of two inches or more. The figures in red are corresponding to that storm while the figures in black are the normal cost for the equipment. It should be noted that this does not take into account the other types of equipment that can be used; for example; wheel loaders, skid steer loaders, and/or motor graders. Also, it does not take into account management salaries.



Operators

The City of Peoria currently has a workforce of 36 full time snowplow operators with 20 part time operators who are guaranteed at least 24 hours of work each week. All operators must receive training prior to operating a snowplow or any other type of construction equipment. Experience seems to be just as important or more important than actual training. The city lost a great deal of experienced operators a few years ago due to an early retirement plan. It will take more on-the- job training to get the experience that is currently lacking. Even though the operators may seem young in experience, many of them are very good at operating the plows and some of the construction equipment.

The city has recently taken advantage of Caterpillar's operator training which focused on removing snow with motor graders. The Caterpillar Edwards training group reported that the four operators participated in the two-day program were excellent to work with and they invite more city operators in the future. The desire to learn was evident to the trainers involved with that group. A well-established plan is included that would assist the city with further training. The team kept in mind accountability of the operator and the city to keep everyone safe when any type of equipment may be used.

Training records are kept for the operators, but the record keeping method should be improved. Right now, there is not one safe source where those records are kept or in what fashion. The city should manage the records and complete them in a consistent manner. A professional database could be built at a very low price or borrowed from another department in the city.

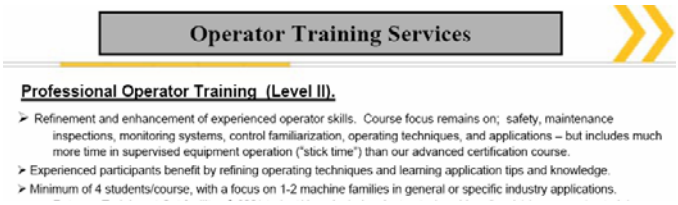
Currently, one manager is available for all three shifts. Even though the operators may work a mandatory 12-hour shift or stay for a maximum of 16 hours, only one manager works the entire operation. One manager on the street during a 24-hour period does not seem safe if this person has to be available during those 24 hours. Many poor decisions can be made when an individual is tired or sleep deprived. This includes operators as well.

The city may find that they have a snowstorm move in quickly and they could possibly have no snowplows on the streets due to the overtime call in method. Operators do not have to make themselves available for overtime if they cannot be reached by telephone. Currently, the operators are under a contractual agreement, which dictates their hours, and work rules. The city lacks direction on how to better serve their residents when faced with larger storms that exceed seven inches of snow. The city must reevaluate the work rules and gain an understanding with the operators to accomplish resident's needs during these events. Inadequacies of not completing the snow removal process should not be dictated by procedures, but should be dictated by what the community expects and pays for.

Operators 6 Sigma Findings and Processes

Training

Currently the city lacks in certain aspects of training. A more formal approach should be used which includes “Train the Trainer” type classes and continued education training. Right now, operators are only as good as the person who instructed them. This system has become watered down and is in need of improvement. The city can no longer rely on experienced operators to train newly hired employees due to the retirement of many of these skilled operators. The city has recently taken advantage of training with Caterpillar. Nine operators took an eight-hour training course concerning snow 101, safety walkarounds, and overall equipment information. In April, four operators completed a 16-hour training level two motor grader class thru Caterpillar.



To assist with future snowplow operator training, it would help the city to put equipment training from the manufactures in their bid specs when purchasing equipment. This way, the manufactures would be accountable for that training and assist the city with this liability. We also met with resources from the State of Illinois to understand their training process. Their snowplow operators receive only one to three days working with rock similar to the City of Peoria. They also have a dedicated trainer for salt management where they train their operators how to spread salt evenly and to spread only the directed amount needed. This has saved the state $100,000 this snow season alone. Since a ton of salt costs the city roughly $40, the city could see many benefits from this type of training. The state has offered to facilitate this training with their instructor and the City of Peoria snowplow operators.

The city’s training is listed below, both current and possible future classes.

City Of Peoria Snow Removal Operator Training Process

Current Training-

Snow Plow Operation- 80 hours
Travel their perspective snow route
Understand the basics of the snowplow
Learn how to push using rocks/dirt
How to spread and distribute salt

Construction Equipment-16-160 hours
Trained from experienced city operators
Equipment dictates hours needed to be trained
No written process or sign off on training

Should be-

Snow Plow Operation- 80 hours
Travel their perspective snow routes
Understand how to operate a snowplow
Know all safety features of a snowplow
Have a basic snow 101 class
How to read city maps
Able to recognize weather conditions
Learn the basics of salt spreading
Have mechanics give an informative “how to” class
Manufacturer of truck/snow plow give safety/operation class (put in bid specs to make sure training is included in price)
Learn how to push using materials that simulate snow/curbs/cul-de-sacs
Construction Equipment- 16- 160 hours
Train the trainer certification from respective company
Simulation training with certified operator
Continued education learning
Keep up- to-date records
Record all training completed

Training Records

The city does keep a record of all training completed by the employees in this department, but the records are only in spreadsheet form or in another type of electronic form. The city should adapt only one electronic type of database so training classes can be recorded. If the city would need to validate a training class that had been completed, managers may have to find the information in more than one area, and it would not necessarily be in sustainable form. Keeping a database would show commitment with training and would also prove accountability if records had to be presented in court due to an accident or injury. Training should also be developed to direct these operators what classes are available and/or what classes have to be completed to fulfill job requirements if need be.

