The proceedings of the City of Florence Environmental Management Advisory Committee were recorded digitally and are on file at Florence City Hall.

City of Florence
Environmental Management Advisory Committee
March 17, 2016

CALL TO ORDER - ROLL CALL

Meeting called to order at 2: 02 p.m.

Members Present:	Chairperson – Bonnie MacDuffee, Vice Chair - Sharon McLeod, David Lloyd, Larry Barney, Dan Webb, David Twombly, Dina McClure and Sandra Davidson
Members Absent:	Erika Bessey, Joan Delano and Josh Haring
Staff & Others Present:	Planning Director Wendy FarleyCampbell, Councilor Susy Lacer, Water & Wastewater Plant Superintendent Gary McLauchlin, CTR Kortney Roberts, CTR Scott Johnson and CCD Alan Twombly

1. APPROVAL OF AGENDA

Start Time:	02:04 p.m.
Action:	Approve agenda as shown.
Vote:	Unanimous

2. PUBLIC COMMENTS

This is an opportunity for members of the audience to bring to the Council's attention any item not otherwise listed on the Agenda. Comments will be limited to three (3) minutes per person, with a maximum time of 15 minutes for all items. Speakers may not yield their time to others.

Action: None

3. Executive Session Per ORS. 192.660 (1) (f)

Start Time:	2:08 p.m.
Action:	Held Executive Session to continue review and discussion of the financial records of the haulers and their individual profitability under the current solid waste rate schedule.
End Time:	2:25 p.m.

4. Mercury Minimization Plan

Start Time: 2:27 p.m.
Action: Gary McLauchlin gave a presentation that included a report regarding awareness and cooperation in the public schools. There was Committee discussion, Mr. McLauchlin requested input from the Committee and stated that the DEQ deadline was the first of April. There was discussion about publishing the report in the Siuslaw News. It was also recommended that promotion could be added at the Habitat Restore, PSA with the Household Hazardous Waste Round-Up, the Green Fair, trifolds could be placed in the utility and hauler billings and the distribution of posters.
End Time: 2:35 p.m.

5. **Public Hearing – Residential & Commercial Solid Waste Rate Review**

Start Time: 2:36 p.m.
Action: Hearing was held regarding the recommendation to not raise garbage hauling rates until a 2017 CPI increase, lower drop box rates, change license fee methodology to 3% of gross receipts, and amend Florence City Code Title 9 Chapter 4 to require landlords to provide garbage service for tenants, establish fleet standards, and housekeeping solid waste code amendments, hereby recommending to Repeal Resolution 5, Series 2012. Wendy FarleyCampbell distributed a copy of the presentation that had been discussed at the Council work session with some modifications and updates regarding findings and suggestions from management. She then pointed out the final six decision points for the Committee to consider and vote on (see attachment). She described the decision points that included the proposed notification options of trash blowing and/or oil spillage, the proposed methodology of license fees and the proposed categories for CPI rates. There were no questions from the Committee on Staff's report. The Committee agreed to accept public testimony with each decision point that was deliberated on. There was discussion between the Committee members and the haulers regarding decision point concerns and recommendations and final votes were as follows:

1. Landlord Requirements, FCC 9-4-6-W - McLeod motioned to approve that Landlord provide garbage and recycling service to begin January 2017, to change single family and duplex working to "residential units" and eliminate the container size specification. Davidson seconded. Committee vote of 5 to 1 in favor. The motion passed.

2. Rate Review, FCC 9-4-5 –
   Public Comments: Change financial reporting to include "profit and loss report", customer counts and type in general more specificity.
   McLeod motioned to approve that there be a rate review every 3 years, to remove min/max language, that the county fee increase be pass-through via Resolution, that the filing fee be increased to $500.00 and add the change annotated in the public comments with exact wording to be provided by CTR. Davidson seconded. Committee vote of 5 to 1 in favor. The motion passed.

3. Fleet and Vehicle Operations – FCC 9-4-4-5-A7 –
   Public Comments: CCD age is not a factor, CTR more than engine is the issue, remove roll-off truck from consideration.

McLeod motioned to add a deadline to d.1 of December 31, 2018 for all collection fleet to be painted, to remove d.2 & 3, to remove a.1.i and to use Code Enforcement number on the collection fleet. Lloyd Seconded. Committee vote of 4 to 1 in favor. The motion passed.

4. License Fee Changes – McLeod motioned to approve the distribution of revenue at 80% to streets, 10% general fund and 10% to education and accept the Phasing change to 2026. Lloyd seconded. Committee vote of 5 to 0 in favor. The motion passed.

5. Rate Schedule Changes – McLeod motioned to approve the Drop Box from 9-10 at $102.00, 11-30 at $112.00, 31-40 at $122.00 with a 1% CPI increase in July 2016 and 80.6% of CPI-U annually on July first of each year by Resolution. Lloyd seconded. Committee vote of 5 to 0 in favor. The motion passed.

6. Zonal Study – Barney motioned to approve that EMAC will research feasibility of doing a study to include: cost, who can perform work, potential outcomes and benefit. McClure seconded. Committee vote of 5 to 0 in favor. The motion passed.

End Time: 4:12 p.m.

OLD BUSINESS

6. **Committee Discussion / Report Items – City Hall Kiosk, Flo-Grow, Other**

Included:

- City Hall Kiosk
- Flo-Grow Update
- Hazardous Waste Event

Start Time: 4:13 p.m.

Discussion: Davidson recommended that another bin be added to the kiosk to collect plastic bags and MacDuffee suggested that they could be taken to Food Share to be reused. Gary McLauchlin gave an update regarding the upcoming Memorial Day garden bed project that involved Flo-Grow and the City Garden Club. It was reported that volunteers were in place for the Hazardous Waste Event scheduled in April, Bonnie MacDuffee, Sandy Davidson and Sharon McLeod on Friday and Susy Lacer and Dina McClure on Saturday. There was brief Committee discussion regarding publicity. MacDuffee reminded the Committee that the Greener Florence nominations were due on April 18th.

7. **SET NEXT AGENDA**

A Regular meeting was scheduled for April 28, 2016, 2:00 p.m.

Meeting adjourned at 4:24 p.m.

