

The Journey of a 6th Grader to Turn the Yellow School Bus Green

Have you ever wanted to make a change in the world? Well for as long as I can remember I have. When I was in 6th grade, I had the opportunity to start my journey on making a change in the world. It all started with my 6th grade science project. I guess it was destiny because my teacher said to choose a topic from our Science book and I decided that whatever page I turned to would be my topic. The page was about CO₂ in the atmosphere. Now, I had to come up with a science project based on CO₂. I live in Florida so global warming takes a huge effect on my life. My home could be flooded in just a few years if we do not make a change. I learned that the primary source of global warming is CO₂ and the #1 contributor of CO₂ is transportation. So, I knew CO₂ is causing climate change and I knew that transportation was one of the main issues creating an excessive amount of CO₂ in our atmosphere. From there I knew I was going to focus on CO₂ emissions from transport and I chose to focus on the school buses because I ride the school bus and I can see the dirty exhaust pollution, I can smell it, I can feel it, and I knew that this yellow school bus had to be one of the worst forms of transportation running on our streets today. That's how I decided to do my science project on the amount of CO₂ produced from my own schools' school buses. The first thing I had to do was decide where to measure the CO₂ levels. I decided that the bus loading zone (a place right next to the buses where the students wait for their bus) and inside the bus would be perfect comparisons. Of course, my hypothesis was that the air outside the school bus where you can see this black smoke would have the worse CO₂ levels, I had no doubt I would be able to prove this. So, for days I would take a huge syringe (100cc) and my CO₂ detecting test tubes to my school and take air samples from outside the bus and then again inside the bus to measure the levels of CO₂ pollution. This was a little scary and embarrassing. Imagine a student holding a huge syringe, cutting glass tubes, and then extracting air and pushing it through this long tubing for over 2 minutes for each air sample. Next came the big surprise....my research found that outside the buses it was around 1000 ppm which I expected. This is 2x the recommended healthy amount but inside the bus, whoa....I was completely shocked because it was 5000 ppm and five times higher than outside! It was also the highest level of my gas detection tubes! How can this be? I must have done something wrong, this can't be. So, I repeated the test three more times and three different days and it was the same. This toxic CO₂ pollution is getting trapped inside the buses and we are breathing it while we go to and from school! How can this be? This can't be safe? No wonder my head always hurts when I ride the bus. I was just completely shocked after getting these results because not only can this negatively affect the environment, but it also affects the students, drivers, and well anyone inside the bus. During my research I had to investigate if there was information showing my results and yes, I found studies confirming that CO₂ and other toxic fumes get trapped inside the bus. It can cause headaches, nausea, asthma, and even cancer which is very dangerous. It can also affect student grades and absences. I'm sure the school bus must be responsible for students being sick or not being able to focus after such a dirty polluted ride. That is when I decided we really needed to make a change. Living in

this toxic environment was not okay. I decided to go speak to the school board because they are the ones that make the decision to change to electric school buses. I had heard that they were looking into buying CNG (compressed natural gas) buses and I wanted them to stop thinking about that and actually make the only change that would make a real difference. Switch to Electric, no other alternative is better. Before I spoke during the school board meeting one of the school board members asked my mom for a meeting because my science report and the data I found were sent to the school board. We thought, this is great, but when my mom arrived they didn't want to speak about my project... they brought in the transportation supervisors, who brought big black binders filled with reports showing how great their old yellow diesel schools were being maintained and that they met all regulations. My mom told them to close the binders and that she wasn't there to sue but to share information that I had discovered so that they can work together to provide good, clean transportation for the students, the drivers, and the planet. My mom says they were trying to CYA (you probably know what that means). Then came the day that I was going to speak directly during the public comments of the school board meeting. I got all the needed information and even information about the Volkswagen funding available for them. They put me last, I was tired, cold, and nervous. While I waited during the break, the Superintendent came by and asked me why I was there... well that made even a little more nervous. My time came to stand up and go to the microphone. You are timed for a maximum of 3 minutes and you can't go over or they stop you. I walked up to the microphone and I was extremely nervous. I was not sure if they would agree to get the buses or even listen to my statements or how they would react to hearing my say that the school buses are bad for the students and the environment but very much to my delight the Superintendent made a commitment. He publicly stated that when they did move forward with buying new buses they would go straight to electric. At least, CNG buses were out of the way. It was a step in the right direction but I knew my work wasn't done yet. I had to make sure that our school district would actually apply for the funds available to them for electric school buses and that they would actually begin to phase out the dirty, noisy, polluting, unhealthy yellow school bus sooner rather than later. Then COVID came to town and everything seemed less important than it was just the day before. Things got pushed back. The Florida Dept of Environmental Protection that is awarding the Volkswagen funds to school districts postponed the application and award process. Now, we have a bigger problem in the world. What's happening to our planet? Life changing virus and a global threat of not having a livable world when I'm older?

So time went by, but I kept speaking on different platforms like Zoom meetings. Lion Electric heard about my project and I spoke with them. They loved to see a kid doing what I was doing. I spoke to bus drivers, to other climate leaders, and we kept the momentum for making the change to electric school buses. Then the Florida Dept of Environmental Protection announced that the school districts would have to reapply. So we fast forward to January of this year and it's my turn again to go make sure the district will apply before the deadline. I have to go speak to the School Board again. This time it was going to be different. This time I was going to thank

them for making change, for their commitment, and their time. I was also coming with a few friends; Lion Electric would speak; Bus Driver would speak; Bus Union leader would speak; parents would speak; teachers would speak; and me – a student would once again speak to make sure that they secured funds for the transition and phasing out of the dirty old yellow school bus to the greener, healthier, quieter, safer, and electric version. Lion Electric even brought an electric school bus to Miami and offered free rides (wearing a mask) around the block to anyone that wanted to ride and for all the school board members, bus drivers, and even the media. The Miami Herald came on board with me and they did an article which made this go almost viral and get more momentum. This was so exciting. The electric school buses are amazing! Quiet, Clean, Smell good, no engine noise, no dirty black exhaust emissions, and safe. After my ride ...it was time again to head to the district office for the School Board meeting and to address them once again during public comments.

Again, I was nervous because you never know how they will respond but even before we spoke, The Superintendent stood up and announced to all the school board members and the public, that what the next speakers were going to speak about was already DONE! Success, the application was submitted, the school board is committed, and now we await the first of many electric school buses in Miami Dade County Schools. This made me so happy because me, the Green Champions (this a group I'm part of at my school who really pushed me and supported me to make this happen and work very hard at ensuring our schools will be carbon neutral by 2030) and my school district would now be taking action to ensure the our planet will be a liveable world for me and future generations. What now? I hope all school districts follow in taking the same action and that by 2030 there will be not one single dirty polluting school bus on the streets transporting students. That by 2030 all students will have access to electric school buses and that many of the cars on the streets will also be electric because it's not only school buses creating this heavy blanket of CO2 that is warming our planet and destroying our future, but all transport. Right now, I'm just overjoyed that I was able to achieve my mission of turning the yellow school buses green but we must continue to become carbon neutral and sustainable in all things we do because there is still a lot more work to ensure we can protect our planet. There is no planet B.

Holly Thorpe 4/12/2021