Equipment	Street Sweeper 204	Street Sweeper 222	Street Sweeper 234	Street Sweeper 236	Street Sweeper 235	Skidloader 237	Case Skidloader 280	Endloader 281	Endloader 207	Endloader 208	Case Backhoe 228	Case Backhoe 243	John Deere Backhoe 233	High Hoe 240	Tiller 226	Motor Grader 210	Oil Distributor 211	Chip Spreader 216	Flusher 230	Semi Tractor 225	Rubber Tire Roller 247	Steel Wheel Ro	Rubb
Employee																							
Shinall	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03					Pre '03	Pre '03	
Tucker		Jan-05					Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03			Pre '03	Pre '03	
Proctor																							
Zears	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03		Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	
Shilling		Sep-05	Sep-05	Sep-05	Oct-05	Oct-05	Feb-05	Feb-05	Feb-05	Feb-05	Feb-05										Pre '03		
Chavez	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Feb-05		Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	
Madrigal	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Jan-04	Pre '03	Pre '03						
Simmons	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03		Feb-05				Pre '03	Pre '03	
Lulay	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03			Pre '03	Pre '03	
Doran	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Feb-05					Pre '03	Pre '03	
Clift		Apr-05	Apr-05	Apr-05	Apr-05	Apr-05	Feb-05	Feb-05	Pre '03	Pre '03	Pre '03					Pre '03					Pre '03		
Thies		Jan-06	Feb-06	Feb-06	Feb-06	Feb-06	Pre '03	Pre '03		Dec-05													
Bromley		Feb-06	Nov-05	Nov-05	Nov-05	Nov-05	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Mar-05								
O'Keefe	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Oct-03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03								Dec-05	
Cagle	Mar-06		Apr-05	Apr-05	Jan-06	Jan-06	Apr-05	Mar-05	Feb-05	Feb-05	Mar-05												
Phillips	Pre '03		Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Dec-03	Pre '03	Pre '03	Pre '03	Pre '03								
Maras	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Dec-03	Pre '03	Pre '03	Pre '03	Pre '03		Pre '03				Aug-05			
Anaya			Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Feb-05	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Feb-06					Pre '03			
Wright							Pre '03	Pre '03	Pre '03	Dec-03	Pre '03	Pre '03	Jan-05	Dec-04		Pre '03							
Cunningham							Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03									
Taylor			Pre '03	Pre '03	Jan-06	Jan-06	Pre '03	Pre '03	Dec-03	Pre '03	Pre '03	Jan-05	Dec-04	Dec-04				Aug-05					
Cottelleso	Nov-04	Oct-04	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Feb-06							
Clark			Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Jan-05	Feb-06							
Hopkins	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Dec-04	Jan-05	Jan-05			Feb-06	Aug-05				Nov-05	
Duncan		Jan-05					Pre '03	Pre '03	Pre '03	Pre '03													
Streck							Dec-04	Dec-04	Dec-04	Dec-04													
Jackson			Pre '03	Pre '03			Jan-06		Pre '03	Pre '03	Pre '03												
Sorrell			Nov-05	Nov-05			Dec-05	Jan-06			Dec-05	Jan-06	Jan-06										
Coffey					Nov-05	Jan-06	Pre '03	Pre '03	Feb-05	Jan-05	Jan-05												
Bowen							Pre '03	Pre '03	Dec-04	Dec-04	Jan-05												
Cooper					Jan-06	Jan-06	Dec-05			Dec-05	Dec-05												
Sparks			Jan-06	Jan-06	Jan-06	Jan-06	Dec-05			Dec-05	Dec-05											Aug-05	
Brooks			Jan-06	Jan-06						Jan-05													
McClain											Jan-06												
Mosley							Jan-06			Jan-06													
Moore										Jan-06	Jan-06												

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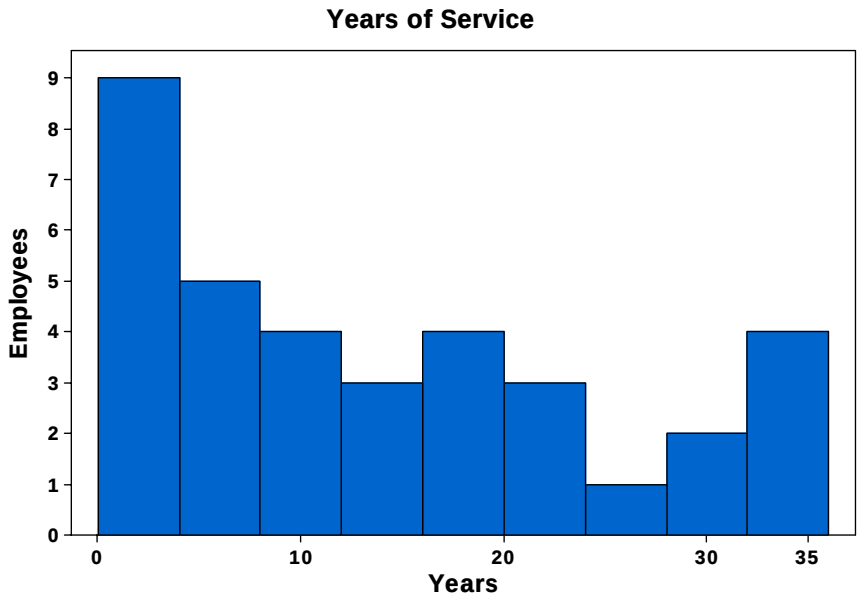
Tucker		Jan-05					Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03		Pre '03	Pre '03	
Proctor																							
Zears	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03	Pre '03		Pre '03	Pre '03	Pre '03	Pre '03	

