Thanks go to the IPWEA National Foundation and the IPWEA NSW and QLD Public Works Foundations for awarding the fellowships which made the tour possible.
Tour Scope

The 2014 IPWEA International Study Tour was conducted on the theme of “Best Practice Plant & Vehicle (Fleet) Management”.

The first time fleet focussed study tour was an initiative of the national IPWEA Fleet Panel supported by the IPWEA Board with the purpose of increasing the profile of the IPWEA fleet management program as well as gaining knowledge from international experience.

The 16 day study tour commenced at the American Public Works Association (APWA) Congress in Toronto from 17-20 August and concluding on 30th August in Chicago.

The IPWEA NSW and QLD Foundations each fully sponsored a participant and the National IPWEA Foundation awarded two part-funded fellowships. The fifth participant was employer sponsored.

- The IPWEA Executive Officer Australasia, Mr Ross Moody
- Manager Fleet Management Services, Dubbo City Council, Mr Steve Colliver
- Manager Fleet Services, Bundaberg Regional Council, Mr Andrew Railz
- Plant and Workshop Coordinator, Bland Shire Council, Mr Paul Glennon
- Plant and Workshop Manager, Temora Shire Council, Mr Tony Hingerty
- Manager Plant and Equipment, Blacktown City Council, Mr Jon Bannister

The Tour was be led by the IPWEA Executive Officer Ross Moody who presented a paper on the topic “Internal Versus External Service Provision - A Methodology for Decision-Making” at the APWA Congress.

The IPWEA tour group were also able to meet with the APWA Fleet Committee on Saturday 16th August.

Following the APWA Congress the Tour visited the following Councils:
- City of Toronto (Ontario, Canada)
- City of Hamilton (Ontario, Canada)
- Niagara Region (Ontario Canada)
- City of Orlando (Florida, USA)
- City of Columbus (Indiana, USA)

There were four industry visits also included in the tour all in the USA, they were:
- Kenworth – Columbus, Ohio
- Parker – Columbus, Ohio
- Cummins – Columbus, Indiana
- Caterpillar – Peoria, Illinois

Details of each of the visits and a summary of what was learned are included in this report.
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Introduction

The 2014 IPWEA International Study Tour was conducted on the theme of “Best Practice Plant & Vehicle (Fleet) Management”.

The 16 day study tour commenced at the American Public Works Association (APWA) Congress in Toronto from 17-20 August and concluding on 30th August in Chicago.

This report will look at the following:

- Objectives of the Tour group.
- What was learned from the International Study Tour.
- APWA Congress – Summary of Congress and presentations attended.
- A summary of each Council visit and the points of interest.
- Industry Supplier visits.
1. Key Focus Areas

Prior to departure the following had been identified as the key focus areas for the study tour to investigate:

- How our Canadian/American counterpart’s manage the plant and vehicle assets of their respective councils?
- What is the philosophy of our Canadian/American counterparts in relation to ownership of plant and equipment? Do they own or lease the fleet and what are the advantages of their decision?
- Do our Canadian/American counterparts maintain repair facilities or do they contract this task out to the private sector? What are the advantages their decision?
- What is considered the optimum retention period for plant in Canada/America? What are the factors that influence this decision?
- Carbon emissions, how does a highly populated city deal with the issue of carbon emissions from internal combustion engines?
- Evaluate ‘alternative fuel’ technologies for strategic change opportunity.
- What challenges are facing the industry in the short and long term?

1.1 How our Canadian/American counterpart’s manage the plant and vehicle assets of their respective councils?

The management approach to Fleet varied across the five (5) Councils that we visited. Large fleets such as City of Toronto faced very different challenges when compared to smaller Councils such as Niagara Region.

Toronto acknowledges that there maintenance practices and replacement programs required a massive review and have recently appointed Mr Lloyd Brierley as the Director Fleet Services to undertake this task. The maintenance could be considered below expectations and as a result the fleet requirements are over catered to compensate for the downtime issues. This has a knock on effect in that the cost of operation is considerably higher than it should be and the replacement program has suffered accordingly.

All operational aspects of the City are “union shops” and the control measures placed around the operation and maintenance requirements, including cleaning of the vehicles, seem to be ineffective.

Particular focus was on the garbage collection fleet and the maintenance techniques surrounding these items. The drivers were responsible for the cleaning of these trucks and the result was below expectations. The collection body was washed out onto a pad and then loaded into a skip bin for removal. The water runoff was not treated prior to entering the storm water drain.

