



Charlotte City Council

Environment Committee

Meeting Summary for November 12, 2014

COMMITTEE AGENDA TOPICS

- I. **Subject:** **Clean Diesel Construction**
 Action: None

COMMITTEE INFORMATION

Present: John Autry, Claire Fallon, Ed Driggs, David Howard and Kenny Smith
Time: 2:00 p.m. to 2:50 p.m.

ATTACHMENTS

1. Agenda Package
2. Clean Diesel for Construction.ppt

DISCUSSION HIGHLIGHTS

I. **Clean Diesel for Construction**

Chairman Autry called the meeting to order and asked everyone to introduce themselves. He thanked Ms. Jennings, for bringing this item back to Committee. He then turned it over to Ms. Jennings who introduced Gina Shell and David Wolfe from Engineering & Property Management.

Ms. Shell reminded the Committee that they had reviewed this several times last year. She stated today that they would have a review of what was discussed last year, which led up to the memo that Councilmember Autry sent out to the Council (copy attached). She said staff has some thoughts and opportunities to discuss with the Committee and would like to hear the Committees thoughts about next steps going forward.

Mr. David Wolfe began reviewing the “Clean Diesel for Construction” presentation (copy attached). He discussed the previous Committee work that had been done and looked at

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some of the strategies that the EPA recommends to help reduce emissions around construction projects. He said that last year when we discussed this topic, it was not meant to be a City or County-wide ordinance, but the discussion last year was around the City-owned equipment and City-contracted construction work. This affects the equipment that is owned and operated by City crews in a number of departments, as well as a large variety of construction projects that we conduct with roadways, water and sewer. The reason that diesel emissions are a concern for the federal EPA for off-road construction is they are actually the second leading contributor to emissions in the United States; 21% of all emissions come from off-road construction. The federal EPA has a national clean diesel campaign.

Smith: Twenty-one percent of all diesel emissions or all emissions?

Wolfe: All diesel emissions. They had a national clean diesel campaign, and a lot of the American Recovery and Reinvestment Act (ARRA) Grants from the 2008-2009 timeframe were gear towards clean diesel.

Fallon: Don't we sell our old equipment to other construction companies, so it stays on the street?

Wolfe: What we learned is the larger contractors may buy a newer piece of equipment that is cleaner burning. They may only run it three to five years, and then they sell it; typically it is where the smaller businesses purchase their equipment.

Fallon: I don't think they get anything to modify it.

Wolfe: There are filters and catalytics that you can attach to older equipment; sometimes it is easier said than done.

Smith: When we are talking about the shelf life in your slide of roughly 20-years, how is that compared to construction equipment that uses other fuel? If you look at the old Mercedes the diesel engine in and of itself tends to last a lot longer.

Wolfe: To my knowledge diesel is the primary fuel for construction equipment. As far as age, the larger the equipment, it is built to last longer. Obviously, weed-eaters, blowers are not going to last as long as a large piece of equipment.

Fallon: Do we really accomplish anything by selling it off and buying new?

Autry: It is being retired by those people.

Fallon: Not for a long time. They are selling the stuff they buy from us. It is still a pollutant.

Autry: I think one of the things we discussed last year were grant programs that would assist these people who buy that equipment in retrofitting it to make it more compliant with the current EPA standards. Are any of those grants still available?

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Mr. Ted Hogan: They come and go. The Diesel Emission Reduction Act is what is the source of most of this funding from the federal level as well as federal highway money: CMAC money. CMAC is more reliable to diesel emissions grants that were included in the President's budget, but they were very popular and were very successful, yielding tremendous savings nationwide, so, from an agency perspective, they are very popular.

Wolfe: We have used those grants and continue to look into them. Obviously, there are a lot of details to acquiring and using those grants.

Autry: One of the things that came up last year that as far as the contractors and the sub-contractors go, they were not aware of the availability of that money that would help them.

Wolfe: That is right, and I mentioned we had a contractor meeting last year and I gave them some information about those grants.

