To: 2020 Regular Session February 8, 2020
Senate Committee on Environment and Natural Resources
Chair Dembrow
Vice-Chair Olsen
Members Findley, Golden, & Roblan

Concerning: SB1530

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Some simple solutions to Green House Gas (GHG) emissions locally in Oregon.

The last several years we have all listened to many knowledgeable experts on some of the very complicated solutions to what we as Oregonians face as our GHG emissions continue to warm our climate. The solutions from the pundits are very important as we wrestle with diverse fixes to reduce the effects of those emissions.

However, there are many far less complicated and relatively inexpensive solutions that I believe we are not taking advantage. These include urban forests, healthy highway and road forests, and rural forest projects that are already in place and can easily be expanded. I have attached to this letter examples of several of these simple solutions that we can support, enhance, and enlarge. These solutions not only promise many good paying jobs they also result in extraordinary health benefits. Please consider these uniquely simple solutions to our now and future climate dilemmas.

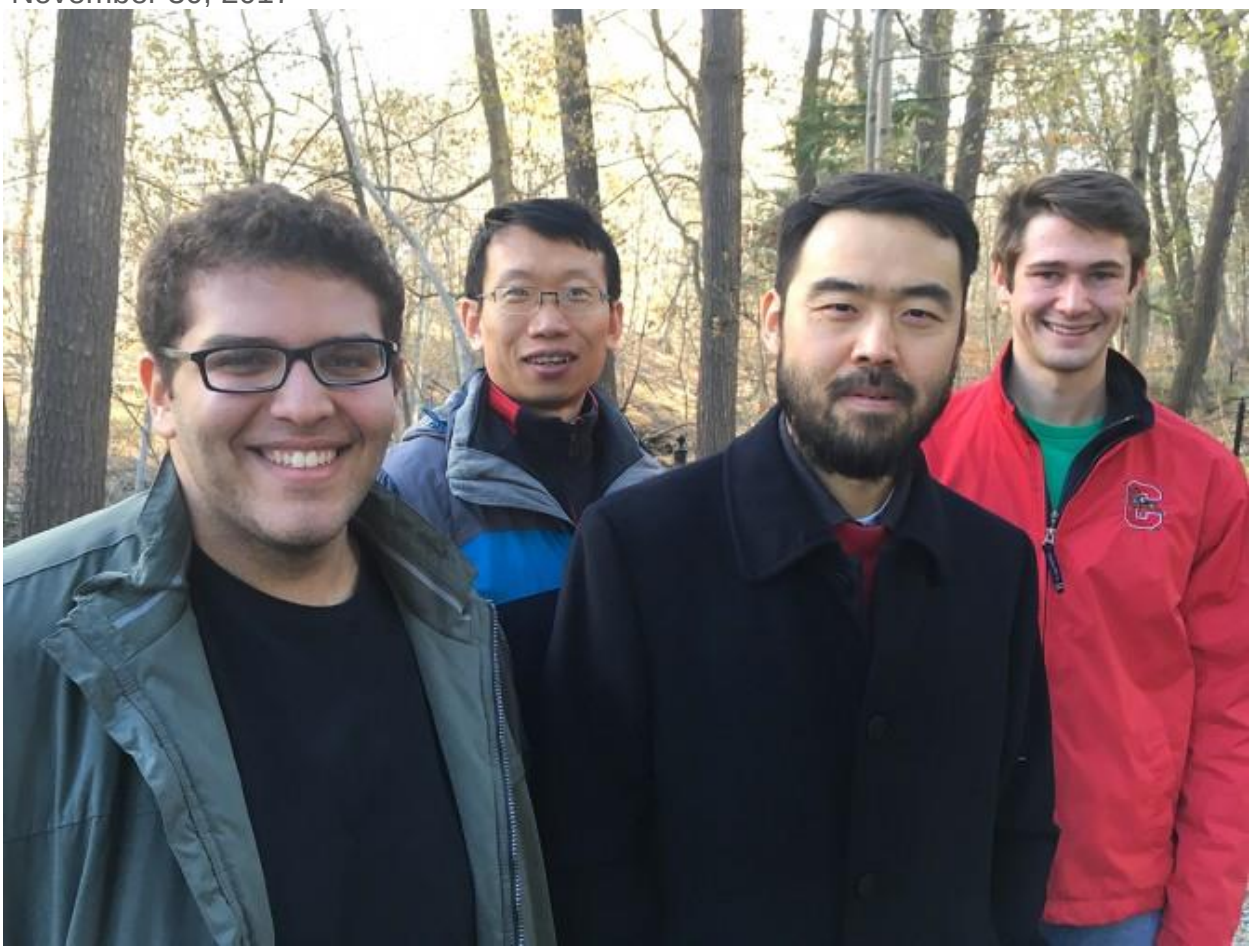
Thank you for your attention.