Mr Brierley acknowledged there were significant challenges and has begun the task to realign the maintenance program and resources to provide a modern and well maintained fleet that is cost effective and has high levels of availability.

Niagara Region which is a much smaller Council demonstrated very good preventive maintenance programs, a strong replacement program and a committed workforce. The staff at Niagara take a great deal of pride in their work and the fleet is presented and operated to a high quality, largely due to the apparent tighter controls they seemed to have over their fleet assets.

The same pressures seem to have arisen in all cases. The recognition of the value of a fleet asset and the fight for capital funding to bring them up to a serviceable standard that can value add to the organisations efficiency and effectiveness. Some organisations appeared to have achieved this better than others, which is not dissimilar to Australian Councils. The ones that have been successful appear to provide a very good product that is well utilised and managed.

Most have some form of a Fleet Management System which programs maintenance and provides historical data. In terms of plant replacement, this varies considerable. Niagara has a solid replacement program based on distance travelled and the age of the item. However at the other end of the scale the City of Hamilton’s replacement strategy is based on the repair costs of an item reaching 90% of the replacement cost before it is considered for replacement. This strategy has a significant impact on the availability of the item and sees those carrying additional items to cover for the downtime of the fleet.

1.2 What is the philosophy of our Canadian/American counterparts in relation to ownership of plant and equipment? Do they own or lease the fleet and what are the advantages of their decision?

All five organisations visited have the same approach to lease v ownership in that they all own their fleet. It should be noted that the light vehicle fleet is based on operational requirements and they do not have a leaseback or packaged vehicle focus. Ownership is considered optimal as they can structure there replacement program around requirements rather than lease constraints.

In Toronto and Hamilton, 50% of the garbage collection has been contracted out. However most of the tasks are maintained in house and there was very little evidence of any leasing of plant and equipment.
1.3 Do our Canadian/American counterparts maintain repair facilities or do they contract this task out to the private sector? What are the advantages their decision?

All workshops visited have their own mechanics and the majority have fabrication sections and some body shops. There is a real focus on “in house” repairs as they can control the workflow and costs. Niagara has their own electronic section that builds and maintains traffic lights. They also have a sign section that prints and produces all the road signs. Again there is a focus internally to control costs and workflow. One noticeable difference was that Australian Councils tend to rely on trade qualified auto electricians to perform complex electrical tasks on fleet assets. The Councils visited all performed the majority of auto electrical repairs in-house, anything from simple repairs to full re-wire and diagnostics are conducted in house. It does appear that our Canadian/American counterparts have more options and accessibility to trade related training than is currently available in Australia. This is highlighted by the need for mechanics to requalify on a bi-annual basis but undertaking mechanical aptitude testing against a national standard. Something that ensures skills base is maintained by each staff member.

1.4 What is considered the optimum retention period for plant in Canadian/American? What are the factors that influence this decision?

This equation varies across the five organisations visited. These philosophies are:

- **Toronto**: based on years /kms/hours/supported by a condition check
- **Hamilton**: 10 years or maintenance costs => 90% of replacement cost
- **Niagara**: Based on annual mileage, or 7 year replacement term
- **Columbus**: Based on age, usage, miles and condition. The Mayor has control of the budget and makes an allocation annually.
- **Orlando**: Based on life cycles and a points system that takes into consideration current age and expected life, life cycle costs v replacement cost and distance travelled v expected life in miles.

1.5 Carbon emissions - how does a highly populated city deal with the issue of carbon emissions from internal combustion engines and evaluate alternative fuel technologies for strategic change opportunity?

There are a number of strategies that Councils have adopted to deal with the pollution associated with running a large diverse fleet. As the public and political climate becomes more sensitive to ‘Global Warming’ issues it is becoming ever more important for Fleet Managers to play their role and consider alternative fuelled plant, vehicles and equipment in an effort to manage the effects of Global Warming.

The following identifies the types of alternative vehicles available, associated challenges, limitations, risks and concerns.

**Types of alternative energy vehicles:**

**Electric Vehicles**

Electric vehicles have a limited operating range and often require overnight charging at specially built charging stations. Due to this limited operating range electric vehicles have not been attractive to the majority of Councils. The larger metropolitan Councils have made much more of an investment into this technology than others. Some of the regional councils who have invested in this technology are moving away from it as they have not seen a favourable return on investment.