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Bonnie MacDuffee, Chairperson

City of Florence

A City in Motion

Mercury Minimization Plan 2016

NPDES Permit No. 101703

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1.0 WWTF NPDES Permit

The City of Florence National Pollutant Discharge Elimination System (NPDES) permit was issued by Oregon Department of Environmental Quality (DEQ) on May 22 1014. DEQ has included in the permit a requirement to develop and implement a mercury minimization plan.

DEQ requires that a mercury minimization plan contain the following elements:

- Identification and evaluation of sources of mercury.
- Identification and evaluation of conditions that might contribute to methylation in collection and treatment system.
- Identification of industrial, commercial and residential sources of mercury
- Monitoring plan to confirm current and potential sources of mercury
- Identification of methods for reducing or eliminating mercury.
- Ongoing monitoring of effluent to assess effectiveness

This document addresses the aforementioned elements and constitutes the City's mercury minimization plan.

2.0 Identification and Evaluation of Sources of Mercury

2.1 Mercury in the Environment

Mercury is a naturally occurring element found in cinnabar deposits and areas of geothermal activity. In Oregon, mercury was mined commercially and used extensively in gold and silver amalgamation. Mercury has been used historically in fungicide formulations and can still be found in many commercial products including fluorescent lights, thermometers, automobile switches and dental amalgam. Mercury is also naturally present in trees and fossil fuels such as coal, natural gas, diesel fuel and heating oil. The mercury present in these fuel sources is released into the atmosphere upon combustion. This atmospheric mercury can be transported great distances and is known to be deposited on the landscape via either wet or dry deposition (DEQ, 2006).

Mercury can be present in various physical and chemical forms in the environment (Figure 1). The majority of the mercury found in the environment is in the form of inorganic or elemental mercury, but these forms of mercury can be converted to organic or methyl mercury by sulfate-reducing bacteria. Methyl mercury production is affected by a host of physical and chemical factors including temperature, redox potential, dissolved oxygen levels, organic carbon, sediment particle size, alkalinity, sulfate concentration and pH. Methyl mercury, once formed,

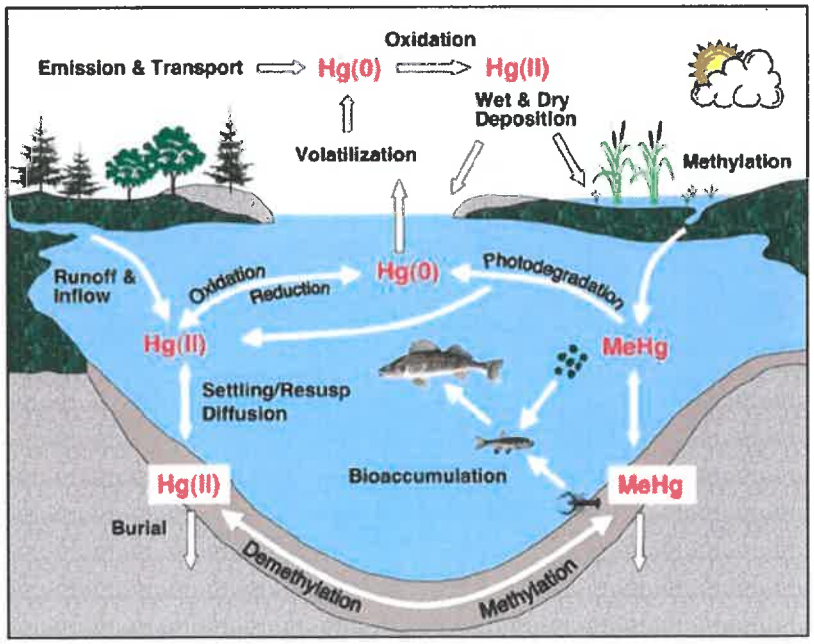

Figure 1: Mercury cycle

represents the most bioaccumulative form of mercury in fish tissue and the most toxic form of mercury for human consumers (DEQ, 2006). Accordingly, DEQ has adopted fish tissue criteria for methyl mercury to protect human health.

2.2 Sources of Mercury in Wastewater

Anthropogenic sources of mercury in wastewater can come from the residential, commercial, or industrial sectors. In a 2002 study, the Association of Metropolitan Sewerage Agencies (AMSA now known as National Association of Clean Water Agencies (NACWA)) listed the most common sources of mercury pollution, which can be seen in Table 1 below (AMSA, 2002).

Table 1: Common Sources of Mercury in Wastewater (NACWA, 2002)

Commercial	Residential	Industrial
• Dental offices • Hospitals • Laboratories • Universities/schools • Medical clinics • Vehicle services facilities	• Human waste (amalgam) • Human waste (dietary) • Laundry graywater • Household products • Improper disposal of mercury thermometers	• Chlorine Production • Portland Cement • Mining – i.e., gold mining • Casuistic Soda • Sulfuric Acid

Mercury is present in a variety of consumer and commercial products including dental amalgam, batteries, compact fluorescent lights, jewelry, skin creams, paint, thermometers, switches/relays, etc. While many of these products have a low probability of reaching the sanitary sewer system in large quantities, their removal from the environment is still beneficial.

AMSA's report concluded that:

The largest source of mercury in wastewater influent is discharges from dental offices. The next largest sources are domestic sources (human waste, household products, and laundry graywater) and hospitals. Of the domestic sources, human waste is considered uncontrollable and laundry graywater is considered very difficult to effectively control.

Additionally, a 2008 EPA report estimated that 50% of the nation's mercury in wastewater comes from the dental sector (USEPA, 2008). Supporting documentation for the EPA's Proposed Effluent Limitation Guidelines and Standards for the Dental Category (released October, 2014) uses 2007 Census data and estimates that there were roughly 110,000 dental offices that place and/or remove dental amalgam in the United States. The EPA estimates that 4.4 tons of mercury waste from these dental offices is discharged to WWTFs annually (USEPA, 2014).

3.0 Identification of Methylation Conditions

3.1 Methylation in the Natural Environment

As mentioned previously, the methylation of mercury poses a significant environmental threat. Methylation of mercury occurs mainly under anaerobic conditions and is greatly affected by the availability of inorganic mercury, pH, organic matter concentration, microbial activity, redox potential, sulfate concentration and

temperature. The methylation of mercury is seasonally/temperature-dependent, with methyl mercury levels likely to increase in summer and fall and decrease in winter and spring (DEQ, 2013).