Fallon: Is there any way to let it be known to all of them?

Wolfe: That is administered I believe by our County air quality group. We can obviously send letters ourselves to the contractors; we can help them with their education efforts as well.

Autry: That is kind of where we left the discussion last year that probably the best solution was also to include a strong educational component.

Mr. Wolfe continued with his presentation and discussed the low-cost, medium cost and high cost strategies to help with pollutants. He discussed biodiesel fuel and retrofitting equipment. Mr. Wolfe described the sensitive receptors around Charlotte. He concluded by asking the Committee for their thoughts and feedback.

Fallon: Do people use the biodiesel fuel?

Wolfe: Yes, I think the restaurant group is on a smaller scale; there is really not a large scale production that we are aware of and that is why it is not so widely available.

Smith: What is the cost?

Wolfe: The last time we checked it was actually a few cents cheaper than regular diesel. I'm not sure why that is.

Autry: Do you ever have a problem where biodiesel is being used that a lot of people just show up looking for it?

Wolfe: It is not always an easy answer because biodiesel can reduce horsepower output and thus reduces miles per gallon, and, in construction equipment, horsepower is important for moving the dirt, but it is a cleaner burning fuel.

Driggs: Can the biodiesel be used interchangeably with regular diesel fuel?

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Wolfe: I think you would want to check with the engine manufacturers, but I think the general answer is, yes.

Blotnick: Regarding sensitive receptors, Clean Air Carolinas have been working with Novant Health lately, and we've met with their facilities' managers, and they have set up meetings with Rodgers Construction and Ben White about this, and they are going to be starting to track, so they have a handle on what percentage of their sub-contractors are using, so we can identify if it is a big problem, how close are we to getting tier four. That is one example.

Autry: I think the discussion we had last year was on sub-contractors that attended the meeting was that they were buying the cast off equipment from larger companies that was not tier four. The larger companies were purchasing tier four and the smaller contractors, a lot of which provide services to the City, were purchasing that second-hand equipment, which was a tier two or tier three. Even when everybody swaps out the equipment, you've still got another 10 to 15 years of equipment that is not going to be meeting tier four. Would that be an accurate assessment?

Wolfe: That is right and in states like California that are implementing a policy, they allow over time for the state contractors to meet tier four, so they will have for example, 25% of equipment should be tier four and by 2016 it should be up to 50%. They do allow the gradual retirement of older equipment, but it is more progressive than the natural retirement.

Autry: I think clean air zones is low hanging fruit, and it doesn't present any perspective challenges because it has nothing to do with bidding for the job; it has to do with how we, as the City, manage the job. Certainly training, providing what assistance we can have with the maintenance of the equipment and trying to get more biodiesel in place. If we could start taking the City equipment and implementing some opportunity for biodiesel, it would also then give us some information that we could share with the community at large about it. One of the other things I also wanted to mention, and I shared with Mr. Smith and Mr. Driggs right after you guys got elected, was that one of the most compelling things that Dr. Raymond said was that, for every dollar that we spend on reducing emissions, we can save \$11 in healthcare costs of dealing with respiratory conditions. That has to have some value there. So an inventory of what equipment we have that doesn't meet tier four would be helpful.

Wolfe: Yes, I think doing an inventory of our equipment and see how much is tier one, two, three, or four is something that we could do.

Autry: The City would not be ineligible for any grants to retrofit that equipment that we were going to be hanging onto for another 10 to 15 years would they?

Phocas: We could apply.

Autry: We could apply and obtain those grants, too, if they should become available.

Shell: I think Robert said the last time we reviewed the grant, we had one piece of equipment that might have been eligible, just depending on the specifics of the grant. We always check and

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see what sort of eligibility we might have.

Driggs: I was just thinking that if we do this inventory, then what comes next? What sort of action should we derive from that?