Lon Otterby

On the highway to health, trimming toxins with trees

By Blaine Friedlander |

November 30, 2017



Blaine Friedlander/Cornell Chronicle

From left, Khaled Hashad, Bo Yang, Max Zhang and Dan Shaw are developing a computational fluid dynamics model for the Green Heart project, to mitigate highway exhaust pollution and improve human health.

Cornell engineering students are creating a state-of-the-art computer model to strategically place trees on highways near residential areas to mitigate pollution particles and improve human health.

Doctoral candidates Khaled Hashad and Bo Yang, and undergraduate researcher Dan Shaw ’18 – all working in the **Energy and the Environment Research Laboratory** of Max Zhang, professor of mechanical engineering – are developing a computational fluid dynamics model for the **Green Heart** project, a research effort that connects a greener environment to human health. The project is managed by the University of Louisville School of Medicine and funded by the Nature Conservancy. The Cornell team is primarily supported by the National Science Foundation on science-driven green infrastructure designs.

“We will be modeling trees and other vegetation, while exploring different designs and ways to scrub the particle pollution,” said Hashad. “For the next five years, we’ll be examining the space between trees in mitigating pollution from the highway, finding the best species and assembling a model to determine which trees belong where. And then we’ll measure the model’s efficacy.”

Observational opportunity abounds in Louisville, Kentucky, as Interstate 64 slices through the city from east to west, I-65 cuts north-south and I-265 serves as a partial beltway around the city. More than 12,000 trees will be planted annually over the five-year Green Heart Project, increasing vegetation by about 30 percent by 2022, the project’s final year.

In addition to producing carbon dioxide, automobiles and trucks generate particulate matter. For the Green Heart Project, the Cornell students will be studying ultrafine (smaller than 100 nanometers in diameter) and fine particulate matter (smaller than 2.5 microns in diameter, also known as PM2.5), which are so fine they can only be observed under a microscope.

Fine particulate matter pollution – which can easily pass through the nose and throat – can irritate lungs, aggravate chronic lung conditions, impair heart function and increase illness for those who are vulnerable, according to the U.S. Environmental Protection Agency.

The Cornell team will examine leaf density, turbulence and how trees affect the flow of air from highways to neighborhoods, and determine if trees grown in a streamline shape will reduce pollution. Other parts of the project will track 700 Louisville residents to see how greening the highways can improve human health.

“It is a coupling of aerosol dynamics, chemistry along with fluid effects,” said Shaw. “Between the cars and the road, and the road and the surroundings, it is possible to alter the fate and transport of the pollutants and mitigate the health risks.”

Highway pollution policies are needed now, but policy change takes a long time. “This work can reduce pollution for the short term,” said Shaw.

Zhang, a fellow at Cornell’s **Atkinson Center for a Sustainable Future** and the recipient of the **2017 Engaged Scholar** Prize, hopes that testing science-driven designs of roadside green infrastructure can help other communities.

“Beyond Louisville, other cities and towns may identify mitigation solutions to their local near-road air pollution problems – this contributes to sustainable community development,” said Zhang. “This model, I believe, could foster interdisciplinary partnerships among different fields – such as air quality and transportation managers, landscapers and urban planners – in solving transportation air quality problems.”

By the end of the fifth year, Hashad expects to have a very good model. “If we succeed in creating the model, we’re going to reduce health costs and improve the health for a lot of people,” he said. “It’s that easy – plant a tree, if you know how to do it properly.”