In natural ecosystems, the methylation of mercury occurs through one of the following pathways:

- Biological activity by various species of microorganisms, mainly bacteria
- Chemical reactions in soils or water that may occur through contact with organic matter and hemic substances
- Photochemical processes (DEQ, 2013)

Mercury methylation is generally thought to be facilitated by sulfate-reducing bacteria, which thrive in organic-rich, anaerobic sediments of many aquatic systems (e.g., wetland soils, lake sediments). Accordingly, it is widely recognized that wetlands, especially those rich in organic matter and receiving appreciable atmospheric mercury inputs, may be important sites of methyl mercury production.

However, recent monitoring in California has shown that not all wetlands are sources of methyl mercury and that some wetlands can act as sinks or are neutral in regard to methyl mercury production, emphasizing the point that site specific characteristics and water quality do influence the methylation of mercury in the environment (DEQ, 2013).

3.2 Methylation Potential in Wastewater Collection and Treatment Systems

3.2.1 Wastewater Collection System

The City of Florence wastewater collection system consists of about 54 miles of gravity sewer and 15 miles of force main. Where possible, gravity is used to convey wastewater to one of the City's WWTF. City Public Works crews periodically perform several maintenance activities on the sanitary collection system that help decrease organic matter and sediment buildup within the system that could facilitate the methylation of mercury. These activities include line cleaning and repair, manhole maintenance, root control, and TV inspection. The City also operates a capital improvement program to replace and rehabilitate existing sanitary sewer lines.

In addition to the sanitary collection system, the City operates and maintains 38 pump stations. In order to prevent sediment buildup in the City's pump stations, Public Works staff routinely clean the pipelines and pump down the wet wells to stir up and flush out any sediment that may have settled there. The force mains at each pump station are also designed to ensure that pump cycles reach adequate velocities (3.5-8 ft./sec) during normal operation to scour sediment from the line. The City's maintenance activities decrease organic matter and sediment build up within the collection system that could facilitate the methylation of mercury.

3.2.2 Wastewater Treatment Facilities

The City of Florence WWTF serve City of Florence residents. The WWTF provide treatment that consists of screening, primary treatment, activated sludge, UV disinfection, before the treated water is discharged to the Siuslaw River.

Studies have shown that modern advanced wastewater treatment plants incorporating activated sludge processes are able to significantly reduce the amount of total mercury from wastewater. Some of the sludge thickening and anaerobic digestion processes have the capacity to cause the methylation of mercury, but this is

typically offset by the demethylation that occurs during the sludge removal and aeration processes. According to a study at the San Jose/Santa Clara Water Pollution Control Plant, "although anoxic conditions are present during some process steps of secondary treatment, the conditions were not sufficient to promote methylation of mercury." (SJ/SC, 2007, DEQ, 2013)

The City has conducted sampling of the effluent and River for "total" mercury.

Table 2 shows the average mercury removal efficiencies at the City's WWTF.

Date	Sample Source	Mercury mg/L
6/30/14	Effluent	2.6
6/25/14	Effluent	3.42
8/10/15	Effluent	2.13
	River	1.02
11/23/15	Effluent	2.05
	River	1.28

Table 2: Average Influent and Effluent Total Mercury Concentrations

As noted previously, DEQ adopted water quality criteria for methyl mercury in fish tissue, but there is limited data regarding methyl mercury in WWTF effluent. Methyl mercury concentrations in wastewater, receiving waters, and fish tissue can be calculated from total mercury with additional information and a series of "translators." A literature review conducted by the EPA for the Proposed Effluent Limitation Guidelines for the Dental Category estimates that WWTF treatment efficiency for methylated mercury is roughly 90% (EPA 2014). The San Jose/Santa Clara Water Pollution Control Plant (SJ/SC WPCP or "Plant") conducted a multi-year study regarding the fate and transport of mercury at the Plant. The study focused on examining the efficiency and primary mechanisms of mercury removal in various Plant processes and whether net production of more toxic forms of mercury (e.g., methyl mercury) occurs in the Plant. The study found that concentrations were reduced nearly 99% for total mercury and 97% for methyl mercury. There was no evidence of a net production of methyl mercury across the Plant (SJ/SC, 2007).

4.0 Strategies for Control of Mercury

Instream and effluent samples results for the City of Florence WWTF shows a quantifiable amount of total mercury in the discharge. At this time, DEQ considers any facility with consistent concentrations of total mercury in the discharge to have a reasonable potential to exceed the methyl-mercury criterion in the receiving water. For this reason the WWTF NPDES permit requires the city to develop and begin implementation of a DEQ approved mercury minimization plan (MMP).

While WWTP can remove a lot of mercury from wastewater, the only cost-effective way to reduce mercury in the discharge is to remove mercury before it is released to the wastewater system. Many users of the Wastewater system that have historically used products containing mercury might be discharging it into the local wastewater treatment plant. The potentially noncompliant users are represented by sectors of the community that have not traditionally been subject to wastewater regulation for metals like mercury, e.g., hospitals, dental offices, and schools.

The traditional approach to this problem would be to issue discharge permits to these mercury discharging facilities, require periodic wastewater sampling and analysis to determine compliance with the sewer use limits for mercury, and implement stepped enforcement programs to force changes or installation of technology to

achieve compliance. Monitoring and administrative cost for these procedures are substantial, and the city would need the permitted users of the treatment plant to pay for this kind of a program.

This plan offers an alternative solution to this problem: mercury-using facilities that agree to implement Best Management Practices (BMP) for mercury, and demonstrates to be in compliance with the city's wastewater discharge permit. This approach in many cases will require no permits, no sampling and analysis, and only enough oversight by the city to ensure that the BMP are in fact being implemented. Further, BMP are specific to each sector and are commonly used by that particular type of facility.