**Hybrid Vehicles (petrol/diesel assisted by electric motors and batteries)**

Hybrid vehicles (light duty) currently provide the greatest potential to reduce fuel demand short term, however are not considered to be alternative fuel vehicles, rather the application of technology to improve fuel economy. Niagara has moved away from this technology as they have not seen the return on investment and are achieving similar or better fuel consumption in modern conventional drive systems.

Hybrid drive system for mid and heavy duty applications appear to have more success. Orlando City Council has introduced a number of hybrid waste trucks into their fleet. The system that they are using is the Parker Run Wise. The conventional transmission is removed and replaced with a hybrid drive system. Orlando have reported that trucks are working extremely well with reduced maintenance costs and fuel consumption savings of up to 58%. The Waste Section are extremely proud of these trucks, drivers with good around performance have been chosen to operate these vehicles as a workplace incentive and reward. The drivers maintain that the truck is quieter, more efficient and quicker and spend less time in the workshop. Orlando has currently 10 hybrid trucks, a further 9 are on order. Orlando is also installing a CNG slow fill station in their depot to take advantage of the low CNG pricing.
Compressed Natural Gas (CNG) powered vehicles

CNG powered vehicles have a very positive effect on vehicle pollution. However, limited vehicle range, on-board fuel tanks, decreased payload and the costs of fuelling infrastructure are major drawbacks. A number of Councils have invested heavily into this technology due to the favourable fuel pricing. Natural gas pricing is between 17 and 25 cents per litre with contracts available for 25 years. It is understood that the petrol and diesel pricing has reduced by 10% over the past year, available between 78 and 86 cents per litre.

One of the more interesting programs that have incorporated an alternative fuels strategy is the Renewable Natural Gas (RNG) program. The program aims to take the organic waste from households, institutions, factories and farms and turn it into an energy source. RNG can then be used as fuel for vehicles. An American Petroleum Council study concluded that RNG could replace 6.4 billion gallons (16%) of today's diesel consumption, using commercially available technologies. RNG offers communities greater fuel pricing stability and fuel security for indispensable services such as the garbage collect fleet.

It can help provide communities with a clean burning fuel that virtually eliminates pollutants associated with diesel exhaust emissions. It is a community based program that will see food waste be used to power garbage truck fleets and not be put into landfill. A very interesting project however it provides the same infrastructure issues associated with the Compressed Natural Gas.

Alternative Fuels Limitations, Risks and Concerns

Evaluation of all currently available alternative fuel technologies indicates increased costs and limitations involved with running alternative fuelled vehicles.

The risks and concerns of adopting any of these alternative fuels in the present is that the chosen fuel/technology may not stand the test if time and become redundant, including the supply of parts, fuel and support.

There is a very real risk that the vehicles and infrastructure investments required for alternative fuels could become prematurely obsolete.

1.6 What challenges are facing the industry in the short and long term?

The challengers facing the Canadian/American Fleet Managers are not dissimilar to the challengers faced in Australia. The introduction of tighter emissions standards, higher levels of technology in plant, vehicles and equipment and the ongoing difficulty in servicing and repair are all common problems. Listed below are some of the current issues faced by both respective Fleet Managers:

- Suitably experienced mechanics
- Specialised training
- Diagnostic equipment and suppliers providing access
- Local parts and service
- Cleanliness levels required for common rail fuel systems and high pressure hydraulic systems
- Budget restraints and a shortage of capital replacement funds
- Pressures to extend replacement cycles
- Difficulties in managing aged fleets
- Unstable fuel prices
2. What we also learned from the International Study Tour

Beyond the objectives are number of other observations were made from the Councils visited which will be of interest to Fleet Managers in Australia.

2.1 Purchasing Process

It would appear from the council visits and the Congress presentations that were attended that the majority of American Local Government entities are only just starting to look at whole of life costs. The procurement process associated with plant purchases and tendering is an interesting one. If a Council goes out for tender they are obligated to take the cheapest option with no further consideration for such things as whole of life costs, operators input etc. This is currently being addressed by most Council that we visited as they are now can see the issues associated with the lowest bid only. They are now requesting quotations and considering operator input, operating costs, safety and residual values to purchase the best option for Council. This practice has been applied in Australia for many years.

2.2 Pride in workmanship

Staff at the Councils visited all displayed exceptional pride in their work and that they were part of a good organisation. All staff that was spoken to at the various fleet facilities had a very positive attitude towards their work, the care of the plant, vehicles and equipment and praised management on the methods that they used. This may well be a cultural issue as there is little or no unemployment support and a job is highly valued in these countries, something that perhaps some Australians could learn from.

