ITEM NO. 18

Staff Report

POLICE VEHICLE PURCHASES

February 23, 2016

BACKGROUND:

The police car represents the mobile office to the officer on the street. As such, it must provide adequate space for the officer's apparel, safety/enforcement equipment, office equipment (computer/printer/radio), and a secured area to transport individuals taken into custody. Over the years, the standard police car has become smaller, while the needed room to house all of the features described above has increased. Therefore, last year Fleet Services and the Police Department began to explore the feasibility of moving to the larger body style of the Utility vehicles. The Police Interceptor Utility has the larger body style on the same frame and drivetrain as the sedan. **Before making any final recommendations, it was important to determine differences between the standard Sedan police car and a Utility unit in terms of the purchase price, outfitting cost, safety, fuel mileage, and overall cost related to the 11 patrol cars in the City fleet.** In order to assist with this analysis, a Ford Interceptor Utility was purchased and put into service in May 2015 for a pilot study that continued until January 4, 2016.

The following information summarizes the staff findings identified during this pilot program.

Safety

When Ford discontinued its Crown Victoria Sedan, the City purchased the Ford Interceptor Sedans for the Police Department. As a result, several positives were realized from this switch, including the ability to have all-wheel drive. However, the trunk space in the new Sedans was reduced. This reduction in space was compounded due to the fact that the spare tire in the new vehicles cannot be removed to house the radio and communication equipment as was done in the Crown Victoria Sedans. In addition, the increased need to respond in different situations has led to an increase in the amount of equipment being carried in the vehicles (i.e. AEDs, shields, breaching tools, fire extinguishers). Due to the nature of the larger cargo area of the Utility, it is possible to store and organize equipment for a faster response than in the Sedan.

Purchase Price and Outfitting

The purchase of the new Utility, #993, was accomplished at the same time as an Interceptor Sedan, #992. The Utility cost $26,840 and the Sedan cost $25,530.

Outfitting is the process of adding the lights, radio, partitions and accessories to the vehicles. The outfitting and in-service costs for the Utility were $8,308. The last Sedan that had a full outfitting was #997, in the amount of $6,636. **This information indicates that shifting to the Utility from Sedans is estimated to require an additional upfront cost of approximately $2,982 per vehicle.**

Fuel Mileage

Currently Fleet Services is tracking information related to fuel mileage from the vehicles and now on the newer units we are able to collect idling information as well.

During the pilot period the Utility averaged 9.7 mpg. All other Sedan patrol cars have a lifetime average of 10 mpg (excluding the two command cars). The two closest units in age to the Utility, #997 and #999 average 9.3 and 9.0 mpg, respectively. Police vehicles in the summer months use E85 for fuel which leads to a lower miles per gallon (mpg). For this reason, if you look at the Sedan patrol cars average mpg for the time period that the Utility was in service, they averaged 9.9 mpg. This information is highlighted on the first page of Attachment A.

The average lifespan of a patrol car is 125,000 miles (roughly two years). Using this for comparison of the Utility to the average of patrol cars at 10 mpg would result in an additional 387 gallons of use during the life of each Utility. **Assuming a cost of $2/gallon this would mean an additional $774 over the life of the each vehicle.** (Current DOT pricing is $1.49 for gasoline and $1.17 for E85).

In regards to the carbon footprint, using the 387 gallons for each vehicle would result in an increase of approximately 6,331 pounds of CO2 for a Utility over a Sedan. For all 11 patrol vehicles this would result in an increase of an additional 69,619 pounds of CO2 (35 tons). This would equate to an increase of 17.5 tons per year which is approximately 2% of the baseline tons of Fleet gasoline/E85 use. It should be noted, that in terms of the current carbon footprint information, the non-CyRide Fleet (which includes police cars) is currently 5% better than the 15% reduction goal.

Resale

Currently the Ford Interceptor Utility is the most purchased Police unit in America. This combined with the higher original cost has resulted in higher resale values for the Utility. A review of websites that sell used Police units shows that resale could be as high as $3,000 more for Utilities than Sedans. **For the purpose of this report a conservative figure of $1,000 was used, since resale has many factors that can affect the pricing.**

Summary of Findings To Date:

FACTORS	UTILITY	SEDAN	DIFFERENCE PER VEHICLE	DIFFERENCE IN COST FOR ALL 11 PATROL VEHICLES
Purchase Price	$ 26,840	$ 25,530	$ 1,310	$ 14,410
Outfitting Cost	$ 8,308	$ 6,636	$ 1,672	$ 18,392
Fuel Cost	$ 25,773	$ 25,000	$ 773	$ 8,503
Resale Adjustment	$	$ 1,000	$ (1,000)	$ (11,000)
Total Evaluated Cost	**$ 60,921**	**$ 58,166**	**$ 2,755**	**$ 30,305**
CO2 Production	210,831 lbs.	204,500 lbs.	6,331 lbs.	35 Tons

Idling

Currently patrol cars, including command vehicles, idle for an average of 62% of the engine on time. If idling could be reduced by 25% this would result in an approximate increase in the Utility miles per gallon (mpg) to 10.5 mpg. Assuming all eleven units have the same mpg this would also equate to fuel savings of $1,190 per vehicle and a total savings of $13,095 over the lifetime of all eleven units. Anti-idling also provides benefits in maintenance and longevity of the units due to the fact that they are not running the engine.

A review of Attachment A shows that we are now able to calculate the percentage of time that the car is idling while running. These numbers show the expected correlation of lower fuel mileage when higher idling is shown. With modern advances in technology it appears that this area could be improved and would be a benefit both financially and with the City's sustainability efforts. This effort will also reduce the amount of carbon produced as less gasoline will be used.

Fleet Services has researched two units for anti-idling. The first unit is sold and installed by Electronic Engineering, which is the current outfitter of our Police vehicles. This unit is a computer based unit which monitors battery performance and cycles the engine on and off. It is estimated this unit would cost approximately $800. The second unit is a more robust anti-idling installation that would include a second battery and a low fuel usage auxiliary heater. This unit would allow for temperature to be a factor in when to cycle the engine and the extra battery will allow for longer periods of time without cycling the engine. This unit is estimated to cost approximately $3,500. It should be noted that the first unit could be installed in Sedans, but the second could not as there is not room for the second battery.

Based on this idling information, staff intends to purchase two new Utility vehicles, thereby allowing the staff to perform a second pilot test to determine the effectiveness of the two idling equipment options.

Estimated Impact Of Installing Idling Devices On Utility Vehicles

Factors	UTILITY	SEDAN	DIFFERENCE PER VEHICLE	DIFFERENCE IN COST FOR ALL 11 PATROL VEHICLES
Purchase Price	$ 26,840	$ 25,530	$ 1,310	$ 14,410
Upfitting Cost	$ 8,308	$ 6,636	$ 1,672	$ 18,392
Idle Management Unit ($2500/depreciated over 5 yrs.)	$ 500	$ -	$ 500	$ 5,500
Estimated Resale Adjustment	$ -	$ 1,000	$ (1,000)	$ (11,000)
Fuel Cost	$ 23,810	$ 25,000	$ (1,190)	$ (13,095)
Total Evaluated Cost	$ 59,458	$ 58,166	$ 1,292	$ 14,207
CO2 Production	194,762 lbs.	204,500 lbs.	(9,738) lbs.	(54) Tons

STAFF COMMENTS:

Because the space in the Sedans that are currently available to serve as police patrol cars is becoming more inadequate to serve the needs of the law enforcement profession, staff is exploring the feasibility of shifting from Sedans to Utility vehicles. **Normally the staff would not involve the City Council in a discussion of the tools that are acquired to accomplish our daily functions. However, staff realizes that one of the City Council's important objectives is to reduce the City's carbon footprint. That objective intersects in with other City objectives, such as holding down costs where possible and providing equipment that meets departments' operational and safety requirements. Therefore, it is important that Council members review the information being provided, and at least concur that you support further exploring the use of these larger body style vehicles.**

It appears from the information that staff has gathered to date that shifting from the Sedans to Utility patrol vehicles will cost the City an additional $30,305. However, staff is hopeful that by installing the idling units, the additional cost associated with switching from Sedans to Utility patrol vehicles can be reduced to $14,207.