5.0 Inventory and Identification

The City of Florence Public Works has completed a preliminary review of the potential sources of mercury discharge to the Wastewater system. The following categories have been identified:

5.1 Dental Clinics

Dental Clinics

Advantage Dental Clinic	1225 Hwy 101
Florence Dental Clinic	2750 Kingwood St.
Charles W. Korando	1705 22nd St.
Hunt Family Dentistry	950 9th St.
Chad E. Clement DDS	1250 Bay St. #5
Coastal Denture Clinic	1647 W. 12th ST.
Denture Masters	208 Nopal St.
Denture Services INC.	524 Laurel St.

5.2 Major Medical Facilities

Major Medical Facilities

Coastal Diagnostic Testing Group	1525 12th St. Suite 11A-11B
Emerald Sleep Disorders Center	4480 Hwy 101
Fresenius Medical Care Dialysis Service	2820 Kingwood
Peace Harbor Hospital	400 Ninth St.
General Surgery	330 Ninth St.
Home Health Hospice	2230 Kingwood St.
Imaging Center	400 Ninth St.
Orthopedic Surgery	530 Ninth St.
P.H. Rehabilitation & Wellness Center	685 hwy 101
Primary Care	380 Ninth St.
Walk-In Clinic	390 Ninth St.
Women's Health	340 Ninth St.
Peace Health Lab	396 ninth St.
Wellspring Clinic	1234 rhododendron Dr.
Florence Eye Clinic	535 9th St.
Focal Point & Oregon Eye Associates	2001 Hwy 101
Best for Hearing	2285 US-101 Ste M

Dynamic Hearing Solutions	1647 12th St.
Hearing Associates Inc.	1525 h St. Suite 11A-11B

5.3 Assisted Living

Assisted Living

Elder Berry Square	3321 Oak St.
New-Horizon In-Home Care	1790 Hwy 101
Regency Florence	1951 E. 21st. St.
Spruce Point Assisted Living	375 Ninth St.

5.4 Veterinary Facilities

Veterinary Facilities

Oceanside Veterinary Clinic	1739 W. 22nd St.
Osburn Veterinary Clinic	1730 Kingwood St.
Florence Humane Society	2840 Rhododendron Dr.

5.5 Funeral Homes

Funeral Homes

Burns Riverside Chapel	2765 Kingwod St.

5.6 Schools

Schools

Siuslaw Elementary School	2221 Oak St.
Siuslaw Middle School	2525 Oak St.
Siuslaw High School	2975 Oak St.
Lane Community College	3149 Oak St.

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5.7 HVAC Contractors

HVAC Contractors

Florence Heating & Sheet Metal	1645 Kingwood St.
Card Heating & Air	7920 N. Fork Siuslaw Road xxxx
Temp Right Refrigerating & Heating	PO Box 1189
Coast Heating & Air	1551 15th St. Unit 1
Cool Breeze Refrigeration & Heating	PO Box 251

5.8 Automotive Repair

Automotive Repair

ACR Auto Repair	1736 15th St.

Brians Automotive	4005 Hwy 101
Florence RV & Motor Specialists	4390 Hwy 101
Hobergs Muffler Center INC.	345 Hwy 101
J & J Automotive	1885 42nd St.
Keith's RV Repair & Mobile Service	1235 17th Place
Les Schwab Tire Center	4235 Hwy 101
Muffler Works	4480 Hwy 101 bldg A
Oil Can Henry's	2086 Hwy 126
Potter's Automotive	4515 Hwy 101
RV Masters of Oregon LLC	2057 Winchester Ave.
Tony's Garage	1730 21st St.
West Coast Autobody inc.	1178 Quince St.
West Coast Mobile RV Service & Repair	3185 Munsel Lake Rd.

6.0 Action Plan to Reduce and Elimination Mercury

Action Plan to reduce and elimination Mercury

Things We are Going To do	Mail	Website	Visits
Public Education & Outreach	X	X	
Industrial Education and Out Reach	X	X	X
Commercial Education and Outreach	X	X	X
Conduct education/awareness training for Wastewater staff	X	X	X
Disposal Collection site information	X	X	
Hazardous Waste Collection day notice	X	X	
Bulb recycling education	X	X	
Site visits to potential significant sources			X

7.0 Outreach

Outreach

Sector	Outreach Tools				
	Ads in Paper	Mail information Direct	Site Visits	Recycle Program	Website
Medical		X	X	X	
Dental		X	X	X	
Industry		X	X	X	
HVAC		X		X	
Auto Switch		X		X	
Schools			x	X	
General Public	X	X		X	X
Fluorescent Bulbs	X	X		X	X
Thermometers	x	x		X	X

Appendix 1. Medical Facility Mercury Checklist

Best Management Practices for Mercury are taken from the AHA/EPA "Making Medical Mercury-Free" Criteria. Compliance with these BMPs may be considered as compliance with reducing mercury; wastewater sampling and analysis may also be waived by the City.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP
Policy				1. Has your facility established a mercury plan and timeline for the reduction and eventual elimination for mercury-containing equipment and chemicals?
				2. Has your facility implemented and Environmentally Preferable Purchasing (EPP) policy for mercury products and process to regularly review mercury use reduction and elimination progress?
				3. Has your facility established mercury management protocols for safe handling, mercury spill clean-up procedures, disposal procedures, and education and training of employees?
Mercury Products				4. Has your facility replaced patient mercury thermometers?
				5. Has your facility replaced all tor majority (75%) of mercury sphygmomanometers?
				6. Has your facility replaced all of majority (75%) of Mercury clinical devices (bougies, miller-abbott tubes, dilators, etc.)?
				7. Has your facility inventoried and labeled all mercury-containing facility devices (switches, thermostats, etc.)?**
				8. Has your facility implemented a program to recycle fluorescent lamps?**
Lab				9. Has your facility implemented battery collection program?**
				10. Has your facility replaced all or majority (75%) of mercury lab thermometers?
				11. Has your facility replaced B5/Zenkers stains with non-mercury substitute?
				12. Has your facility inventoried mercury-containing lab chemicals?

** May not affect wastewater

Actions:

date	Description of action taken

Comments:

Appendix 2. Dental Facility Mercury Checklist

Best Management Practices are those defined by the ADA.