2.3 Workshop reporting methods

Some of the workshops visited had very good reporting mechanisms or KPI’s to test the performance of the workshops. Interestingly the workshops that had good reporting capabilities were also those that had ‘recognised’ stand alone fleet software systems in place along with appropriate policy and procedure surrounding its use. Standard repair times have been incorporated and measured on a consistent basis. This allows each mechanic to be measured against a set criterion and ensures that the workshop is competitive against the dealerships. Items such as call outs and door traffic are recorded as a measure against the performance of the preventive maintenance program. The theory being that if the preventative service is undertaken correctly that there should be no door traffic or call out for items other than repairs. For example if the vehicle comes to the workshop and requests a set of wiper blades then the preventative maintenance service was not undertaken to the correct standard.

2.4 Training

Our Canadian and American counterparts have a very good system to ensure that the mechanics are trained to a high standard. They have more options and accessibility to training than is currently available in Australia. This is highlighted by the need for mechanics to requalify on a bi-annual basis, something that ensures skills are maintained by each staff member. They are trained in auto electrics and do most repairs in house. This allows them to control the workflow without relying on external provider.

2.5 Parts inventory

Again, the Canadians and Americans appear to do this function very well. All facilities visited had a dedicated parts section or was contracted out to a specialist provider that placed their staff in location. Most Australian Councils tend to have a minor parts store for urgent items and contract out the consumables such as filters and tyres. As the vast majority of fleet software systems that are currently used by Australian Councils do not have dedicated parts ‘inventory’ systems, spare parts are generally handled on an ad-hoc basis.

2.6 Understanding costs

There appears to be varying levels of understanding what the costs are associated with the operation of a Council workshop. At the APWA Congress there was a session dedicated to “Understanding Costs”. It was surprising to hear that the majority of the attendees at the fleet sessions appeared to have little understanding of the costs associated with running a workshop other than wages, parts and consumables. Costs such as corporate overheads, IT, finance, building rental etc where not considered by most.

2.7 Rising fuel cost

There is a real concern from operators of heavy plant and equipment regarding rising fuel prices. In an attempt to gain some control and stability over these concerns Councils have invested heavily into this technology such as Natural Gas due to the favourable fuel pricing. Natural gas pricing is between 17 and 25 cents per litre with contracts available for 25 years. This investment appears to have had a knock on effect. It is being claimed that the petrol and diesel pricing has reduced by 10% over the past year, available between 78 and 86 cents per litre.
2.8 Council provided vehicles

A notable point is the difference between the Canadians and Americans approach to Council provided vehicles compared to the Council vehicle in Australia. There was little evidence of Council provided vehicles throughout Local Government. Most Directors/Managers/Staff provided their own vehicles and used them for Council business without an allowance. This is a very different approach from the Australian perspective where it is almost a mandatory requirement when attracting suitable staff.

2.9 Plant Replacement Methodology

We noted a number of variances in regards to the plant replacement methodology. It ranged from Fleet staff having very little understanding how the process worked to a more complex equation that rated each item on a set criteria. Overall there appeared to be little evidence of a strategic approach to plant replacement, it appeared to be based more on a financial value rather than asset identification and management processes. The danger with this approach is that critical indicators can be ignored to the detriment of good fleet management principles. Such things as the downtime, condition, criticality, fit for purpose of an asset, technological advances and emission standards are all considerations that are taken into account when structuring a plant replacement program.

Failure to consider the above list appeared to have a knock on effect with long periods of down time and a requirement to carry additional vehicles to cover for, in some cases, poorly maintained items.
3. APWA Congress – summary of Congress and presentations attended

The APWA Congress was held between 16th and 20th August in the Toronto Convention Centre. The congress included presentations over 3 days and a static display of equipment. Unlike the IPWEA conference, there are no conference papers and most sessions are power point presentations with a copy of the slides are available for download. The fleet related presentations attended included:

3.1 Fleet Services Open Forum

**Issues confronting fleet managers.**
- Retention of labour
- Labour rates – public versus private.
- Shortage of capital replacement funds
- Rising costs.
- Justification for change
- Benchmarking
- Trades qualification systems.

3.2 Don’t let the overhead go over your head

**Define the different types of overheads – direct, indirect, fixed & variable.**
- Determine direct labour costs.
- Determine avoidable labour costs.
- Chargeable labour rates, categorise
- Contract out.