Benefits of Roadside Plantings

Transportation Enhancements Go Beyond Just "Beautification"

Transportation enhancement plantings along our state and federal highways and our county roads are **critical elements of a complete road system**. Well-designed and properly installed native plantings:

- Slow, absorb, and clean water that runs off the highway, resulting in reduced soil erosion, flood control and cleaner water supplies.
- Serve as living snow fences, catching snow rather than letting it drift across travel lanes.
- Provide important pollinator habitat adjacent to farm fields, orchards and vineyards.

Native plants are **used in roadsides for functional reasons**, not aesthetic, because they are:

- durable, long lived perennials
- best adapted to Iowa's climate and growing conditions
- able to survive the stresses of road right-of-ways

Transportation enhancements help **build our state and local economies** by:

- Minimizing necessary roadside maintenance.
- Supporting trail construction and tourism.
- Helping small Iowa communities attract visitors off major highways by making their community more attractive.

- Employing landscaping professionals and County Roadside Managers.
- Supporting farmers who cultivate and sell Iowa native plant seeds, wildflowers, grasses and other plant material.

Transportation enhancements also **enrich our communities** and celebrate our history by providing much needed funds for:

- Trail construction
- Restoration and operation of historical transportation buildings, structures and facilities
- Scenic and historic byways

United States Environmental Protection Agency

Living Close to Roadways: Health Concerns and Mitigation Strategies

Published January 10, 2017.

Every day, millions of Americans that live, work, and go to school near a major roadway or train, bus, or railyard station, come into contact with traffic-related air pollution. Exposure to emissions from cars and trucks can have negative effects on health. That's why EPA is developing strategies to reduce the impact of traffic emissions on public health.

EPA scientists have compiled research and recommendations for designing and planting roadside barriers in the recent report *Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality*. Roadside barriers can be walls built alongside roadways to reduce traffic noise, and vegetation made up of trees and bushes that are along the road. Study findings show that properly designed roadside vegetation and noise barriers can reduce downwind pollution concentrations near roadways by altering air flow and intercepting pollution. Roadside vegetation can be most effective at reducing air pollution when barriers are thick, with full coverage from the ground to the top of the canopy, and extend or wrap around an area, so that pollutants cannot flow around the edges.

Communities can use roadside vegetation barriers in different ways. Using a vegetation barrier may remove some of the smallest particulate pollutants from the near-road environment. Other research suggests that combining roadside vegetation with noise barriers can reduce downwind pollution at a greater rate than vegetation or a solid, noise barrier alone.

“These roadside barriers can be a good addition to emission control techniques because they can address existing air quality problems in a shorter time period than most other strategies,” says Richard Baldauf, an EPA scientist who studies mitigation strategies for near roadway air pollution. “Noise barriers and vegetation barriers can also provide other benefits to the community such as noise reduction and water runoff control.”

EPA developed these recommendations to help support two communities in building and evaluating the capabilities of vegetation barriers. Two locations were selected based on their proximity to major roadways with significant diesel traffic: an elementary school in Oakland, California, and a community park in Detroit, Michigan. Partners leading the planting of the vegetation barrier include Urban Releaf and the Bay Area Air Quality Management District in Oakland and The Greening of Detroit and Departments within the City of Detroit for the community park there.

These will be the first known studies to plant roadside vegetation for air quality mitigation. Previous studies used existing vegetation to conduct research on near-road pollutant concentrations. These studies are bringing together community organizations, local agencies, and EPA to design, plan, and measure air quality before and after the planting of the vegetation.

The highway near the elementary school is bordered by a noise barrier and provides an opportunity to investigate the ability of noise and vegetation barriers used together to reduce pollution. The location of the park offers the opportunity to compare the performance of a noise barrier with vegetation to a vegetation barrier alone.

Near-road mitigation strategies can be critical to reducing traffic-related pollutants and protecting the public from air pollution. EPA is expanding its air pollution research to include other sources besides major roadways, such as rail yards, ports, and wildfires, that can impact air quality in a community. New studies are characterizing the sources of air pollution, determining how they are dispersed, identifying their health impacts, and evaluating ways to reduce their impacts on communities. This work will help support EPA in its mission to reduce the health impacts of air pollution.