Compliance with the ADA recommended mercury management practices plus the installation and maintenance of an amalgam separation meeting ISO 11143 standards may be considered as compliance with the limiting of mercury; wastewater sampling and analysis may also be waived by the city.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

Yes	No	Date	Best Management Practice
			1. Has all bulk mercury been eliminated from your stock at your dental office?
			2. Does your dental office use precapsulated alloys?
			3. Does your dental office recycle disposable amalgam capsules?
			4. Does your dental office capture and recycle non-contact scrap amalgam?
			5. Does your dental office capture and recycle contact amalgam including the contents of chair-side traps?
			6. Does your dental office recycle contact amalgam retained by the vacuum pump filter?
			7. Does your dental office disinfect and recycle extracted teeth with amalgam fillings?
			8. Does your dental office use non-chlorine, non-bleach line cleaners that minimize the dissolution of amalgam?
			9. Does your dental office have and maintain an amalgam separator meeting ISO standards? Manufacture:_____ Model: _____
			10. Does your dental office recycle florescent bulbs?**

** May not affect wastewater

Actions:

date	Description of action taken

Comments:

_____

_____

_____

_____

_____

5.3 Industrial Facility Mercury Checklist

Industrial Best Management Practices for Mercury

Compliance with these BMPs may be considered as compliance with the local sewer use limit for mercury; wastewater sampling and analysis may also be waived by the city.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP
Policy				1. Has your facility established a mercury policy statement that includes the reduction of virtual animation of mercury?
				2. Has your facility developed a plan to phase-out mercury-containing devices?
				3. Has your facility implemented a chemical management program that includes pre-purchase review and approval?
Mercury Products				4. Has your facility established mercury management protocols for safe handing mercury spill clean-up procedures, disposal procedures, and education and training of employees about these protocols?
				5. Has your facility inventoried all mercury-containing devices (such as switches, thermostats, etc.)?**
				6. Has your facility labeled mercury-containing devices to recycle at the end of life?**
				7. Has your facility implemented a program to recycle florescent lamps?**
				8. Has your facility properly recover and recycle elemental mercury and mercury-containing products?**
Lab				9. Has your facility requested certificates of analysis for bulk chemicals known to have potential mercury contamination?
				10. Has your facility reduced the use fo mercury-containing chemicals as much as feasible?
				11. If applicable, has your facility inventoried mercury-containing lab chemicals, thermometers and other devices with a plan for non-mercury product substitution?

** May not affect wastewater

Actions:

date	Description of action taken

Comments:

Appendix 4. School Mercury Checklist

Best Management Practices for Mercury are taken from the DEQ's Green and Healthy Schools Criteria. Compliance with these BMPs may be considered as compliance with reducing mercury; wastewater sampling and analysis may also be waived by the City.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP	
Policy				1. Has your school completed a mercury products inventory for the entire school?	
				2. Does your school have an action plan in place to eliminate mercury-containing items that were found as a result of the inventory?	
				3. Has all elemental mercury been eliminated from classrooms at your school?	
Mercury Products				4. Have all mercury compounds been eliminated from classrooms and storerooms?	
				5. Have all mercury lab thermometers been eliminated from the classroom?	
				6. Have all mercury lab barometers been eliminated from the classrooms?	
				7. Have all mercury fever thermometers been eliminated from the school?	
				8. Have all mercury blood-pressure cuff been eliminated from the school?	
Optional				9. Are all mercury-containing items being stored in airtight, unbreakable containers?	
				10. Has the danger of a mercury spill been mitigated by having a mercury spill kit and trained staffed to use the kit?	
				11. If your school has completed any of these activities, check below: **	
				____ Classroom presentations on mercury	____ Phase-out of mercury thermostats
				____Recycling of fluorescent bulbs	____Recycling of mercury batteries

** May not affect wastewater

Actions:

date	Description of action taken

Comments:

_____

_____

_____

Appendix 5. General Public Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as reducing and eliminating household use of mercury containing products, and recycling (rather than discarding) old mercury containing products.

Educate households in reducing and eliminating their use of mercury containing products. Encourage participation by household in recycling their old mercury containing products.

Household Mercury Product	Discontinued Sale (Describe)	Recycled Products (Quanity)

Note: Common household mercury products include fever and other thermometers, thermostats, and "silent" light switches.

Outreach activities to households (and retail stores). List date accomplished.

Activity: Date:	Website /Ads in Paper/ Displays	Mailing Surveys	Collection Events	Workshops Community Events	Site Visits or Personal Contacts	Other Describe:

Appendix 6. Mercury Fact Sheet

What is mercury?

Mercury, chemical symbol Hg, is a silver-colored metallic element that is toxic to living organisms. At room temperature, elemental mercury is a liquid, conducts electricity, and mixes easily with other metals. Mercury also expands and contracts evenly with temperature changes. Elemental mercury easily breaks up into many small droplets and evaporates to form mercury vapor, a colorless and odorless gas. One of the organic forms of mercury, methyl mercury, is volatile, very water soluble, and the most toxic form of mercury. Mercury can cycle in the environment due to its ability to change forms.

Where is mercury found?

Although mercury is a naturally occurring element, more than two-thirds of the mercury in the atmosphere comes from human-made products and energy production activities. Mercury is released into the atmosphere through a variety of means such as evaporation from water and land, but primarily through coal-fired utility and incinerator emissions. Mercury gets into the soil through the natural breakdown of mercury-containing rocks, disposal of mercury in landfills, and atmospheric deposition. It enters the watershed through runoff, atmospheric deposition, and when mercury products are poured down the drain. Once in the water cycle, mercury can convert to methyl mercury. Methyl mercury can accumulate in the tissues of fish and other organisms inhabiting mercury contaminated bodies of water, and may be carried up the food chain.

What are the impacts of mercury exposure on humans?

Humans are exposed to mercury through their diet (primarily through fish), absorption, or through the inhalation of toxic elemental mercury fumes. Signs and symptoms of brief exposure may include coughing, shortness of breath, chest pain, nausea, vomiting, diarrhea, fever, and bronchitis. Long-term exposure can result in shakiness, tremors, loss of muscle control, memory loss, kidney disease, and loss of appetite and weight. The health effects due to mercury exposure depend on several factors, including the amount of consumed, absorbed, or inhaled mercury and the length and frequency of exposures. Also a person's general health status, age, gender, family history, diet and lifestyle, and exposure to other chemicals may have an effect on whether the mercury causes an ill effect. Young children and fetuses are most sensitive to mercury poisoning during early development to age six.