Knowledge



The city currently has 36 full time snowplow operators. Their experience in years is listed above. Even though the average experience is 11 years, 16 of the 36 have less than 10 years experience. Of those 16, 11 have less than five years' experience. The teamwork needed to be successful with the execution of a snow plan takes numerous years. If the average snowfall is 1.2 inches, operators may not get the opportunity to work in a storm over six inches of snowfall. It may take three to five years or more to work a handful of storms to improve their skills. This is one major frustration with training. On the job training is the key to being successful with snowplows. It may not be viable for the city to send operators to other cities that experience larger amounts of snowfall for training. This is due to cost and to liability factors. Operators may be able to hone their skills thru education about the snowplow and the manufacturer should supply this. Some operators will eventually be replaced with new employees who may not have experience before being hired. Advanced planning should take place to train these new operators.

The city also employs 20 part-time operators and has access to eight other city employees to operate plows. These employees are not included in the above chart.

Supervisors

The city currently only has one manager to oversee accountability for snowplow operators, two supervisors, call in the overtime list, answer citizens' complaints during the snowfall, and is the overall project manager during a snowstorm. Currently, this amounts to over 50 employees to manage. This includes all shifts since the city has only one manager to maintain the work 24 hours a day for as long as the snow progresses. The team can find no reasoning for having just one manager during these crucial times. If the snowplow operators are called in for overtime during a weekend shift, and they do not accept the overtime, this manager will have to fill in as a snowplow operator as well. There could be a potential time where there are no snowplows on the city streets because of the overtime needed to clear the streets. There is a list of managers that would come in and work the snowstorm, but they may not have adequate skills needed since they do not receive annual training with the plows.

Schedules

The snowplow operators are currently under a union contract and all schedules are limited to that agreement. The team spoke freely about the scheduling the snowplow operators being fully supportive since two operators are key members of the 6 Sigma team. It would be advantageous for the residents if operators and their managers work together and develop a process that will not allow disruption of service even though it may conflict with current policies.

Non-Operator Strategy

The city does not have a back-up plan if operators would not be available to work overtime during a snowstorm or storm clean up. Cities that the team spoke to uses a strategy that involves other city employees. They invite any city employee that has a CDL license to place their name on an "overtime" list. The city will then call them to operate a snowplow during the storm or after the storm has subsided. Municipalities are having success with this plan and comment that is one of the keys that assists them to clear the streets in a favorable time allowance. These cities also keep approximately 10%-15% of extra snowplows in their fleet to execute this strategy.

Contractors

This issue was a concern for the project; How much work to contract out versus how much to keep “in house”. The general consensus was to have contractors called in when storms exceed a certain amount of inches. Have the contractors work on certain areas in the city that will benefit the snowplow operators so they can stay on their routes and get their job duties completed. Examples could be tackling cul-de-sacs, assisting with downtown areas or helping out with snow routes that may need extra attention. This would be a real win-win situation for the city.

Three different plans were looked at, each with their own advantages and disadvantages. If the city does not have a proactive plan in place, finding a contractor can be very difficult. Many contractors have their workload set prior to the snow season starting. Others don’t have the proper equipment to get the job completed. With an adequate amount of snow, the city will need trucks, and they are very difficult to find since many contractors do not have them in their personal fleets. It is easy to think contractors will come to the city’s aid with the right equipment, but many times this is just a fallacy unless planning is completed before the snow starts to fall. A method can be adopted to stick with a plan and budget without hampering quality. One other problem the city has is that many contractors who do have contracts with area businesses will push their snow in to city streets. A process needs to be in place to penalize those contractors and/or those businesses due to public safety.