Learn more:

- Research on Near Roadway and Other near Source Air Pollution
- Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality
- Best Practices for Reducing Near-Road Air Pollution Exposure at Schools
- California Air Resources Board Land Use Handbook
- Sacramento Air Quality Management District Roadside Vegetation Handbook
- Smart growth
- Healthy Heart Toolkit and Research
- Asthma Research

Urban Forestry Eugene, Oregon

Who We Are and What we do

Mission

In addition to their aesthetic value, city trees provide significant ecosystem services essential for our current and future generations. Our mission *is to maximize the social, economic and environmental benefits of Eugene's urban forest and to minimize its costs and liabilities by means of adaptive management and community engagement.* –Urban Forestry Program Review (2013).

Vision

The Urban Forestry program manages more than 76,000 public street trees. Our team strives to promote a healthier and more sustainable urban forest, foster community tree awareness and stewardship, and develop tree projects and regulations.

Our vision is to increase city-wide canopy cover from our current 23% (2017) to over 30%, and to improve tree care, health, and safety to maximize the benefits they provide to our community.

Our Services

The Urban Forestry workgroup provides the following services:

- Emergency response
- Street tree maintenance, consisting of: planting, pruning and removal
- Street tree removal and planting permits
- Street tree inspections
- Street tree appraisals
- Street tree inventory

Our Urban Forestry Team

Our group is composed of 10 International Society of Arboriculture (ISA) Certified Arborists, including three board certified Master Arborists and six Tree Risk Assessment Qualification (TRAQ) credentialed arborists:

- 1 Urban forestry manager
- 1 Urban forestry management analyst

- 1 Lead arborist
- 4 Operations staff members
- 3 Urban forestry technical specialists
- 1-2 seasonal interns when budget allows

Urban Forestry arborists also practice aerial rescue on a monthly basis to ensure that we are prepared in the event of a high angle rescue. Training consists of the extraction of a person from a tree using modern climbing techniques or an aerial lift truck. This training is done periodically in conjunction with Eugene Springfield Fire Department staff. Our goal is to be able to perform a safe, efficient and effective rescue of either one of our own staff or a member of the community, if necessary.

About urban forests in Oregon

Urban forests are the trees in the cities and neighborhoods where we live. The urban forest includes trees along streets, in parks and natural areas, and in your own backyard.
Urban forests provide many important environmental, social, and economic benefits and services too.

Urban forestry is the care and management of these trees in cities. Many cities have an urban forestry or other tree care program that manages trees along city streets and in parks.

ODF's Urban and Community Forestry Program provides assistance to communities committed to their urban trees, or looking to improve and expand their urban forestry programs. Contact an Urban and Community Assistance Forester to learn how your city can become more involved in urban forestry activities.

Urban and Community Forestry Conference seeks speakers

Mark your calendar for Thursday, June 4 to attend the **2020 Oregon Urban and Community Forestry Conference.** The conference will again be at **Portland's World Forestry Center**. This year theme is *Water-Wise Community Forests: Strategies for Oregon's Future.*

Organizers are looking for **compelling presenters** for the conference. Proposals should focus on sharing results, lessons learned, and/or information about opportunities tools, best practices and resources. Of particular interest are speakers from small to medium-sized cities, from around the state, who can share practical tips and ideas. Time slots usually vary in length from 10 minutes to 45 minutes. Presentation ideas might include: best management practices for establishing trees during drought, dealing with trees after flooding, designing water-efficient irrigation systems to help establish trees, managing water via green infrastructure design, choosing drought resistant tree varieties, etc. If you would like to make a presentation, or know someone you think would be a good speaker, please fill out/ask them to fill out this Call for Speakers form and submit it by **Friday, Jan. 17.** The registration site will be available when we are closer to completing our speaker line-up.

Tree City USA
The Tree City USA program is a national program that provides the framework for community forestry management for cities and towns across America.

Communities achieve Tree City USA status by meeting four core standards of sound urban forestry management:

- Maintaining a tree board or department
- Having a community tree ordinance
- Spending at least $2 per capita on urban forestry
- Celebrating Arbor Day

Participating communities have demonstrated a commitment to caring for and managing their public trees. In Oregon, nearly 60 communities participate in the Tree City USA program.