What can you do to help prevent mercury pollution?

- Once mercury is released it is difficult to remove, so the best practice is to prevent mercury from entering the environment, whenever feasible.
- Mercury is being phased out of many retail products such as thermometers. However, as a consumer, educate yourself, do not buy mercury-containing items if a substitute is available. Below is a chart of items containing mercury and their alternative.
- Separate out household products containing mercury (thermometers and the like) and dispose of them during hazardous household waste collection days, when other products such as paint and pesticides are collected.

Items with Mercury	Alternatives
Thermometers	Red Bulb (Alcohol) Thermometers or Digital Thermometers
Non-Electronic Thermostats and Thermostat Probes	Electronic Thermostats and Sodium/Potassium Thermostat Probes
Barometers	Aneroid Barometers
Old Alkaline-Type Batteries Prior to 1996	Rechargeable Alkaline or Mercury-Free Batteries
Quicksilver Maze Toys (Old)	Mercury-Free Toys
Old Latex Paint (Before 1990)	New Latex Paint
Some Shoes that Light Up	Mercury-Free Shoes
Some Light and Appliance Switches such as in clothes irons or space heaters	Mechanical or Electrical Switches such as magnetic dry or optic sensor switches
Contact Lens Solutions Containing Thimerosal	Solutions Without Thimerosal
Button Batteries	Mercury-Free Button Batteries
Lamps (Fluorescent, High Intensity Discharge and Mercury Vapor Lamps)	Low Mercury Fluorescent Lamps, Sulfur Lamps, Low Mercury Sodium Lamps (Energy conserved by using these lights will reduce mercury emissions from coal & oil combustion)

Appendix 7. Kid's Facts About Mercury

Fact Sheet

KIDS' FACTS ABOUT MERCURY

What is MERCURY?

MERCURY is a heavy silver-colored metal that can change from a liquid to gas.

MERCURY has many uses, but it can also be harmful to humans and wildlife.

Where do you find MERCURY?

MERCURY is the only metal that is liquid at room temperature. It is used in switches, toys and games.

MERCURY expands and contracts with temperature changes. It is used in thermometers and thermostats.

MERCURY conducts electricity. It is used in some light bulbs and in televisions and computer monitors.

MERCURY builds up in certain kinds of fish through the food chain.

Where does MERCURY come from?

There are natural and human-made sources of MERCURY in the environment. Natural sources of MERCURY are in soils and rocks, forest fires and volcanic eruptions. More than half of the MERCURY in the environment comes from human sources such as burning coal to create electricity, burning trash, and improper disposal at landfills.

Burning coal and trash releases MERCURY in the form of gas and particles into the air.

Rain and snow bring MERCURY in the air back to the earth's surface. Improper disposal causes MERCURY to get into the water and soil.

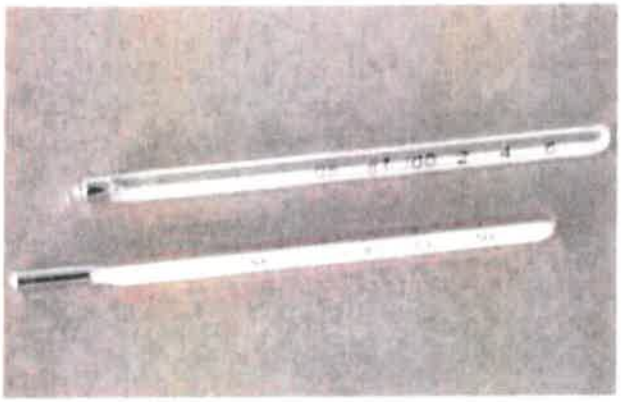
How can we help prevent MERCURY pollution?

- Educate yourself and others about MERCURY.
- Tell your parents to buy MERCURY-free products, such as alcohol or digital thermometers.
- Help separate out household products containing MERCURY (thermometers, batteries, and the like) and dispose of them during household hazardous waste collection days.
- Turn lights and computers off when not in use to conserve electricity to reduce the amount of coal burned to generate electricity. Recycle and reuse as many products as possible to decrease the amount of trash that needs to be burned or put in landfills.

Appendix 8. Mercury Around You

Mercury Around You

Mercury-containing products do not pose a health risk as long as they are handled correctly and disposed of safely. If they are broken, liquid mercury will evaporate at room temperature and form mercury vapors. Mercury vapors are colorless and odorless, and inhaling the invisible vapor can lead to serious mercury poisoning. The higher the temperature, the more vapors will be released from liquid metallic mercury. Some people who have breathed mercury vapors report a metallic taste in their mouths. Even a small amount of mercury can lead to health and environmental problems.



Mercury-containing thermometers

A Green Bay High School student took a bottle of mercury from the school's science lab in March 1999. She shared it with friends who poured the mercury on their skin and brought it to a bowling alley, where they filled the finger holes of the bowling balls and rolled them down the lanes. When the mercury spill was discovered, students were detained in their classrooms until the extent of the spill was ascertained. Four students were sent to the hospital and 88 students were put in decontamination showers, though no one was permanently injured. The total cost of the mercury spill at the school, a home, and the bowling alley was $230,000, though the cost was settled at $175,000. The family of the student who stole the mercury paid $6,000 in restitution while the remaining costs were paid by the school district.

Chronic Mercury Exposure: Mercuric nitrate was used in the hat-making industry up until the 1940s. Hat-makers in Danbury, Connecticut developed a reputation for strange behavior related to their exposure to mercury

Appendix 9. HVAC Thermostat Recycling

HVAC Thermostat Recycling

Programs for Specific Mercury-Containing Products
All it takes is a creative idea to encourage the public or local businesses to inventory and recycle the following mercury-containing devices. The case studies listed below are given as examples for device-specific programs that communities and businesses can put in place, emphasizing the importance of collaborative efforts.

Thermostats
Mechanical thermostats contain an elemental mercury switch that can release mercury into the environment if the thermostat housing is damaged during replacement or demolition. These thermostats should be recycled at the end of their useful life. Digital thermostats are recommended for upgrades or new construction because they do not contain mercury and are more energy efficient.