3.3 Concepts for using Biogas

- Not easy to bridge varying perspectives.
- Clearly defined goals or primary drivers
- CNG/RNG concepts are relatively new as a project driver.
- Long term impact on the fleet costs.

3.4 Implementing sustainable transportation at the local agency level

- Reviews the environmental, social and economic aspect as a measure of sustainability using a balanced approach.
- Integrating the sustainable approach for the future.
- Integrating community, policy, capital, climate, transportation and open space plans.
- US – uses “Greenroads” principals and Canada uses “LEED” principles.

3.5 Boras Sweden, A city free of fossil fuels

- 105,000 residents
- Discussion started in the 1940’s, project started in the 1960’s.
- Trash collected to be used for electricity, heat / cooling and alternate fuels.
- 60 buses and 30 taxis and private cars (3 fuelling stations) running on the biogas.
- Limited collections (small bag for organics and plastics) every 2 weeks.
- Residents take the whitegoods (normal roadside collection) to the waste dump.
- 250 staff managing the system.

3.6 Green to Gold with alternative fuels

- Initiate a plan to reduce fuel costs.
- Employ a “Grant” Consultant to have a look at available grants.
- Acquire funding from the Green Cities Program.
- Introduce CNG trucks and fuelling stations weighing up recovery costs or ROI.
- Steady climb of CNG vehicles from 2008 (17,100 litres) to 2014 (162,640 litres).
- Saving 2012 to 2014 = $US296,310.
  - Fuels savings down by 50%,
  - Emissions down by 97%,
  - Noise Reduction down by 80%.

3.7 Environmental Management Systems for fleets

- Comprehensive fuel and energy strategies.
- Emissions testing and inspections.
- Vehicle procurement policy.
- Implementation of ISO14001.
- No idle policy.
- Hazardous waste reductions, energy and fuel reduction strategy.
- Performance measurement.
• Continually reinforce the culture of collaboration.
• Complete service reviews
• Initiate KPI’s, continually monitor and reset goals.

3.8 Achieving community carbon reduction goals with renewable natural gas
• Concept of producing biogas from a variety of feedstock's.
• Sacramento Bio digester Project.
• Initial 25 tons per day now 100 tons per day.
• Pre-processing technology – removes contaminants
• Anaerobic phase – separate hydrolysis and methane formation.
• Renewable natural gas is made by concentrating the methane in biogas.
• BioCNG versus diesel (10 waste trucks would reduce over 1000 tons of CO2 per annum.

3.9 Professionalism in fleet management
• Continually following up on a daily basis to ensure that the fleet operations are qualified and quantified in a professional manner.
• Make sure that the drivers, operators, mechanics have a consist view, and management are seen to be sending the right message.
• First appearance is what counts included vehicle and staff presentations are always professional. You look professional, you will be seen as professional – clean, organised, painted and well lit.
• A third of your life is spent a work, treat your workplace as you would do your home.
• Display certifications, mission statements, awards, customer statement and where possible a business plan.

3.10 Developing world class fleet technicians
• Focuses on developing technicians through new skill learning and diversification.
• Pay scales tied to skills, knowledge and efficiency standards.
• National certification levels:
  » Level 1. Advanced engine performance specialist – 6 steps
  » $19.34/hour to $21.46/hour
  » Level 2. Medium/Heavy vehicle electronics diesel diagnostic specialist. $22.54/hour to $25.54 /hour
• Continued performance evaluation
  » Productivity 3 performance levels
  » Initiative 3 performance levels
  » Dependability 4 performance levels
  » Interpersonal/Teamwork 5 performance levels
  » Safe work Procedures 3 performance levels
  » Ratings 5 rating levels
• Employees must obtain a minimum of 3 in all 5 factors, along with having earned appropriate certificates to receive an increment. Below standard to be reassessed after 6 months.
• Advantages
  » Reduced overtime
  » Increase in equipment availability
  » Better recruits
  » Increased employee morale
  » Sense of belonging.
• Rolled out to other positions.
4. Council Visits and Points of Interest

4.1 City of Toronto

Summary

- **Size of Fleet**: 5,200 units (not including Fire, EMS, Transit and Police 4,800 units)
- **Number of mechanical staff**: 130 mechanics
- **Number of fabrication staff**: 3 welders
- **Number of parts staff outsourced**: 1 Parts Manager (Parts are outsourced)
- **Workshop hours**: 8 locations provide 2 shifts – 6am to 11pm. 1 location 24 hour coverage
- **Charge out rate**: $84.20/hr
- **Size of Municipality**
  - Population: 2.8 million
- **Replacement policy light vehicles**: \( \text{years/kms/supported by a condition check} \)
- **Replacement policy heavy vehicles**: \( \text{years/kms/hours/supported by a condition check} \)
- **Annual Plant replacement budget**: $45 million
- **Annual fuel bill**: $17.5 million