Contractors 6 Sigma Findings and Processes

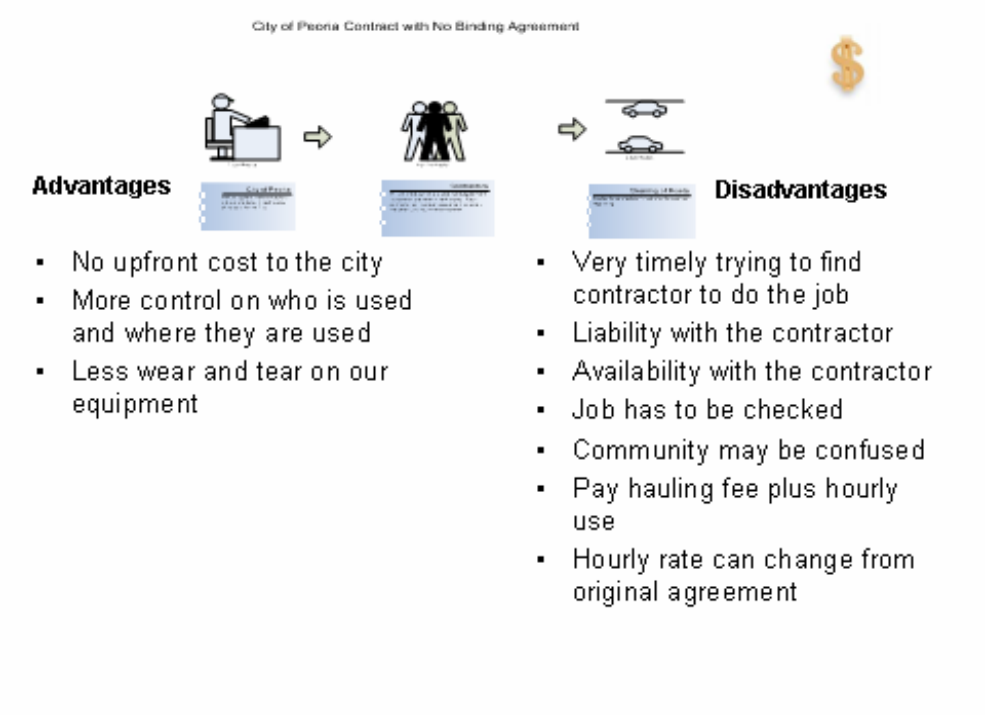
Contractors

A contractor will be defined as someone the city has a contract with. Not to be confused with an actual contractor that is out removing snow for a place of business. We will consider that contractor as an outside contractor. As of today, the city has no contracts with any outside contractors to remove snow. The city currently develops a list of outside contractors and keeps that list up to date when needing assistance. Once they are used and paid by the city for that service, they will be termed as a contractor. There is much confusion on this term due to the many outside contractors in the City of Peoria. Residents may feel that these outside contractors should be used to remove snow, but they are unaware that these contractors may not have the equipment needed to remove snow successfully. This is in reference to snowplows. Before dictating that outside suppliers should be called in, people must understand that many outside contractors with trucks and plows attached to them are already under a contract with a local business and may not have time to do the city work offered to them.

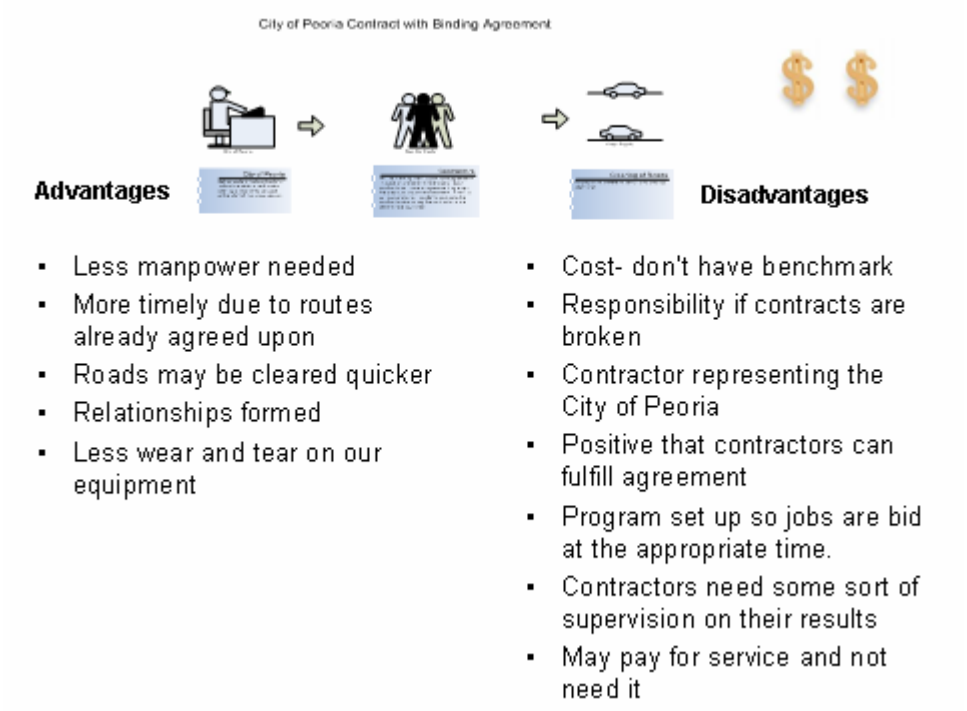
Three plans were studied and all advantages and disadvantages are listed.

-The first plan is what is in use today, but not practiced- can be a success with planning prior to the season starting and less costly of the three
-The second plan is placing the contractor into an actual contract before the season starts- more costly due to a retainer being issued
- The third plan is placing a contractor as a project manager and sub contracting areas of the city out to other contractors- very costly