Mercury-containing thermostats

Outreach Tools
►Mail thermostat recycling literature to HVAC wholesalers and contractors
►HVAC community workshops and conferences
► Onsite visits to HVAC businesses
► Promote thermostat recycling to homeowners at trade shows and other community events

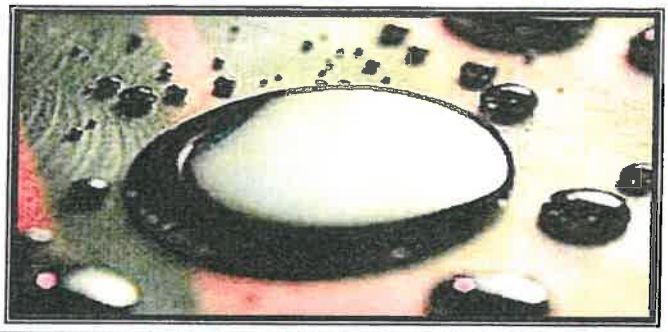
The Thermostat Recycling Corporation (TRC) is a non-profit corporation funded by thermostat manufacturers to simplify recycling mercury from end-of-life thermostats. Heating, Ventilation, and Air Conditioning (HVAC) wholesalers can request a mercury thermostat recycling bin from the TRC Corporation for a one-time charge of $15. When HVAC contractors remove thermostats from homes or businesses, they are asked to drop them off with the wholesaler where they purchase their new thermostats. The wholesaler ships the filled bin back to TRC at **no charge**. All brands of wall-mounted thermostats are included in the TRC Program.

Many Oregon HVAC wholesalers and contractors participate in the TRC Program but many are still not aware how easy participation can be. A community mercury reduction program can readily promote the TRC Program as part of their educational outreach. The website below contains instructions for participating in the TRC Program.

Appendix 10. Example of what a City's Mercury Webpage may look like

Prevent Mercury Spills

don't mess with MERCURY



HOW TO CLEAN UP A MERCURY SPILL

Broken thermometers or Thermostats The small amount of elemental mercury in fever thermometers and thermostats is not likely to cause serious health problems if it is immediately cleaned up. Follow these instructions.

IMMEDIATELY AFTER THE SPILL

If the spill is more than one pound (about three tablespoons), do not attempt to clean it up by yourself. Call Oregon Response System at 1-800-452-0311 or 503-378-6377. Try not to touch the mercury.

If possible, have all people and pets leave the area and wait 15 minutes before starting the clean up. Then, keep all people and pets away from the spill except the person performing the clean up.

Turn off heating, ventilating, or air conditioning systems that circulate air. Ventilate the area by opening windows or, if available, using fans that exhaust directly to the outdoors.

Remove all jewelry (mercury bonds with metals, especially gold) and put on rubber gloves.

Contain the spill to prevent it from spreading. Divert it from cracks and crevices.

In case of a life threatening injury or accident, call 911.

MATERIALS NEEDED

If you do not have a mercury spill kit, you should have the following items:

- stiff paper (for example, index cards)
- flashlight
- duct tape or packing tape
- eye dropper
- plastic or rubber gloves
- sulfur powder (available at garden stores)
- plastic zipper-lock bags
- small empty plastic container (bottle or tub)

Mercury spill kits are commercially available from safety supply companies or online (search for "mercury sorbents").

CLEANING UP THE SPILL

- Never use a vacuum – it will blow mercury vapors into the area, increasing the chances that you will inhale the vapors.
- Never use a broom or paint brush or cloth or paper towel – it spreads mercury.
- Never use household cleaning products. They may react violently with the mercury and release toxic gases.
- Never pour mercury down a drain or put it in the garbage. Call 1-800-782-9253 for information about where to safely dispose of mercury waste.
- Never allow people with contaminated clothes or shoes to walk around.
- All people and pets should be kept away from the area until proper clean up has been completed.
- Continue ventilating the room for several hours.
- After clean up is completed, wash your hands and face.

Hard Surfaces such as linoleum, vinyl, or hardwood floors:

- Wearing gloves, work from the outside of the spill toward the center.
- Use the stiff paper to push the beads of mercury together.
- Use the flashlight to look around in all areas of the spill. The light will reflect off the shiny mercury beads and make it easier to see them.
- Using the eye dropper, suction the beads of mercury and carefully deposit them into a small empty plastic container (bottle or tub). Use the eye dropper to get mercury out of cracks or crevices.
- Using the tape, pick up remaining mercury and place tape, eye dropper, and plastic container into a plastic bag, along with the stiff paper and gloves. Seal the bag so it won't leak.
- Sprinkle sulfur powder on the spill area; a color change from yellow to brown indicates that mercury is still present and more clean up is needed.
- Place the plastic bag of waste in a second plastic bag and label it as mercury waste.

Carpet or rug. The section of carpet that is mercury contaminated should be cut out, if possible. The cut out carpet, along with all clean up items, should be placed in a plastic bag and then placed in a second plastic bag labeled as mercury waste. If the carpet can not removed, open the window during the next several times you vacuum it to provide good ventilation.

Fluorescent light bulb. Breaking a fluorescent light bulb is different from breaking a thermometer thermostat or other item containing elemental mercury. You will not be able to see the mercury. Follow these instructions:

- Scoop up the glass and all other pieces of the broken light bulb. Use gloves to protect against cuts.
- Put all the pieces of the broken bulb into a rigid container such as an old paint can. Seal the container with a lid and remove it from your living area.
- Air out the room where the lamp was broken for 12-24 hours.
- Disposal options:
  Take the container to a hazardous waste collection center that accepts mercury. To find out where to take it, call your local county landfill.

Emergency Telephone Numbers:

Oregon Response System

(spills of one pound or more) 1-800-452-0311 or 503-378-6377.