Police Car Replacement Information

Unit #	Mileage	In-service date	Mo. In-ser	Miles/Mo	Miles in 6mo.	Cost over next 6mo./Mile	Fuel Used	MPG	Eng. Hours	Idle Hours	Idle Hr Mo	% at Idle	Gallons of Fuel/Mo.	
196	55,135	1/6/2011	55	1,002	61,149.73	$ 2,706.63	4,571	12.1	1775				83.11	**Safe Neighborhood**
684	96,016	10/5/2007	71	1,352	104,130.03	$ 3,002.19	7,751	12.4					109.17	**Community Resource**
687	116,055	2/13/2009	55	2,110	128,715.55	$ 4,684.40	11,731	9.9					213.29	**Reserve**
799	122,993	9/10/2010	58	2,121	135,716.41	$ 4,707.66	10,407	11.8	761				179.43	**Transport**
910	101,766	8/22/2013	27	3,769	124,380.67	$ 7,688.99	10,026	10.2	13,164	8,696	322	66%	371.33	
991	93,205	3/14/2014	22	4,237	118,624.55	$ 8,388.45	8,335	11.2	9,481	5,762	262	61%	378.86	
912	88,300	11/15/2013	25	3,532	109,492.00	$ 8,476.80	8,722	10.1	10,621	6,954	278	65%	348.88	
993	33,557	4/1/2015	9	3,729	55,928.33	$ 4,921.69	3,463	**9.7**	3901	2505	278	64%	384.72	**Utility**
994	54,983	6/30/2014	17	3,234	74,388.76	$ 5,433.61	4,864	11.3	4528	2338	138	52%	286.12	**Command Cars**
916	85,827	6/3/2013	30	2,861	102,992.40	$ 5,664.58	7,852	10.9	9544	6028	201	63%	261.75	**Command Cars**
997	13,066	7/1/2015	6	2,178	26,132.00	$ 5,226.40	1,400	9.3	1647	1092	182	66%	233.35	
918	66,451	4/3/2014	20	3,323	86,386.30	$ 6,778.00	6,617	10.0	7,912	5,209	260	66%	330.85	
999	34,275	1/20/2015	11	3,116	52,970.45	$ 5,234.73	3,821	9.0	4,686	3,335	303	71%	347.36	
AVG	73,971		31	2,813	90,846.71	$ 5,608.78	6,889	10.6	6184	4,658	247	64%	265.17	

Car 910

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/31/2014	62622	5886	8130	5428
1/26/2015	66377	6332	8661	5794
2/18/2015	69118	6607.1	9103	6110
3/25/2015	72563	6928.4	9632	6485
4/17/2015	75826	7242.2	10040	6747
5/14/2015	78660	7571.5	10388	6965
6/5/2015	81971	7869.7	10739	7170
7/1/2015	85078	8239.7	11101	7393
7/29/2015	88652	8599.3	11512	7643
8/24/2015	91429	8862.2	11860	7860
9/23/2015	94810	9305.1	12280	8127
10/28/2015	98626	9686.2	12738	8415
11/25/2015	101766	10026.3	13164	8696

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3755	446	531	366	8.4	165	69%
2nd	2741	275.1	442	316	10.0	126	71%
3rd	3445	321.3	529	375	10.7	154	71%
4th	3263	313.8	408	262	10.4	146	64%
5th	2834	329.3	348	218	8.6	130	63%
6th	3311	298.2	351	205	11.1	146	58%
7th	3107	370	362	223	8.4	139	62%
8th	3574	359.6	411	250	9.9	161	61%
9th	2777	262.9	348	217	10.6	131	62%
10th	3381	442.9	420	267	7.6	153	64%
11th	3816	381.1	458	288	10.0	170	63%
12th	3140	340.1	426	281	9.2	145	66%

Car 991

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/31/2014	43402	3790	4338	2602
1/28/2015	47022	4233.5	4843	2965
2/23/2015	50582	4478.6	5207	3185
3/19/2015	53670	4753.9	5561	3416
4/9/2015	57237	5008.2	5910	3629
5/6/2015	60661	5462	6272	3852
6/3/2015	64849	5825.2	6644	4062
7/1/2015	68467	6189	7013	4284
7/27/2015	71852	6540.9	7368	4505
8/25/2015	75604	6830.3	7749	4735
9/16/2015	79123	7218.8	8060	4906
10/29/2015	83515	7669.4	8501	5172
11/18/2015	86598	7915.5	8766	5326
12/14/2015	89971	8208.2	9120	5534
1/4/2016	93,205	8,335	9481	5762

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3620	443.5	505	363	8.2	142	72%
2nd	3560	245.1	364	220	14.5	144	60%
3rd	3088	275.3	354	231	11.2	123	65%
4th	3567	254.3	349	213	14.0	136	61%
5th	3424	453.8	362	223	7.5	139	62%
6th	4188	363.2	372	210	11.5	162	56%
7th	3618	363.8	369	222	9.9	147	60%
8th	3385	351.9	355	221	9.6	134	62%
9th	3752	289.4	381	230	13.0	151	60%
10th	3519	388.5	311	171	9.1	140	55%
11th	4392	450.6	441	266	9.7	175	60%
12th	3083	246.1	265	154	12.5	111	58%
13th	3373	292.7	354	208	11.5	146	59%
14th	3,234	127	361	228	25.5	133	63%