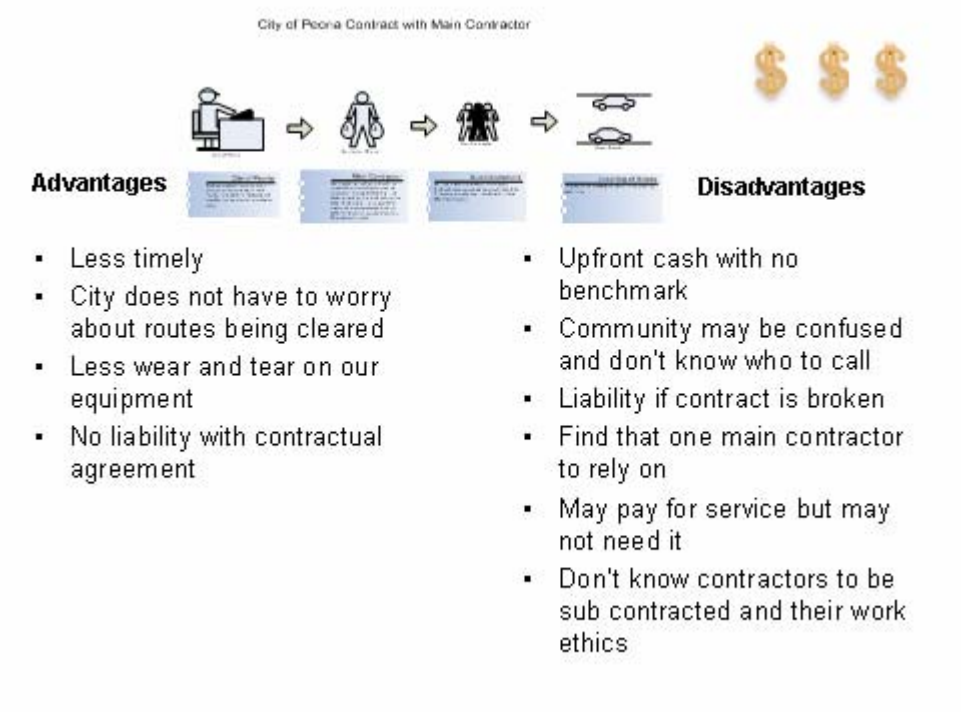
Example of using an outside contractor



Example of contracting out with an outside contractor before snow season starts.



Example of contracting with a main contractor who will sub contract parts of the city to other contractors.

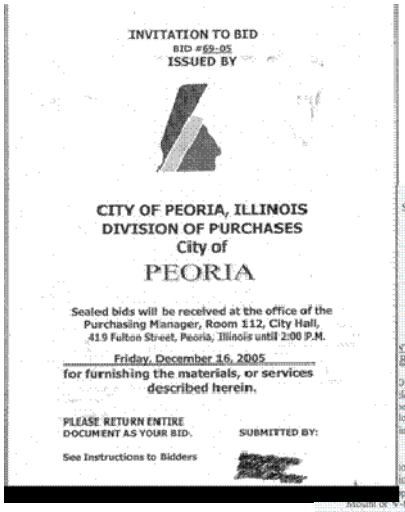


Contractor Fines

Due to safety concerns for the citizens, the city should develop a process to fine contractors who are pushing snow into city streets. This is also timely for the city snowplow operators to backtrack and clear the streets a second and third time. Communication can be given to contractors thru the media that they will be ticketed for placing the snow onto city areas. Residents could call to report if they are seeing this being done or the city could let citizens report the actions thru their website. Residents should be encouraged to do so because of safety reasons. If contractors are to be held liable and the city is not getting relief from this process, businesses should then be held accountable for their contractor's actions. This snow season saw too many banks of snow left in public walkways and streets, which created more work for the snowplow operators and wasted their time going back and clearing cleaned streets.

Contractor Process

Should outside contractors be used in any of the before mentioned processes, the city must define that process. Should a bid process be used? Should an outside contractor be held to certain qualifications, e.g. like stating up front what kind of equipment will they be using? Awarding contracts can have its benefits, but it must not be a determent to the overall plan. The city has a process that has been in existence since 2000, but it is not very effective. If the decision is made to look at another option, a new process will have to be implemented. Peoria has practiced an open bid process but this was not used in 2006-2007 due to understaffing with the position accountable for getting bids out earlier in the year. This process could still be maintained with improvements.



INVITATION TO BID
BID #69-05
ISSUED BY

CITY OF PEORIA, ILLINOIS
DIVISION OF PURCHASES
City of
PEORIA

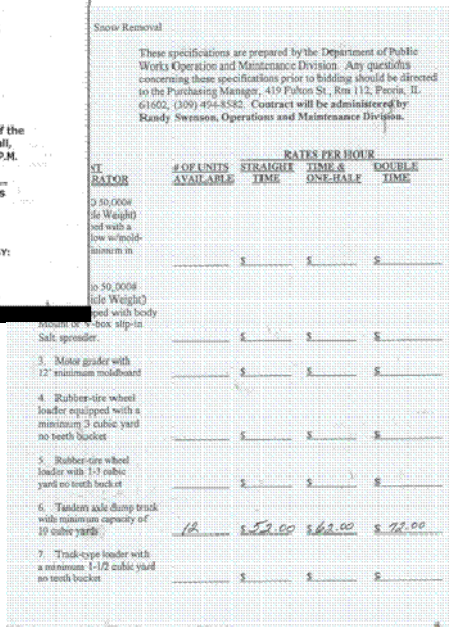
Sealed bids will be received at the office of the Purchasing Manager, Room 112, City Hall, 419 Fulton Street, Peoria, Illinois until 2:00 P.M.

Friday, December 16, 2005
for furnishing the materials, or services described herein.

PLEASE RETURN ENTIRE DOCUMENT AS YOUR BID.

SUBMITTED BY:

See Instructions to Bidders



Snow Removal

These specifications are prepared by the Department of Public Works Operation and Maintenance Division. Any questions concerning these specifications prior to bidding should be directed to the Purchasing Manager, 419 Fulton St., Rm 112, Peoria, IL 61602, (309) 494-8582. Contract will be administered by Randy Swenson, Operations and Maintenance Division.