Wolfe: Well, we turn over equipment ourselves based on the factors such as its age, its usage, hours per year and its ongoing maintenance costs. If this could be one of those factors that is looked at, what tier your equipment is, that could play into it. I learned that the departments purchase the equipment themselves out of their budgets, so it becomes a question for each department and their annual budgets. I think having the inventory will help us know about applying for grants, which equipment qualifies and, you are correct, it could become a factor in replacing the equipment.

Jennings: Maybe a benchmark in the future of how quickly we age out and replace, how much does it have of a different tier. I think it would give us a platform to build on.

Smith: Do we hedge our fuel buys for diesel construction?

Taylor: CATS does but we buy strictly from the purchase farm. We use a vendor and a Fuel Man card. We are going to get it at cost or plus; that is all we use is fuel. Our Fire stations may be slightly different, I don't know.

Autry: Mr. Hogan, did you have a comment about the inventory?

Hogan: On the inventory slide, I would say you probably have an awful lot of diesel burning equipment and focusing on the higher horsepower pieces of equipment would be better served and probably the longer lasting. Another point on anti-idling -- it is a very common strategy used in reducing emissions. It is most useful and most effective on road applications construction equipment and doesn't just sit like a tractor-trailer does at a rest stop overnight when the driver is getting eight hours of down time.

Autry: Looking at the summary from our last meeting on this subject, one of the contractors mentioned that they had a 10-minute idling policy because of the negative impact of cutting off and restarting the engine. Do you have some comment about that as a factor?

Taylor: I think, historically, diesel engines need to keep running. If you turn them off and on, you are going to have trouble starting, especially in cold weather.

Smith: Do we have a rough approximation of the reduction in horsepower when biodiesel fuel is used and what kind of length does that add to task or job time? Is that an equation that we can even approximate?

Cousar: Utilities looked at that and the challenge isn't really that much and sometimes it is only 20%; the challenge comes when you try to exceed that because the fuel has an issue with gel point and we can't operate it because it gets cold, biodiesel past a B-20 we can't use it. I guess I would say we weren't successful with that, might be the best way to put it.

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Autry: It sounds like it could be more of a perception for not getting the same lift out of biodiesel as we do ULSD.

Wolfe: We will look more into that, but that does not have the horsepower that the diesel does.

Hogan: 5% reduction would be a ballpark.

Phocas: NASCAR has been experimenting with biodiesel, so I think they might be B-10 in all of their cars, so they have made some headway.

Autry: At this point, I appreciate this discussion and getting this issue back in front of us. What we have coming out of this is full inventory of the diesel equipment that the City owns and operates and then some recommendations that would include some of the low cost aspects that would improve and get us moving in the right direction for clean construction. I think how we manage the clear air zone and how we establish that and set those up is another thing.

Shell: I think that would be something we'd like to pursue as long-range opportunities, and we might need more time to look at operationalizing that. We can bring it back to you next month. We wanted to know particularly which ones you were interested in, and so we are hearing some interest in the inventory definitely and awareness around the other low-cost options so we can think through exactly what that would look like and then bring back firmer recommendations next time.

Autry: Training, awareness of the grant programs, what we could see into the future about the benefit of the grants and how we can get people interested in that. Certainly we are onboard with the retrofit that is going on in the market, and we want to highlight that.

Fallon: Especially letters out directly to the small vendors so they know there are grants.

Smith: I assume some of this low hanging fruit, like idling and the clear air zones, is that self-regulated or are we sending folks out for enforcement?

Wolfe: We will have to work on that, but I think our concept so far is to have some language for our contracts that promotes awareness and education around those topics, and we can have the GIS mapping that we and contractors can look at and determine that.

Autry: When we have a project that is being done by a contractor, City people are visiting those sites pretty often, and so a little training on our side to insure the compliance will be good.

Shell: The idea that we had tossed around, for example, we could remind them of these factors in our pre-bid meetings when all the contractors come and hear about the projects. Our inspectors could also be aware of this and issue just reminders like, oh, I noticed that you are idling over here for 30 minutes, probably nothing of a strong enforcement nature, but awareness and reminding.