Points of Interest

- 3,000 Garbage Truck drivers
- 44 Councillors + Mayor
- 335 Agenda items over 1 x week
- Councillors speaking directly with Council staff and being influenced by suppliers (out to dinner)
- Fleet manages the following agencies
  - Police
  - Fire
  - Ambulance
- 12 x procurement staff
- Seeking approval to build a new workshop $40,000,000
- Electric cars
  - Manufacturer gone out of business…cannot buy parts
  - Make 2 cars out of 3 to keep them going
- Commonality amongst the garbage truck fleet
- 95% or higher trucks are bonneted trucks and not cab over
- Dual side pick up arms
- Left hand side of trucks is seated and the right hand side of truck is stand up
- 1X Isuzu in fleet NPR 200
- Major problems with Diesel Particulate Filter problems mostly related to drivers not allowing trucks to perform ‘burns’
• Drivers rush to finish their garbage rounds as quick as possible – pressured to do so
• General condition of the fleet and depot was poor, untidy and run down
  » Environmental issues compared to Australia
  » WH&S issues compared to Australia

Fire department Workshop

• 320 total fleet
  » 180 fire trucks
• 100,000,000 litres of fuel per year
• 25 mechanics
• 10.5 hrs days 4 x days per week
• Ladder truck replacement cost of $990,000
• Trucks are in full service for 12 years then used for 3 years as spares, however often kept in service for 15 years
• 25 spare trucks
  » 9 of those spares are ladder trucks
• Annual inspection 3 – 4 weeks
• Apparatus and hydraulic equipment tested and serviced in-house
• Downsized 4 x fire trucks – impact was a reduction in 80 x staff
4.2 City of Hamilton

Summary

Size of Fleet 1350 units
Number of mechanical staff 39 mechanics
Number of fabrication staff 1 Welder
Number of parts staff 4 parts staff
Workshop hours Mon to Friday 7 am to 3 pm and 3 pm to 11 pm (Nov to April Winter Season) for the summer season he afternoon shift moves to 4-10 hour days with Friday off
Charge out rate $102/hr
Size of Municipality 1350 square kilometres
Population 530,000
Replacement policy light vehicles 8 years or maintenance costs => 90% of replacement cost
Replacement policy heavy vehicles 10 years or maintenance costs => 90% of replacement cost
Annual Plant replacement budget $5,700,000 funded from reserve funds
Annual fuel bill $4.5 million

Points of Interest

- Heavy industrial are for steel and coal
- Downturn in industry
- High poverty and unemployment
- Largest port in Canada
- Large education colleges and affordable housing
- Council staff 7,000
- Average age of mechanics 52 years
- Fleet assets 1,300 items, not including fire, ambulance and transit
- 1 x major site and 9 x satellite locations
- Waste trucks 40 x trucks in-house / other half is contract
- 9 x year lifecycle for garbage trucks
- 1 x spare garbage truck for every 5 x active units
- 24 x Zamboni ‘ice’ cutters
- PM Service ratio 36%
- Very high (64%) ‘on demand’ repair
4.3 Niagara Region

Summary

Size of Fleet
220 light vehicles, - 189 pieces of equipment

Number of mechanical staff
11 mechanics

Number of fabrication staff
1 full time body shop – painter and panel beater

Number of parts staff
1 stock keeper
1 parts delivery person

Workshop hours
No shifts. Monday to Friday 7:00am – 3:30pm. On call and standby duty during winter months.

Charge out rate
$92.50/hr mechanical, $58.00/hr body shop

Size of Municipality – Population
1852 square kilometres
427,421

Replacement policy light vehicles
Based on annual mileage, average is about 20,000km/yr so 7 year replacement term

Replacement policy heavy vehicles
Depends on item and usage. Varies between 10 to 20 years.

Annual Plant replacement budget
Based on a 10 year forecast that is basically a living document. Average of US$2.0 M per year.