...T ...RATOR	# OF UNITS AVAILABLE	RATES PER HOUR STRAIGHT TIME	TIME & ONE-HALF	DOUBLE TIME
...0 50,000# ...le Weight) ...ped with a ...low w/mold- ...minum in		$	$	$
...o 50,000# ...icle Weight) ...pped with body Mount of 5-box slip-in Salt spreader.		$	$	$
3. Motor grader with 12' minimum moldboard		$	$	$
4. Rubber-tire wheel loader equipped with a minimum 3 cubic yard no teeth bucket		$	$	$
5. Rubber-tire wheel loader with 1-3 cubic yard no teeth bucket		$	$	$
6. Tandem axle dump truck with minimum capacity of 10 cubic yards	12	$ 52.00	$ 62.00	$ 72.00
7. Track-type loader with a minimum 1-1/2 cubic yard no teeth bucket		$	$	$

Partnerships

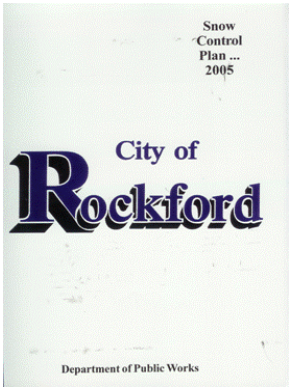
The team can see a great attribute for the city to enter into working relationships with area companies. Looking at the sharing of minds as well as resources will only benefit all parties concerned. Using other city officials like Rockford, Naperville, and Aurora, IL, was a great way for Peoria to compare themselves to a city of equal size. After spending time with them and sharing snow plans, Peoria managers can learn from their mistakes and implement new strategies for inclement weather. The team was surprised to find that these cities, even though larger in size and population, might have less equipment and operators but more supervision. These cities are effective when using contractors and other city employees that clear their streets in an effective manner.

The Peoria Park District is also a group that can be helpful with assisting the city with resources where the city may be able to return the favor at a later date. The Park District has agreed to work towards a possible partnership when purchasing future vehicles.

Caterpillar is a perfect partner which values a bond on what is best for the community and offering of their resources to make sure the city is not caught in conditions to where it cripples the city and their residents. There are many valuable companies that may be able to assist the city. The list should not end with this project.

Partnerships 6 Sigma Findings and Processes

City of Rockford, Illinois



Even though Rockford is not an actual partner with the City of Peoria, the team used them as a comparison city. Rockford is the third largest city in Illinois, right behind Chicago and Aurora. Their population of 150,000 residents is larger than Peoria but close enough to use them as a comparison. The following information was gained from that relationship.

Rockford is well versed in being prepared to tackle a storm. They gain their storm information from three different expert sources, and have duty supervisors on the street 24 hours a day viewing the weather and understanding environmental changes occurring. All supervisors from the city have to participate in this duty even if they do not belong to the Street Department. Once the storm starts, the city has two supervisors on all three shifts to operate their snow plan.

Rockford currently has 75 operators and 25 trucks. During larger storms, they have 12-hour shifts, with 16 hours being the maximum amount an operator can work. They have 680-center lane miles, and 2,040 lane miles in a 60 square mile area. It should be noted that this city took 14 days to tackle and complete clearing the snow from the
December 1, 2006, storm.

The city contracts out all residential areas. The bid is for one year, with one-year extensions for a maximum of two years. The bid is done with an hourly amount agreement with every machine a different monetary value. Example: usage of a skid steer will cost less then a motor grader. All contractors manage their route in a certain plot where they never change the way they start their routes. In other words, if certain neighborhoods are last, they will always be last. There is no change to this sequence at anytime. The contractor bidding the quote must have at least 100 pieces of construction equipment available to assist with a potential storm. The city will see approximately 25 motor graders clearing their streets during a typical snowfall since this is the machine of choice for the contractors. The city also hired a project manager who works directly with the contractor so no city supervisor has to manage the contractors. Rockford also has a unique cul-de-sac strategy where they divided their city into 30 different routes, and the contractors go into each route and sweep all cul-de-sac/dead end roads before plows enter into the subdivisions. The city has paid approximately $1M for contractor service and is in favor of using it again next season.

Rockford has a different strategy for no parking routes. They currently have no signage other than a few signs that are over 20 years old and need to be removed. They have a two-inch

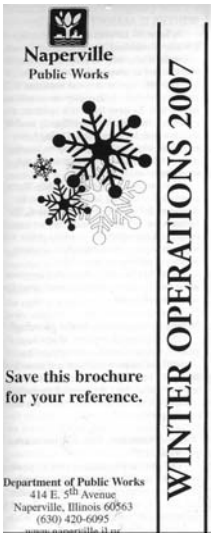
parking ban but make their residents rely on the internet and news media to find out if the ban is in place. They rarely tow cars since residents are familiar with the no parking policy. Residents have to be off the street even if they have no driveway. Since all streets are treated the same way, residents can't simply park on another street. The city claims the residents have to find a parking spot in an alley or someplace else. The city averages around 35 inches of snow this past year, but has had annual amounts of 18-20 inches in the past few years- much like Peoria. A no parking ticket is $75 dollars, but the price will increase if not paid in time.

The process for training operators is not as involved as Peoria's. Operators practice with wood mulch, but only approximately 40 hours. Their trucks are 12-foot plows, so on-the-job training is more beneficial to them. They also use AVL on their trucks and monitor it closely during a storm.

Aurora was able to look ahead and replace their snowplows as a group instead of one or two trucks every so many years. They decided to replace their older trucks and purchase ten new trucks at one time. By doing this, the city saved their taxpayers over $60,000 per truck.

The city has a very good reporting system when it comes to sharing information with their city council members. The team would like the City of Peoria to use some form of this report for their council meetings. The report is updated every week and given to all council members so they understand where the city lies on expenditures. The report is included in this section and should be kept confidential since all information was given to the team in confidence.