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Autry: Some of these sub-contractors have enough burden getting the work completed on schedule; we are not interesting in burdening them any further or any denser, but we are also understanding that every dollar that we can put into reducing emissions that is \$11 saved in healthcare costs.

Wolfe: Yeah, I think there are strategies that we can implement for our work that will have a real benefit for how we do business.

Jennings: Why don't we come back next time and have more of the ideas flushed out, have the inventory and present that to the Committee?

Autry: Great, and I understand Clean Air Carolinas has offered to help with the inventory of the equipment. That is great; we appreciate that.

Jennings: Would you like a brief update on the coal ash?

Autry: If there is such a thing.

Phocas: I checked in with Tim Gause, who is the Government Relations Manager at Duke Energy, last Friday to get an update in preparation for the meeting. The information that Tim shared with me is that the counter proposal, the land swap proposal, is still under consideration. They have not reached a conclusion on it yet. They've been very focused on meeting one of their first requirements under the Coal Ash Management Act that was passed by the General Assembly, and that is to get it in by the end of the week. Their initial excavation plan for the first four sites that were considered priority sites under the Act, and River Bend is one of them, so their goal is to have by this Friday that initial excavation plan which would talk about excavation and relocation of some of the ash. Tim will be able to give us more detail and answer questions as to what their plans are later. They are under a very tight time line, and they have to have everything out of River Bend by August 1, 2019, so they recognize that they might have to start moving things very soon.

Autry: The Business Journal said something about they were already moving material out of River Bend, and I asked Mr. Gullet about that when I happened to see him a couple weeks ago, and he said yeah, they've got to have this stuff done by 2019, and, if it is going to take five years to move it, they've got to start moving it. Apparently, they have some place where they can put some of it now.

Phocas: I will follow-up with him and find out the details of that. One thing I heard was they were going to move the ash from the wettish ponds, but then there was also a big berm area which was coal ash that had been moved historically out of those areas to make room for more coal ash and now it has grass over it, and I think that was going to be the first area they would start, but I will ask specifically about that.

Autry: Great, thank you for the update. Meeting adjourned at 2:50 p.m.

Environment Committee

Wednesday, November 12, 2014; 2:00 – 3:00 p.m.
Charlotte-Mecklenburg Government Center
Room 280

Committee Members: John Autry, Chair
 Ed Driggs, Vice Chair
 David Howard
 Claire Fallon
 Kenny Smith

Staff Resource: Carol Jennings, Chief of Staff

AGENDA

I. **Clean Diesel Construction**

Staff Resources: Gina Shell and David Wolfe, Engineering & Property Management

Staff will discuss the issue of clean diesel construction, specifically the issue of diesel in equipment used at construction sites. The Committee discussed this issue in 2013, resulting in a memo from Committee Chairman Autry to the Mayor and Council summarizing the discussions (memo attached).

Staff will review highlights of the previous discussions and offer possible approaches for Committee discussion.

Action: None requested.

Next Meeting

Wednesday, December 10, 2014; 2:00 p.m., Room 280

Distribution:	City Council	Ron Carlee, City Manager	Executive Team
	Bob Hagemann	Stephanie Kelly	Environmental Cabinet



MEMORANDUM

December 2, 2013

TO: Mayor and City Council

FROM: John Autry, Chairman Environment Committee

SUBJECT: Environment Committee Discussion and Recommendation to Council Regarding Clean Diesel Construction

At the Council meeting on August 26, 2013, Council approved my request to refer the topic of Clean Diesel Construction to the Environment Committee. The topic of Clean Diesel Construction refers to efforts to minimize the health and climate impacts from diesel engine emissions associated with construction activities. Diesel engines power many types of construction equipment such as backhoes, loaders, and graders. Their emissions include fine particulate matter and nitrogen oxide which contributes to ground-level ozone.