Annual fuel bill
US$11.2 M

Points of Interest

Main workshop facility and police fleet workshop
Police Fleet
1,200 officers
360 x fleet assets
6 x mechanics * looking to employ a seventh
1 x mechanic per 75 police vehicles
Lifecycle 5 years / 200,000km
Parts on J.I.T only

Operations
20 x single axle snow plows (multi purpose)
1 x main depot / 3 x satellite workshops
Flexible hours during winter due to snow
11 x hybrid vehicles
Discontinuing purchasing hybrid vehicles as late model technology is just as fuel efficient
Average worker age 55 – 65 years
Total fleet value $19,000,000
Mechanics wages $30 - $31 per hour
Very strong Union shop
Well maintained fleet in good condition
Various Departments are run as Business units
Niagara Council employees across all departments 3,000 – 4,000
In-house sign Department including screen printing
In-house traffic management 'electrical control board' manufacture and repair and traffic lights
30 x Councillors + Chair + Mayor
All vehicles are sprayed with a product which provides rust protection.

All snow vehicles and supervisory staff are fitted with temperature sensors to pick up road temperature for the correct application to melt snow. 3 – 4 different products dependent on severity of snow conditions.
4.4 City of Columbus

Summary

Size of Fleet 69 plant items and numerous sundry equipment
Number of mechanical staff 2
Number of fabrication staff 0
Number of parts staff 1 Parts Manager
Workshop hour No shifts. Monday to Friday 7:00am – 3:30pm. On call and standby duty during winter months.
Charge out rate Unable to provide this information
Size of Municipality – square miles 45 square kilometres
Population 44,000
Replacement policy light vehicles Based on age, usage, annual mileage and condition
Replacement policy heavy vehicles Based on age, usage, annual mileage and condition
Annual Plant replacement budget Unable to provide this information, seemed to be at the Mayor’s discretion
Annual fuel bill US$321,563

Points of Interest

• When new vehicles are purchased the old vehicles are generally kept for spares
• No fleet software
• All paper based system
• Ticket system for all works
• Cummins a major contributor to the City
• Columbus population 5,500
• 7 councillors 1 Mayor – no GM the Mayor runs the administration of the City
• 5 waste trucks
• Just about to start kerb recycling all mixed
• Then to transfer station
• employs 500 staff includes police
• 2 mechanics
• 50 employees at depot includes operators
• All major work outsourced
4.5 City of Orlando

Summary

Size of Fleet 2,250
Number of mechanical staff 34
Number of fabrication staff 13
Number of parts staff 1 Parts Supervisor
4 Parts personal
Workshop hour 2 shifts. 6 am to 2.30 pm and 2 pm to 8.30 pm.
Charge out rate $74 hr
Size of Municipality – square miles 178 square kilometres
Population 2,134,000
Replacement policy light vehicles Based on life cycle costs and a points system
Replacement policy heavy vehicles Based on life cycle costs and a points system
Annual Plant replacement budget $9.37 million

Points of Interest

• Focus on driver training
• Staff attraction for mechanics a problem
• Faster - fleet software
• 98F temp high humidity
• 980 police cars
• 79 garbage trucks
5. Industry Visits

There were four industry visits all within the USA including:

- Kenworth – Columbus Ohio
- Parker – Columbus Ohio
- Cummins – Columbus Indiana
- Caterpillar – Peoria Illinois

5.1 Kenworth – Columbus Ohio

In 1974, Kenworth opened a 300,000 square-foot plant on 120 acres in Chillicothe, Ohio. Today it is a state of the art facility that produces 150 trucks per day. It has a team-based method of continuous process improvements based on customer requirements. Employees work in small teams empowered to identify opportunities for improvement in the assembly process. There is a fantastic culture of “pride in workmanship” and a drive to be the best truck facility in the world. Robotic technology has been incorporated into the production line to ensure production rates and quality of work is maintained.

The pride in the quality of work and the drive from all levels of the organization to achieve the best truck production facility that they can is something that we Australians can learn from. The staff take every opportunity to continually improve the processes and be part of a solution rather than just an employee, very impressive work culture and commendable process.

