



an audible engine sound



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One of the ways in which people who are blind are able to live independently is through increased use of their other senses, which includes being able to sense different sounds. One of the critical situations where they need to hear is when they are listening for vehicles driving toward, away or along side them.<sup>1</sup>

People who are blind need to be able to listen for specific sounds.<sup>2</sup> Unfortunately with the new hybrid car these sounds are not able to be detected, especially when they are going 30 mph or less. This makes it dangerous for anyone, especially people who are blind.

The NFB recently did a test to see if people who were blind could hear the hybrid cars driving through a parking lot. After the test had started, people were asking when the test was going to start.<sup>3</sup>

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1. Daniel B. Frye, "We Want Cars that Sound like Cars," Braille Monitor, Nov 2007, <http://www.nfb.org/images/nfb/Publications/bm/bm07> (accessed November 30, 2007).

2. Thomas J. Carroll, "Blindness: What it is, What it does and how to live with it. (Boston: Little, Brown and Company, 1961) ,105.

3. Ibid "We Want Cars that Sound like Cars"



an audible engine sound

A bill was introduced on Wednesday April 9th 2008, protecting people who are blind from hybrid cars. The law requires the Transportation Department to produce standards for automobiles like hybrids and other vehicles that make very little noise. It also states that it wants the Transportation Department to conduct a two year study before putting out the standards. The National Highway Traffic Safety Administration is planning a listening session during the spring to consider possible solutions.<sup>4</sup>

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4. Associated Press. "Congress to Introduce Bill to Protect Blind People from Hybrid Cars." April 2008 (<http://www.foxnews.com/story> (accessed April 2008))



The National Federation has listed standards that the sound has to comply to. There will be sound variations to indicate if the car is idling (stopped at a stop sign), traveling at a constant speed, or accelerating. When the car is idling, it will create a sound at 45 dBa from 10 ft away. When traveling less than 10 miles per hr the sound will be at 53 dBa from 20 ft away. When traveling between 10 and 30 mph it will be no less than 60 dBa measured at 60 ft. When the car is traveling over 30 miles per hr it will be measured at 65 dBa measured at 60 ft away.<sup>5</sup>

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5. Daniel B. Frye, "We Want Cars that Sound like Cars," Braille Monitor, Nov 2007, <http://www.nfb.org/images/nfb/Publications/bm/bm07> (accessed November 30, 2007).



The purpose of SAFETONE is to provide people who are blind with a specific sound that identifies a hybrid vehicles presence, as well as speeding up this two year process that has been put into place.

Since this problem exists in all of the hybrid cars I am creating a sound which lets the person know the brand the car, creating a selling point for each individual car. The sound will comply to the standards which the National Federation has put in place and will be placed into the electronics of the car.

The sound will be heard as soon as the car is turned on. Once the car accelerates above 30 mph the sound I have created, will be in harmony with the normal engine sound, eliminating extra noise pollution.

Along with this sound I have created a sticker and a bumper with the SAFETONE logo, which will go onto the car once the new law is passed to let people know that it complies with the regulations of the Transportation Department.



shows it's official

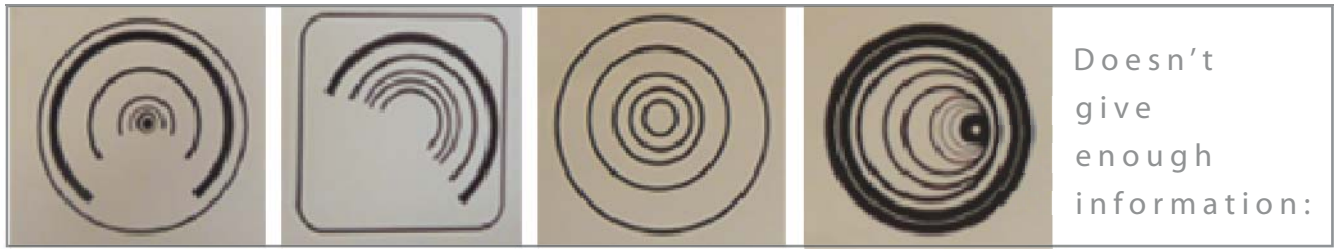


simple logo

From looking at the criteria of car stickers that already existed, I came up with several ideations for this new sticker:

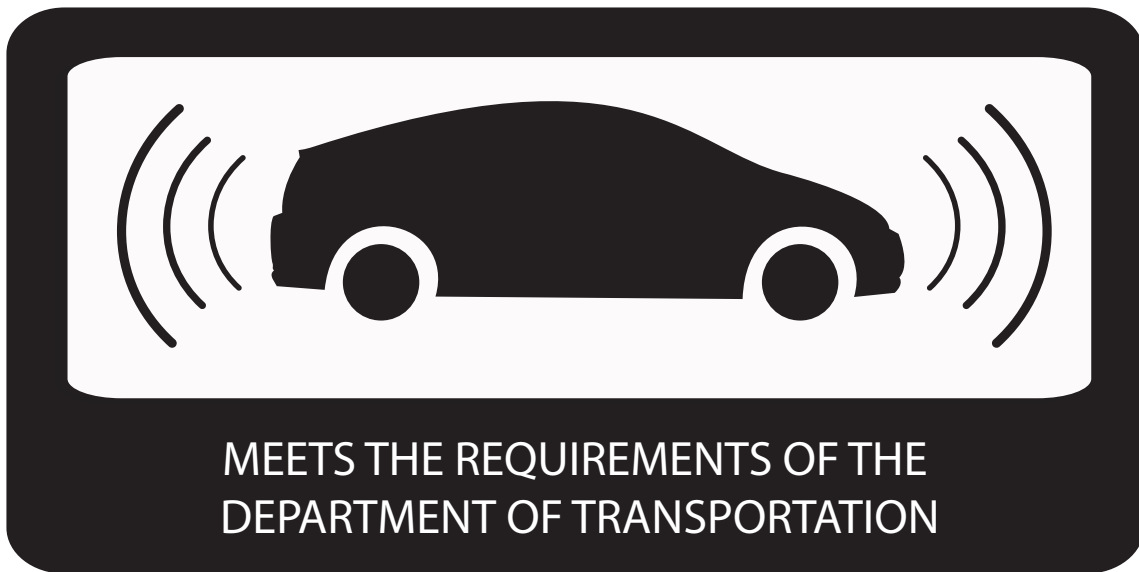


This is some of the feedback I got:





From the feedback, this then became the final design:





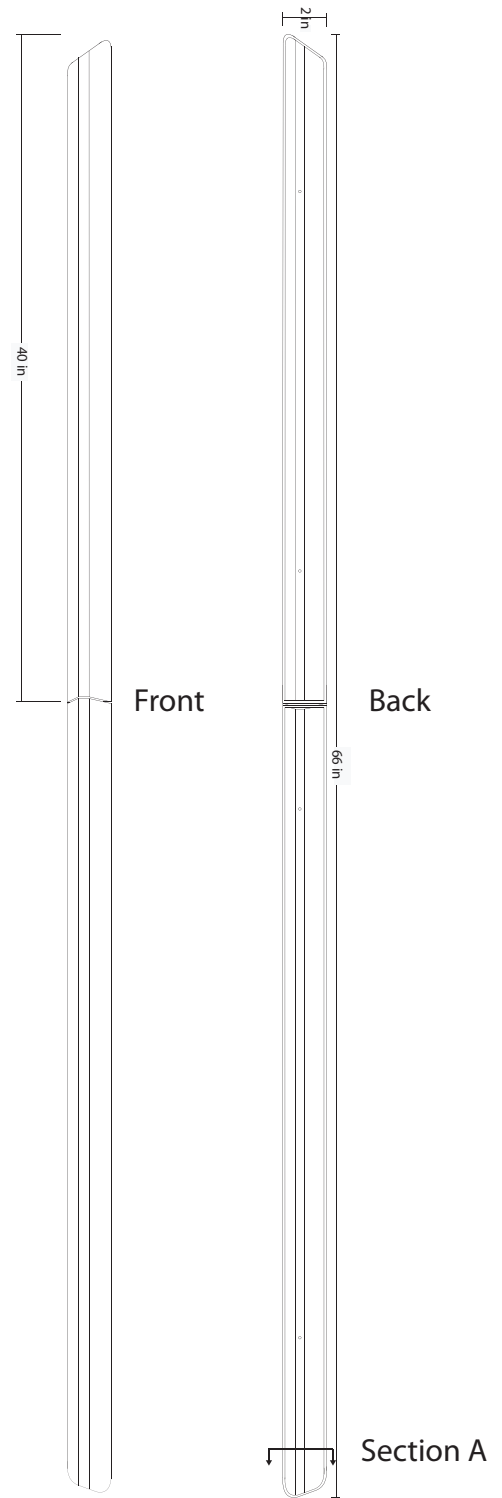
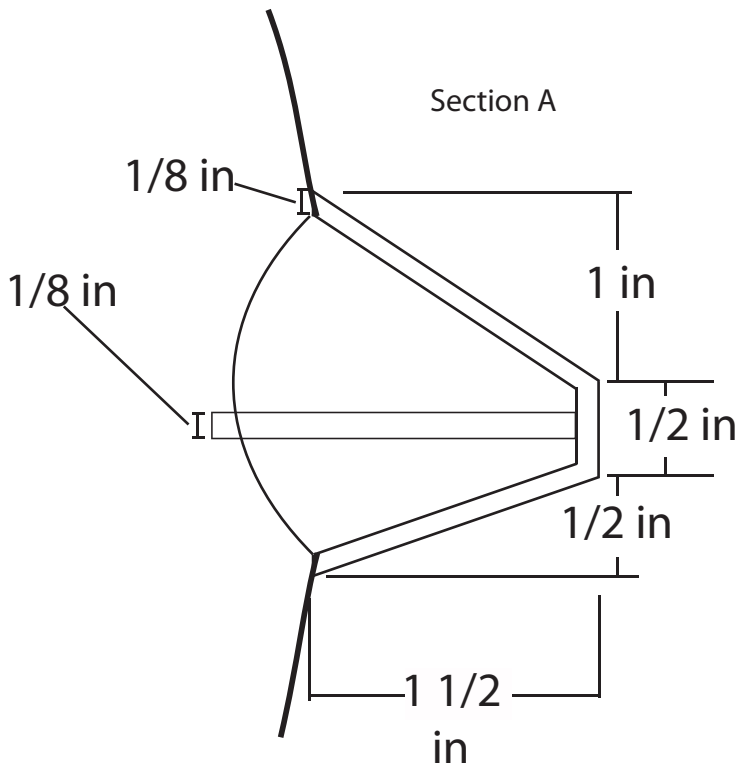
To Design the piece that would let the public know that there was a sound in the car, I found influences from what was on the vehicle already, such as the plaques on the prius hybrid:





an audible engine sound

I decided on the bumper because it not only branded the car but also spoke of the other issues of safety:



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SAFETONE





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- the material used for the bumper would be a polypropylene-type resin<sup>6</sup>
- the material used for the sticker on the car window would be a thin self adhesive vinyl<sup>7</sup>

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6. [www.freepatentsonline.com](http://www.freepatentsonline.com)

7. [www.holographics.com/info/materials.html](http://www.holographics.com/info/materials.html)



When creating the engine sound I wanted to make it iconic, so I looked for influences from other products that also made these kinds of sounds:

-after a person lets the elevator know which floor they want, the elevator lets the person know when it has arrived on this particular floor.

-Harley Davidson motorcycles have a distinct engine sound when they start up. The engine has helped the motorcycles sell in the past.

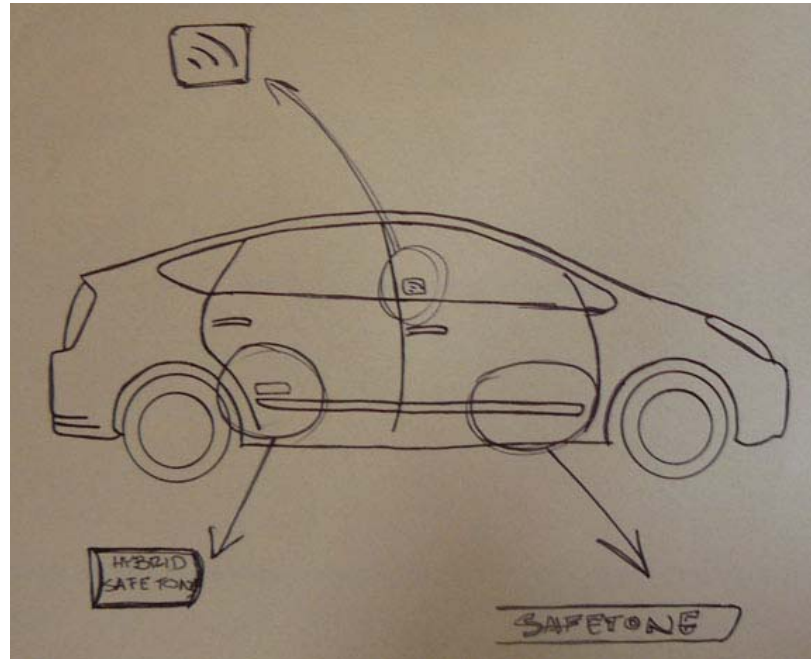


an audible engine sound

These were a few other ideas for the name of the system.