Our Committee discussion, as intended, was limited to diesel emissions from equipment used by City staff in service provision and by contractors working on City-funded construction projects. Our discussion was not intended to address all construction-related diesel emissions in Charlotte.

The Environment Committee received three informative presentations from staff and also heard from Dr. Lawrence Raymond, MD, ScM, Department of Family Medicine & Corporate Health & Wellness, Carolinas HealthCare System; Dr. Stephen Keener, Mecklenburg County Medical Director; and Ted Hogan, Program Manager, Eastern Research Group, Inc. (Consultant to the Air Quality and Climate Change Work Group under the "CONNECT Our Future" Regional Initiative). The Committee also received comments from representatives of two current City contractors, one large firm and one small business enterprise.

The following bullets summarize some of our conclusions:

- Diesel emissions are a known health concern; however, Mecklenburg County air quality is improving each year.
- Private contractors generally support low-cost diesel emission reduction strategies such as anti-idling policies and equipment maintenance, but they have concerns about potential requirements or incentive programs aimed toward the replacement of older equipment.
- There would be a significant cost to the City to upgrade all City-owned diesel equipment.
- There would be a cost impact to the City to monitor and enforce any new contractor

requirements or incentives.

- There are legal considerations and risks to be weighed prior to establishing requirements.
- The regional “CONNECT” initiative may develop strategies to encourage cleaner equipment.

After three meetings on the topic, the Committee voted 3 to 2 (Autry, Pickering, Howard for; Fallon, Dulin opposed) to submit this summary report to current and new Council members. The Committee asks that the topic be brought up during Environment Focus Area Plan discussions for the purpose of further exploration, including possible establishment of potential measures against benchmarks and possible funding for the replacement or upgrade of City-owned equipment. I appreciate the Council’s future consideration of this action and will be happy to discuss it further.




CHARLOTTE
ENGINEERING & PROPERTY
MANAGEMENT

Clean Diesel for Construction

Council Environment Committee

November 12, 2014

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- Review of Previous Committee Work
- Definition of the Issue
- Clean Diesel for Construction Strategies
- Staff Recommendations

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Previous Committee Work

- August 2013 - Council referred the issue of clean diesel for off-road construction to Environment Committee
- September - November 2013: Three Committee presentations
- December 2013: Committee Chair Autry summarized committee discussion in memo to Council and recommended the topic be further discussed in FY15

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Expertise and Stakeholders reached in 2013

Clean Air Expertise

- Dr. Lawrence Raymond, MD, Carolinas HealthCare System
- Dr. Stephen Keener, MD, Mecklenburg County Medical Director
- Mecklenburg County LUESA Air Quality Group
- Ted Hogan, Eastern Research Group
- June Blotnick, Clean Air Carolinas

Construction Stakeholders

- Allen Gray, Lobbyist, AGC
- Stephane Berwald, Metrolina Minority Contractors Assoc.
- Charlotte Business Inclusion – Contractors Forum
- Roadway Contractors Public Meeting (eight contractors)
- City E&PM, Aviation, CDOT, CMUD

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Definition

A set of operational and regulatory strategies designed to minimize the health and climate impacts to local communities from diesel engine emissions associated with construction activities



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City Construction



- City Contractors
 - Roadway
 - Building Projects
 - Water/Sewer Projects
 - Stormwater
 - Aviation

- City Crews
 - Street Maintenance
 - Landscape Maintenance
 - Water/Sewer Crews

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Off-Road Construction Equipment Examples