Car 912

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/23/2014	52160	5114	6333	4206
2/5/2015	56221	5365.3	6829	4534
3/2/2015	59249	5673.8	7227	4806
4/1/2015	62538	5979.7	7648	5088
4/30/2015	65845	6327.1	8014	5307
6/2/2015	68,749	6644	8359	5527
7/9/2015	71981	7012.8	8748	5775
8/12/2015	75271	7356.4	9130	6016
9/10/2015	78758	7744.4	9515	6250
10/7/2015	81908	8066.2	9871	6473
11/4/2015	85203	8336.1	10232	6698
12/8/2015	88300	8722.2	10621	6954

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	4061	251.3	496	328	16.2	168	66%
2nd	3028	308.5	398	272	9.8	126	68%
3rd	3289	305.9	421	282	10.8	139	67%
4th	3307	347.4	366	219	9.5	147	60%
5th	2,904	316.9	345	220	9.2	125	64%
6th	3,232	368.8	389	248	8.8	141	64%
7th	3290	343.6	382	241	9.6	141	63%
8th	3487	388	385	234	9.0	151	61%
9th	3150	321.8	356	223	9.8	133	63%
10th	3295	269.9	361	225	12.2	136	62%
11th	3097	386.1	389	256	8.0	133	66%

Car 793

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/11/2014	102771	10282		
1/6/2015	105937	10670	6639	
2/20/2015	108242	10955.3	6883	

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr
1st	3166	388		
2nd	2305	285.3	244	

Car 994

Date	Mileage	Fuel	Eng. Hr	Idle Hr
1/15/2015	21,033	1,873	1696	845
2/18/2015	24892	2178.4	2070	1067
3/23/2015	28383	2471.6	2404	1273
4/23/2015	32279	2789.2	2691	1412
5/21/2015	35378	3078.4	2930	1530
6/23/2015	38775	3415.9	3204	1676
7/30/2015	41969	3663.7	3479	1815
9/1/2015	45288	3841.3	3741	1945
10/8/2015	48653	4297.1	4021	2086
11/6/2015	51808	4581.6	4267	2204
12/9/2015	54983	4863.9	4528	2338

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3,859	305	374	222	12.6	152	59%
2nd	3491	293.2	334	206	11.9	128	62%
3rd	3896	317.6	287	139	12.3	148	48%
4th	3099	289.2	239	118	10.7	121	49%
5th	3397	337.5	274	146	10.1	128	53%
6th	3194	247.8	275	139	12.9	136	51%
7th	3319	177.6	262	130	18.7	132	50%
8th	3365	455.8	280	141	7.4	139	50%
9th	3155	284.5	246	118	11.1	128	48%
10th	3175	282.3	261	134	11.2	127	51%

Car 916

Date	Mileage	Fuel	Eng. Hr	Idle Hr
1/7/2015	52828	4818	5895	3749
2/18/2015	56256	5056.5	6393	4101
3/27/2015	59606	5345.1	6837	4409
4/24/2015	62840	5660.9	7153	4593
5/29/2015	66451	5998.8	7475	4768
6/30/2015	69686	6332.8	7807	4966
8/13/2015	73,254	6736.5	8207	5216
9/10/2015	76379	7040	8539	5416
10/9/2015	78898	7265.3	8802	5573
11/18/2015	82314	7617	9174	5804
12/28/2015	85827	7852.4	9544	6023

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3428	238.5	498	352	14.4	146	71%
2nd	3350	288.6	444	308	11.6	136	69%
3rd	3234	315.8	316	184	10.2	132	58%
4th	3611	337.9	322	175	10.7	147	54%
5th	3235	334	332	198	9.7	134	60%
6th	3,568	403.7	400	250	8.8	150	63%
7th	3,125	303.5	332	200	10.3	132	60%
8th	2519	225.3	263	157	11.2	106	60%
9th	3416	351.7	372	231	9.7	141	62%
10th	3513	235.4	370	219	14.9	151	59%

Car 797

Date	Mileage	Fuel	Eng. Hr	Idle Hr
1/7/2015	103446	10719	7046	
3/9/2015	106591	11013.5	7321	
6/1/2015	110,052	11330.2	7508	