PRODUCT NAME:

- ENVIRO SOUND
- SAFE + SOUND
- SAFESOUND
- SAFETONE
- SOUND ALERT
- SOUND ALERT DEVICE





I created one set of prototyped sounds and when testing them with my user group was told they didn't sound enough like an engine. After this, I went back and created another set of sounds that sounded closer to the sound of an engine.<sup>8</sup>

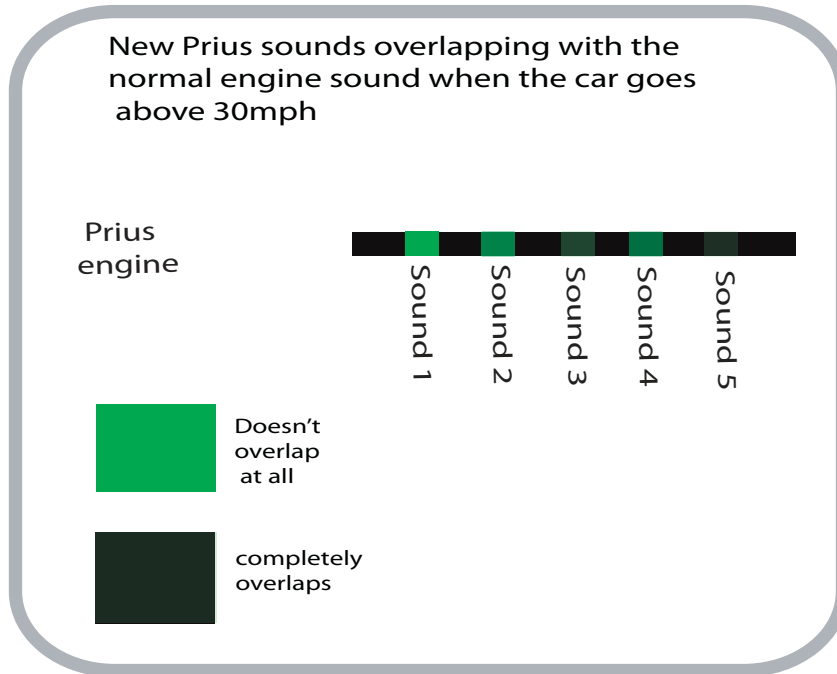
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8. May 1st 2008. Romeo Edmead



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This is the second set of prototypes for the engine sound. The green chart shows which sounds are in harmony with the conventional engine and which sounds aren't.





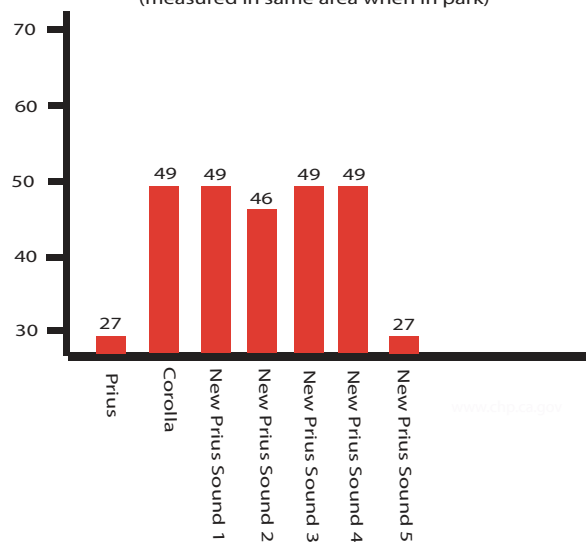
an audible engine sound

The red chart shows which sounds had the highest decible level when the car was idling. The sound that worked the best was "New Prius Sound 3"

[http://www.thecarconnection.com/Vehicle\\_Reviews/Hybrid\\_Cars\\_Electric\\_Cars\\_Diesels/2000\\_Toyota\\_Prius.S274.A1416.html](http://www.thecarconnection.com/Vehicle_Reviews/Hybrid_Cars_Electric_Cars_Diesels/2000_Toyota_Prius.S274.A1416.html)

(A series of sounds which sound like an engine.)