 **75-100 Horse Power (HP)
Trailed Air Compressor**

 **100-175 Horse Power (HP)
Wheeled Loader**

 **175+ Horse Power
(HP) Gradall**

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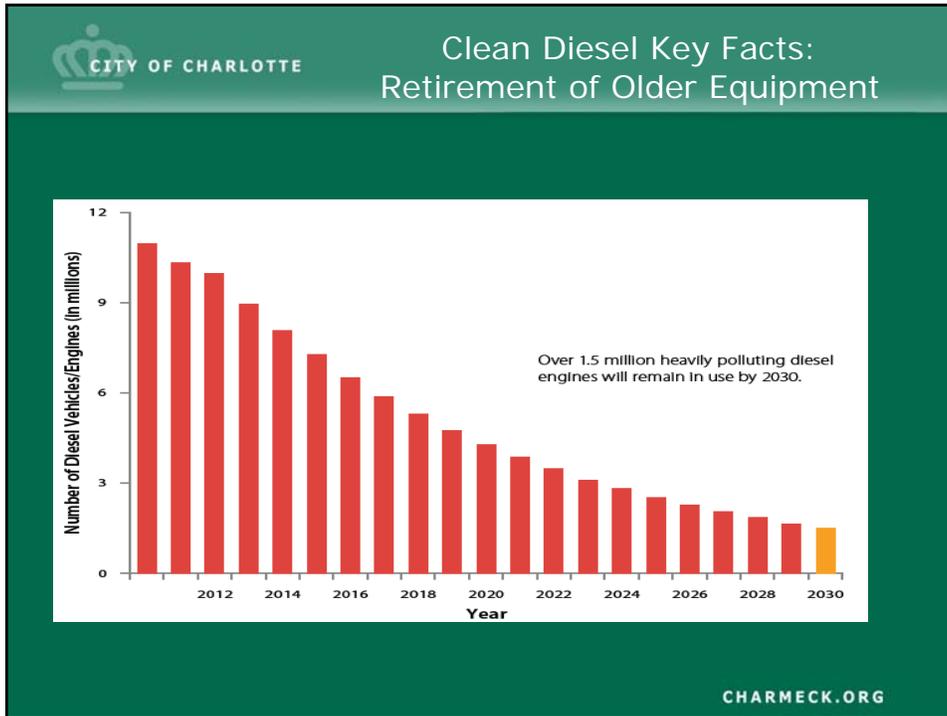
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National Sources of Diesel Emissions

- 31% Highway Diesel
- 21% Off-road Construction
- 21% Agricultural
- 13% Marine
- 6% Railroad
- 4% Industrial
- 4% Other



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Progress of EPA Regulations

Off-Road Diesel Engine Tiers by Engine Horsepower and Model Year

Engine Model Year	Engine Horsepower Groups							
	25-49	50-74	75-99	100-174	175-299	300-599	600-750	750+
1989 and Earlier	T0	T0	T0	T0	T0	T0	T0	T0
1996	T0	T0	T0	T0	T1	T1	T1	T0
1997	T0	T0	T0	T1	T1	T1	T1	T0
1998	T0	T1	T1	T1	T1	T1	T1	T0
1999	T1	T1	T1	T1	T1	T1	T1	T0
2000	T1	T1	T1	T1	T1	T1	T1	T1
2001	T1	T1	T1	T1	T1	T2	T1	T1
2002	T1	T1	T1	T1	T1	T2	T2	T1
2003	T1	T1	T1	T2	T2	T2	T2	T1
2004	T2	T2	T2	T2	T2	T2	T2	T1
2005	T2	T2	T2	T2	T2	T2	T2	T1
2006	T2	T2	T2	T2	T3	T3	T3	T2
2007	T2	T2	T2	T3	T3	T3	T3	T2
2008	T4I	T4I	T3	T3	T3	T3	T3	T2
2009	T4I	T4I	T3	T3	T3	T3	T3	T2
2010	T4I	T4I	T3	T3	T3	T3	T3	T2
2011	T4I	T4I	T3	T3	T4I	T4I	T4I	T4I
2012	T4I	T4I	T4I	T4I	T4I	T4I	T4I	T4I
2013	T4	T4	T4I	T4I	T4I	T4I	T4I	T4I
2014	T4	T4	T4I	T4I	T4	T4	T4	T4I
2015 and later	T4	T4	T4	T4	T4	T4	T4	T4

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Clean Diesel Construction Strategies as offered by EPA

Method	Low-Cost	Medium Cost	High Cost
Idle-Reduction Policy	X		
Clear-Air Zones	X		
ULSD Fuel	X		
Preventive Maintenance	X		
Operator Training	X		
BioDiesel Fuel		X	
Retrofitting Equipment		X	
Engine/Vehicle Replacement			X



Low-Cost Strategies

- Idle-Reduction Policy
 - 5 minute engine idle limit
 - Exceptions for Safety, Mfg. requirements, testing, etc.