Points of Interest

- 2350 employees operating two shifts on the main production line
- Kenworth have 29% market share in North America
- 10 hour to built a truck from start to finish
- 300 chassis colour options
- 30,000 truck colour options
- 8 different suspension options
- fuel tanks made here start to finish
- Just in Time supply, a day and a half of chassis in stock
- Good environmental management - nothing goes to landfill
- non union factory
  » 5 days sick leave after one year's employment
  » 2 weeks annual leave after one year's employment
  » 3 weeks annual leave after 4 years employment
  » 4 weeks annual leave after 14 years employment
  » 30% of trucks manufactured are fitted with disc brakes
  » 50% of trucks manufactured are fitted with auto manual
- T680 with big sleeper $125,000 (yellow truck featured below)
5.2 Parker Hannifin – Columbus Ohio

Parker Hannifin produces an Advanced Series Hybrid Drive System (Runwise) using hydraulics. A hybrid, by design, uses two forms of energy. Its first source originates from the engine, while the second source is derived from brake energy captured and reused to propel the vehicle. It is claimed that you can reduce your fleet’s fuel consumption by up to 50%. The conventional transmission is replaced with the Parker Runwise system. The primary target has been the garbage collection market with Orlando currently running 10 trucks with the system fitted. These trucks are working extremely well with reduced maintenance costs and fuel consumption savings of up to 58%. The Waste Section are extremely proud of these trucks, drivers with good around performance have been chosen to operate these vehicles as a workplace incentive and reward. The drivers maintain that the truck is quieter, more efficient and quicker and spend less time in the workshop. Orlando has currently 10 hybrid trucks, a further nine are on order. The price of the system can be inhibiting at approximately $100,000 US dollars. The company states that there is an estimated payback of four to five years using $US 3.50 per gallon of diesel including brake and reduced maintenance savings.
5.3 cummins – Columbus Indiana

Cummins Incorporated designs, manufactures, and distributes engines, filtration, and power generation products. Cummins also services engines and related equipment, including fuel systems, controls, filtration, emission control and electrical power generation systems. Headquartered is located in Columbus Indiana. Cummins sells in approximately 190 countries and territories through a network of more than 600 company-owned and independent distributors and approximately 6,000 dealers. Cummins reported net income of $1.64 billion on sales of $17.3 billion.

The tour took in the research and development (R&D) facility and the production plant for the 6.7 litre diesel engine developed to power the Dodge RAM and a medium duty Freightliner truck.

One of the major challenges for engine manufacturers is the ever tightening emission control measure being applied. This is the primary focus for the R&D facility with numerous test equipment trialing innovations in the area of emission control. Cummins have invested heavily into R&D which is a primary reason why they are market leaders in engine development.

Points of Interest

- 120,000 employees in the Columbus area
- Hourly rate of $12- $18 per hour
- 550 engines produced per day when operating two shifts
- strong union shop
- 6.7lt 5 cyl common rail producing 400hp and 800 ft/l
- Engine blocks are made in brazil machined in house
- Turbo chargers and head only parts made by Cummins
5.4 Caterpillar – Peoria Illinois

Caterpillar is the world’s leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial turbines and diesel-electric locomotives. The Tour group visited the following facilities:

- Caterpillar’s Cast Metals Organization, is a modern, electric melting, cast iron foundry located in Mapleton, Illinois. The facility occupies 440 acres and contains approximately 880,000 square feet (20.2 acres) of space under roof and employs approx 650 staff. The CMO produces cast iron (high-strength grey, CGI, and ductile) cylinder blocks, heads, and liners that are used in the 115-6,600hp (86-4,920 kW) engine platforms. Current finished castings range in size from 15-pound (7 kilograms) liners to 22,000-pound (10,000 kilograms) engine blocks. CMO also produces high-performance blocks for a variety of racing applications. The facility ships an average of 150,000 tons of finished product each year. The convenient location in the Mapleton area provides links to all major forms of transportation allowing CMO to ship to anywhere in the world.

- The SS Dozer Assembly Facility. It assembles the full range of Caterpillar dozers from the D3K to the D11T, including a hybrid diesel electric D7E. It is not only the largest, but it is also one of the most efficient, technologically advanced and modern track-type-tractor assembly buildings in the world. Production time for dozers range from 5 days to assemble the small dozer to 9 days for the D7 to D11 dozers.

- Caterpillar Parts Distribution at Morton. Morton was opened in 1958 with one thousand employees. Today, Morton is the central point for customer parts support with primary responsibility for receiving and shipping after-market parts to worldwide parts facilities and CAT dealers. It employs 3,000 staff to operate the 24 hour a day, 7 days a week facility. The facility has 51 acres under roof and a conveyor system that extends to 42 kms throughout the facility. The inventory covers some 415,000 items with a total value in the Billions. It has a laboratory that systematically test the quality of the parts to ensure the highest quality.
The “Brickyard” Indianapolis Motor Speedway