City of Naperville, Illinois



The City of Naperville has a distinct strategy that is directly linked to how successful their contractors can be when clearing residential streets. This city has experienced tremendous growth and a population of 137,000 residents is challenging their effectiveness to clearing snow. Having over 1,100 cul-de-sacs/dead end streets adds to this problem and is the top concern of Naperville's snow plan. They experience 24 inches of snow each year, but this season they have totaled 34 inches.

Using contractors is the success of their planning process. Each year, Naperville sets an hourly price and informs contractors that if they want to participate in the process, they must agree to that pricing policy (included in this report). A bidding process was used at one time, but the city found it to be inadequate for their needs. Contractors are only used for the residential areas and must have proper equipment to clear those areas. If there is less than two inches of snowfall, eight contractors are used for dedicated routes. Once the snowfall is above two inches, there could be over thirty-five contractors working residential areas. The city has a cul-de-sac strategy that includes these contractors in the planning process. Their wish is to have 50 cul-de-sac teams available to clear neighborhoods. Using contractors gives the city personnel time to clear all main and primary arties into their city. Once that is completed, the city plows can move in and assist the contractors if needed. Contractors cost the city approximately $400,000 this season.

The city has 39 snowplow operators and 27 snowplows. Four of these plows are for reserve only. The city has 525 center lane miles. The city uses three salt piles that are placed strategically around the city to decrease travel time for their snowplows. Operators will work a 12hour shift during a storm and can only work a maximum of 16 hours. They have only one morning shift operation, but will move into two shifts when a snowstorm is approaching. Each shift has three supervisors plus one manager working at all times. A project manager is available during each shift and that person must communicate with all snowplow operators, assist with phone calls, and keep track of the entire operation.

Naperville has also been very successful with using other city employees to operate their snowplows. Once a city employee has their CDL license, they can notify the department to be placed on a call out list. Once all union workers have been called for overtime, the city will then

activate the names on this list. If that employee is not scheduled to work, they will be paid overtime to come in and work the storm.

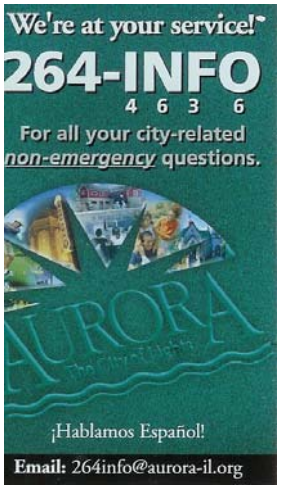
Every operator has to complete a two-day training event taught by city supervisors. This includes safety, equipment walkarounds, and area snowplow driving. No simulation training is offered. Naperville offers training classes through Chicago due to their proximity and find this to be a great asset. They also benefit from seminars and trade shows.

Communications is one of their keys to a successful plan. They send out information to their residents prior to the snow season starting (included in this report). The city has a two-inch no parking ban, but they don't have to enforce it. They have no parking signs from 2 A.M. to 5 A. M. which gives the city time to clear streets. The city uses parking decks and does not have downtown on street parking. Parking fines are $15. They find that citizens follow their snow policies so towing has not been enforced.

The city has a database where all complaints are collected. If resident have an emergency, they call 911. If it is a non-emergency, the residents call a snow command phone number. No non-emergency call will dictate changing the cities current process when clearing the roadways. Snowplows or contractors will not change their strategy to direct attention to these calls. City personnel will not look at these complaints until after the storm has subsided. This keeps all attention on the current plan without disrupting any service to the community.

In the future, Naperville is proposing to work with one contractor to do all work in a designated zone. This would include not only clearing snow, but spreading salt as well. The city wants to look at different pricing for the contractor and base those prices on an escalation factor determined by the inches of snow that may fall in that season. By doing this, the city would not need extra manpower or equipment to fulfill their obligation to their residents. This practice would lower costs for the city and be more productive in the overall clearing if snow and ice.

City of Aurora, Illinois



Aurora practices good communication with their residents and gives them the opportunity to provide feedback when warranted. The city keeps an electronic database where all phone calls are collected. The residents can only make non-emergency calls to that phone number and all emergency calls are directed to their 911 operators. Any complaint that arrives during a snowstorm has to wait, because city personnel will not take their operators or contractors off of their current duties. They find that after their services are no longer needed, many of those original complaints have been taken care of. The city keeps their website current and also sends out reminders with resident's water bills on what actions they need to take during the snow season (included in this report). At any time, supervisors and City Council members can log in and look at the database to track the results of these complaints.

The city has 32 snow routes and divides the city into three departments, Parks, Sewer, and Street. The Street Department has 16 operators for 16 routes. The other departments have 16 operators as well. Aurora splits the city into these divisions because of substantial growth these past few years. Their current population is 180,000, the second largest city in Illinois. They request contractors to assist them with residential clearing. Every year, Aurora invites contractors to send in their rates for snow removal. Aurora will then negotiate with each contractor on a price and on a snow route to clear when accumulation is greater than two inches. Aurora depends on these contractors to clear residential areas, leaving the city to tend to main and primary roads. This season, Aurora has spent $1.3 million for contractor services.

The city feels they are overwhelmed with cul-de-sacs and need a specific strategy for clearing them. This is the main reason why a contractor may get a specific route: it leaves more time and equipment for the city to focus on their primary routes.

Aurora does not enforce a no parking policy during a larger snowfall due to residents not creating parking problems. The city has 130 signs posted throughout their streets and will charge $25, if warranted. Two inches is their current policy.