- Clear-Air Zones
 - Identify sensitive receptors ie. Building air intakes, Parks, Schools and Hospitals, and keep engines at a distance

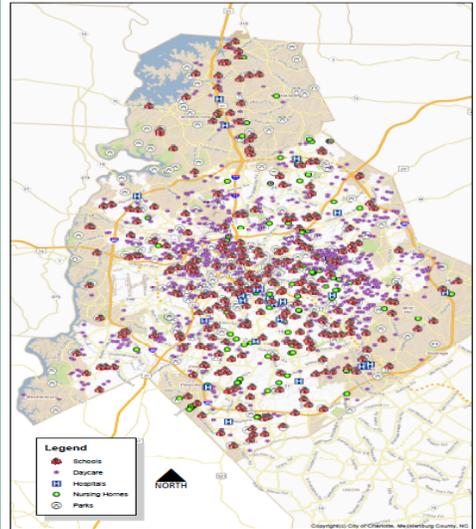
- Ultra-Low Sulfur Diesel (ULSD) Fuel
 - reduces engine wear, deposits and oil degradation
 - now widely available

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Charlotte – Sensitive Receptors

- Hospitals
- Schools
- Parks
- Nursing Homes
- Day Cares



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Low-Cost Strategies

- Preventive Engine Maintenance
 - address equipment problems promptly
 - follow mfg. recommended schedules
 - Inspect equipment daily
 - Keeps engines running cleanly
- Operator Training
 - to run equipment properly and safely increases productivity
 - Engines may not run as long and operators know how to maintain the engines

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- BioDiesel Fuel
 - alternative fuel created from a blend of conventional diesel and renewable resource such as used vegetable oil;
 - cleaner burning;
 - can improve engine lubricity and reduce wear;
 - may reduce horsepower output;
 - limited availability in Charlotte market
- Retrofitting Equipment
 - Retrofit emissions control equipment such as installation of new catalysts and air filters
 - improves operator work environment



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 CITY OF CHARLOTTE Higher Cost Strategies

- Engine/Vehicle Replacement
 - Purchase new equipment; or
 - Repower older equipment with new engines
 - Reduces harmful emissions
 - enhances public image
 - may utilize GRADE+ Grants





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Who Is Implementing These Strategies and How?

- State/Municipalities
 - California, Illinois, Texas, New York City have state-wide regulation for engine replacement
 - Localities utilize lower-cost non-regulatory strategies
- Sustainability Rating Systems
 - LEED
 - GreenRoads
- Private entities
 - Hospitals

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2013 Contractor Meeting Summary

- 2013 Contractor Meeting
 - Contractors who frequently perform City work
 - Generally support low-cost strategies such as idle reduction, Clear-Air Zones, ULSD Fuel, etc.
 - no or minimal cost impact
 - many currently implement
 - Concerned about a “requirement” to use Tier 4 equipment
 - impact to small businesses
 - increased cost
 - would ‘move equipment around’ to other parts of Charlotte, not remove it from service
 - Equipment they use also depends on location within City
 - Showed interest in Grade+ Grant

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Discussion & Opportunities

- Equipment Inventory
 - City-owned equipment
 - Contractor-owned
- Awareness/Education of Clean Construction
 - Operational Strategies
 - Anti-Idling
 - Clear-Air Zones (Sensitive Receptors)
 - Training / Maintenance
 - BioDiesel Fuel
 - Equipment Retrofit / Replacement
 - GRADE Grants

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