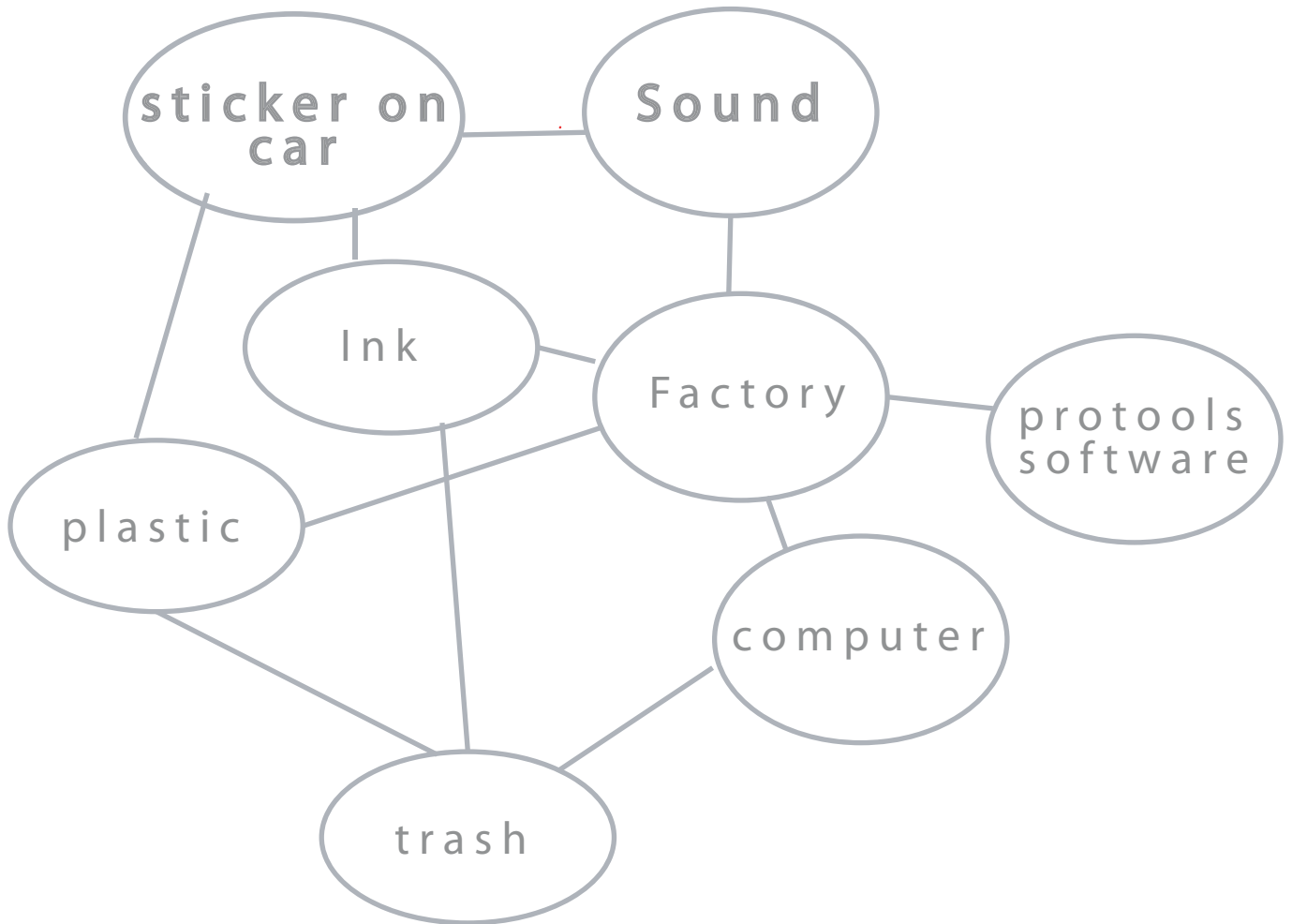
dBa scale of prius versus Corolla vs new sounds  
(measured in same area when in park)





an audible engine sound

## Lifecycle analysis:





### Next Steps:

I am going to continue experimenting with multiple sounds, and at some point present the idea at the National Federations yearly convention.



## Bibliography:

May 1st 2008. Romeo Edmead "User Testing."

. Associated Press. "Congress to Introduce Bill to Protect Blind People from Hybrid Cars. April 2008

(<http://www.foxnews.com/story> (accessed April 2008))

[www.freepatentsonline.com](http://www.freepatentsonline.com)

[www.hollographics.com/info/materials.html](http://www.hollographics.com/info/materials.html)

Nathaniel Pearson (helped with logo and access to lasercutter)



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Carroll, Thomas J. *Blindness: What it is, What it does and How to live with it.* (Boston: Little, Brown and Company, 1961.)

Koestler, Frances A. *The Unseen Minority: A society History of Blindness in the United States.* (New York: David McKay Company Inc, 1976.)

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