Oregon Poison Control: 1-800-222-1222

City of Prineville
Public Works Department

387 NE Third Street, Prineville, OR 97754 Tel 541.447.5627 Fax 541.447.5628

WWW.CITYOFPRINEVILLE.COM

Solid Waste Rate Review

City of Florence
A City in Motion

Hearing

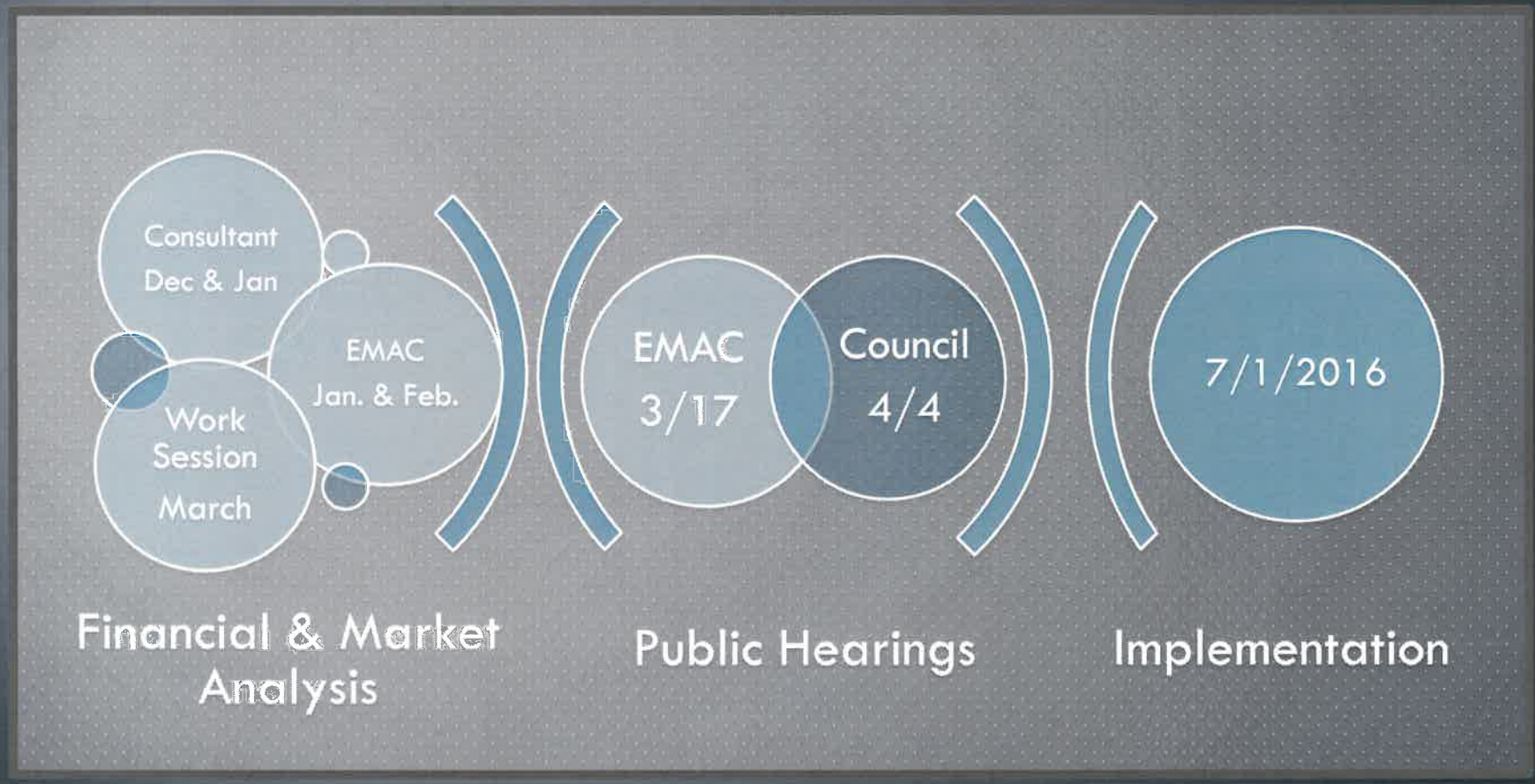
March 17, 2016

Resolution 5, Series 2012

City of Florence
A City in Motion

- Bell & Associates Consultant
- Maintained License Fees
- Phased Three Year Implementation (50-25-25)
- CPI-100% each year
- Established 9% Profit Margin
- County Tip Fee Increase Pass-Through

Rate Review Process



Bell & Associates Findings

A City in Motion

Financial Analysis

- Composite Profit Margin
  - 2015 = 16.1%
  - 2016 Estimated = 13.6%
  - Disparity between haulers
- Inflation
  - 80.6% of Expenses Impacted

Market & Comparables

- Profit Margin
  - Most Jurisdictions-10%, $^{+/-}$ 2%
  - Some North Coast-12%, $^{+/-}$ 2%
- Most License Fees = % Gross
  - Range from 3% to 5%

Recommendations

City of Renton
A City in Motion

Rates

- **2016 CPI 1% Increase**
- Lower and Adjust Drop Box
- Set Profit Margin: 10% +/– 2%
- Annual Increase: 80.6% of CPI

Other

- Update Solid Waste Code
  - Landlords provide service
  - Fleet Standards
  - Revise periodicity of reviews
  - County Pass-Through
- Change License Fee Method
  - 3% of Gross
  - Phase in to 5%

over 5 years

Decision Points

A City in Motion

Title 9 Chapter 4

Landlord Provides Garbage & Recycling Service

- Single Family and Duplex
- Weekly 32 gallon service

Rate Review

- Change every "two" years to every "three" years
- Min-Max & "form provided by the city" language removed
- County pass-through by resolution
- Filing Fee increased from $150 to $500

Decision Points

Title 9 Chapter 4 (continued)

Fleet & Equipment Operations and Standards

- Fleet Replacement –
  - 12 year old engines or 12 year old vehicles?
  - 300,000 miles maximum usage + or -?
- Vehicle Standards - leaking vehicle fluids, signage
- Painting Standards-Every 6 years collection fleet

Decision Points

A City in Motion

License Fee Changes

- Methodology – Axle Count to % of Gross Receipts
- Phased– 3% **July 1, 2016,** .5% annual increments, 5% by 2020.
- Distribution of funds – **Street Fund**, ~~General Fund, Opportunity to Recycle Education~~

Rate Schedule Changes

- Drop Box decrease, reduce number of service levels, July 2016
- 1% (CPI) increase July 2016
- 80.6% of CPI-U annually on July 1st of each year, by resolution

Decision Points

Zonal Study

- Yes / No and When if "yes"

City of Florence
A City in Motion

Questions