The street department has three full shifts during the start of November until the end of March. They will offer overtime during a snowfall if needed. Each shift will have one to two supervisors at all times. After the first snowstorm of this season (12/1/06), Aurora had to draft a new strategy plan and fired two contractors due to their inconsistency during that storm. The city was still cleaning up after two weeks of the initial snowfall.

The city expects everyone to fulfill his or her training requirements. Even contractors must participate in a two-day training event. This training includes classroom as well as equipment safety training. There is no actual plow operation for the drivers. New operators will spend close to 20 hours of equipment training and driving snowplows (not operating). Caterpillar does all construction training by sending a certified operator to instruct their employees.

Caterpillar

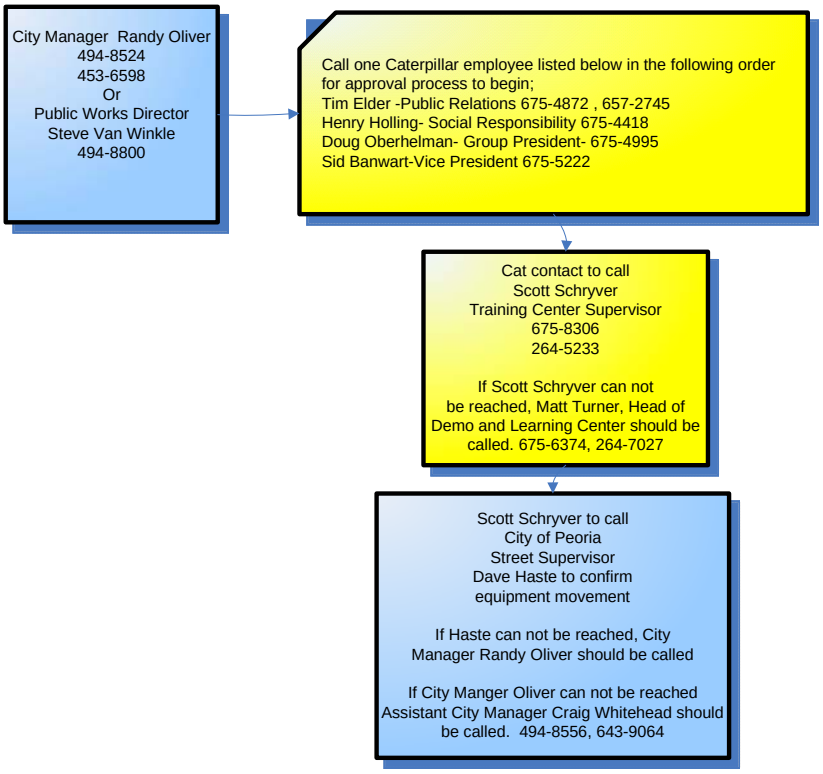
In the past, Caterpillar has offered their assistance to the City of Peoria on a gentleman's agreement. The team has formed a secure process so everyone understands what that agreement is and how to act upon it. The following is that agreement.

City of Peoria and Caterpillar Snow Removal Process

The following process will be used when the City of Peoria contacts Caterpillar seeking snow removal assistance. Caterpillar may assist with snow clean up if their equipment is available and it can be safely moved into the city. Caterpillar's equipment cannot be used to replace any contractor work and may only be used to clear the areas around Caterpillars Corporate Headquarters located at 100 NE Adams St.

The City of Peoria will call for assistance after these requirements have been met:

1. 12-48 hours advance notice. This will allow Caterpillar to move their equipment into the city if needed.
2. Maximum of 8 inches or more predicated from the National Weather Service.
3. The City of Peoria Manager has issued a weather related emergency notice to the citizens of Peoria.
4. The below process has been met.



Peoria Park District

The Peoria Park District owns over 20 pick-up trucks that are used for the summer months to tend to golf courses and parks. During the winter months, these trucks are idle. In the future, the city would like to partner with the park district when purchasing new trucks. The current trucks are 2 X 2s and the city would need 4 X 4s when to plow snow. Both the city and the park district would benefit from purchasing new trucks together. It would allow the city to use the trucks in the fall and winter months, and the park district would use them in the remaining months. Peoria city would buy plows for the trucks and also maintain them. This strategy would give the city an opportunity to clear roads and cul-de-sacs quicker. The team did meet with a representative for the Peoria Park District, and all agree this may be a beneficial strategy.

Ameren

The team has decided there would be no benefit to partner with Ameren at this time.

Waste Companies

Larger cities will use their refuse companies to place small snowplows on the front of the garbage trucks. The team looked at this plan, but believes that, Peoria doesn't see enough snowstorms that would make it be beneficial to the city to pay for these plows and work out an agreement with these carriers. If Peoria would get consistent snowfall of 25 inches or more, this would be a good avenue to investigate.

State of Illinois

The state cannot offer equipment to the city but has offered assistance in operator training on salt maintenance.

Other Municipalities

The team would like to enter agreements with surrounding cities to assist in snow clean up but believe the process would not be reliable. Many cities won't let another municipality have their equipment, because they may need it themselves. The team tried to find logic in moving equipment from other states or local cities in order to be prepared, but once the plan was drawn out, it was not conceivable. The idea seems good on paper, however it is not cost neutral for the city.

Illinois National Guard

The National Guard would be an asset for the city during a state of emergency. They have both equipment and manpower resources that could be used during large snowstorms. Since the city has not practiced this ordinance, now would be the time to focus on how it can be used to their benefit.