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG
1st	3145	294.5	275		
2nd	3,461	316.7	187		10.9

Car 918

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/11/2014	29883	3001	3498	2277
2/10/2015	36871	3666.3	4440	2940
3/5/2015	40113	3963.9	4864	3234
4/1/2015	43426	4252.4	5227	3466
4/29/2015	47328	4634.4	5642	3723
6/9/2015	50832	4907.2	6027	3967
7/10/2015	54,082	5308.1	6417	4223
8/20/2015	56,791	5611.4	6753	4447
9/29/2015	59713	5954.6	7073	4649
11/9/2015	63090	6264.3	7465	4902
12/10/2015	66451	6616.8	7912	5209

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
2nd	3242	297.6	424	294	10.9	130	69%
3rd	3313	288.5	363	232	11.5	131	64%
4th	3902	382	415	257	10.2	158	62%
5th	3504	272.8	385	244	12.8	141	63%
6th	3,250	400.9	390	256	8.1	134	66%
7th	2,709	303.3	336	224	8.9	112	67%
8th	2,922	343.2	320	202	8.5	118	63%
9th	3,377	309.7	392	253	10.9	139	65%
10th	3,361	352.5	447	307	9.5	140	69%

Car 999

Date	Mileage	Fuel	Eng. Hr	Idle Hr
2/18/2015	3203	345.9	502	381
3/24/2015	6766	728.8	1092	835
4/20/2015	9798	1007.2	1465	1090
5/20/2015	13057	1399.2	1871	1374
6/18/2015	16350	1788.7	2280	1652
7/15/2015	19594	2145.1	2681	1925
8/21/2015	22425	2468.6	3090	2220
9/17/2015	25645	2835	3489	2485
10/13/2015	28511	3140.5	3855	2734
11/19/2015	31713	3539.2	4304	3054
12/18/2015	34275	3821.4	4686	3335

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3203	345.9	502	381	9.3	121	76%
2nd	3563	382.9	590	454	9.3	136	77%
3rd	3032	278.4	373	255	10.9	118	68%
4th	3259	392	406	284	8.3	122	70%
5th	3293	389.5	409	278	8.5	131	68%
6th	3244	356.4	401	273	9.1	128	68%
7th	2831	323.5	409	295	8.8	114	72%
8th	3220	366.4	399	265	8.8	134	66%
9th	2866	305.5	366	249	9.4	117	68%
10th	3202	398.7	449	320	8.0	129	71%
11th	2562	282.2	382	281	9.1	101	74%

Car 196

Date	Mileage	Fuel	Eng. Hr	Idle Hr
12/23/2014	48435	4076.6		
4/29/2015	51721	4304.9	1681	
7/22/2015	55135	4571.3	1775	

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr
1st	3286	228.3		
2nd	3414	266.4	94	

Car 993

Date	Mileage	Fuel	Eng. Hr	Idle Hr
5/4/2015	3641	350.9	382	229
5/29/2015	6968.7	749.6	749	461
6/24/2015	10,335			
7/22/2015	14,085	1514.3	1483	903
8/19/2015	17,508	1898.9	1908	1182
9/15/2015	20,823	2283.5	2292	1425
10/12/2015	24,101	2604.2	2670	1668
11/9/2015	27,460	2,964	3060	1915
12/7/2015	30,104	3307.4	3442	2186
1/4/2016	33,557	3462.5	3901	2505

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3641	350.9	382	229	10.4	153	60%
2nd	3327.7	398.7	367	232	8.3	135	63%
3rd							
4th	3,423	384.6	425	279	8.9	146	66%
5th	3,315	384.6	384	243	8.6	141	63%
6th	3,278	320.7	378	243	10.2	135	64%
7th	3,359	360	390	247	9.3	143	63%
8th	2,644	343	382	271	7.7	111	71%
9th	3,453	155.1	459	319	22.3	140	69%

Car 997

Date	Mileage	Fuel	Eng. Hr	Idle Hr
8/13/2015	3,539	442.2	493	349
9/25/2015	6734	801.5	857	572
11/10/2015	9916	1140.6	1245	820
12/31/2015	13,066	1400.1	1647	1092

Monthly Differences

Month	Mileage	Fuel	Eng Hr	Idle Hr	MPG	Drive Hrs	Idling %
1st	3,539	442.2	493	349	8.0	144	71%
2nd	3,195	359.3	364	223	8.9	141	61%
3rd	3182	339.1	388	248	9.4	140	64%
4th	3,150	259.5	402	272	12.1	130	68%