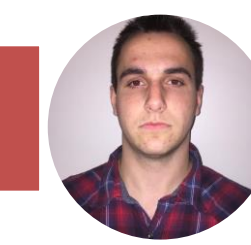




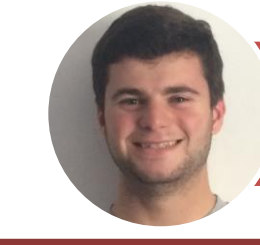
John Bieber (CS)



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Ben Pasculano (AE)



Zijian Xiong (ME)

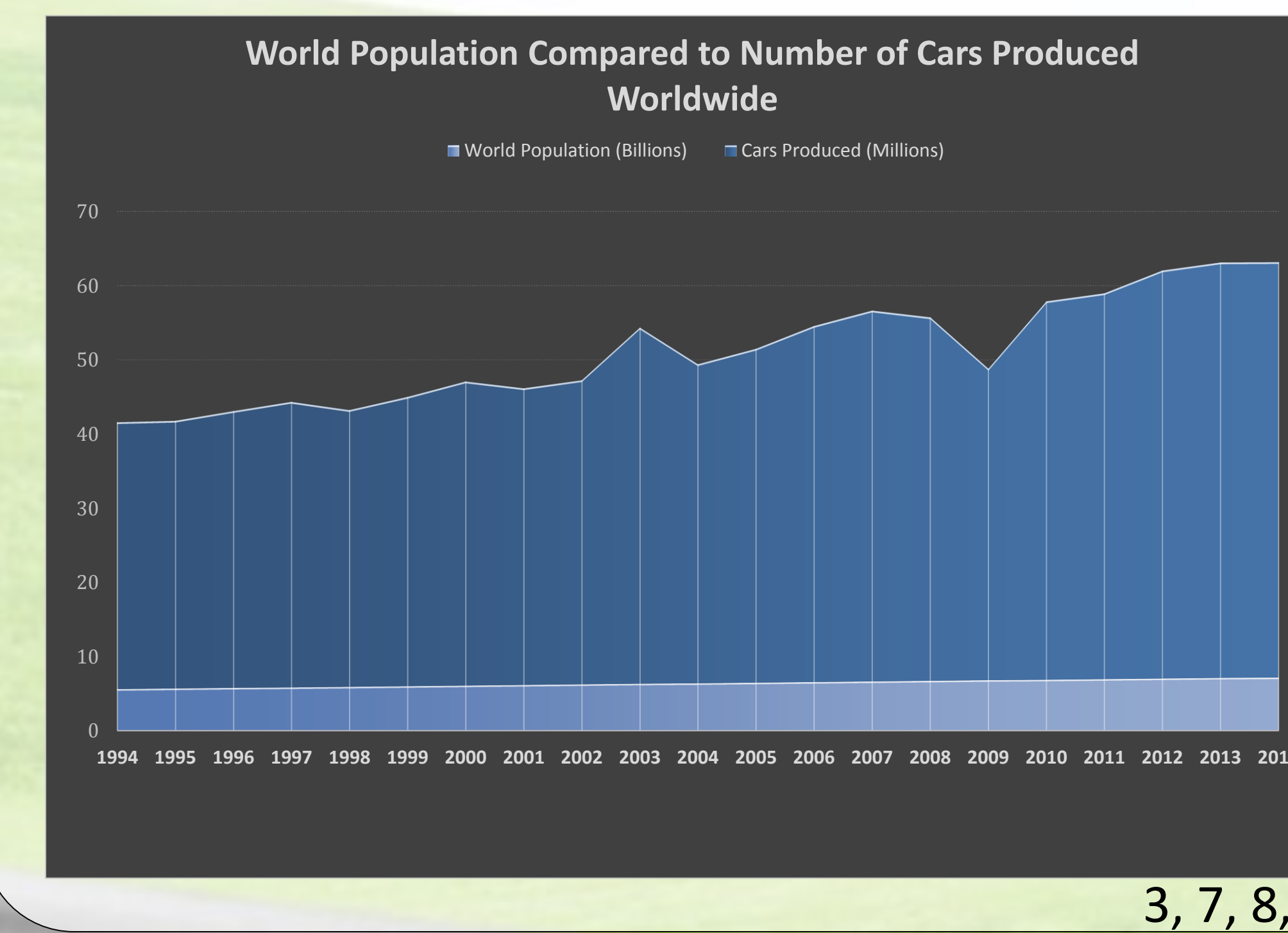
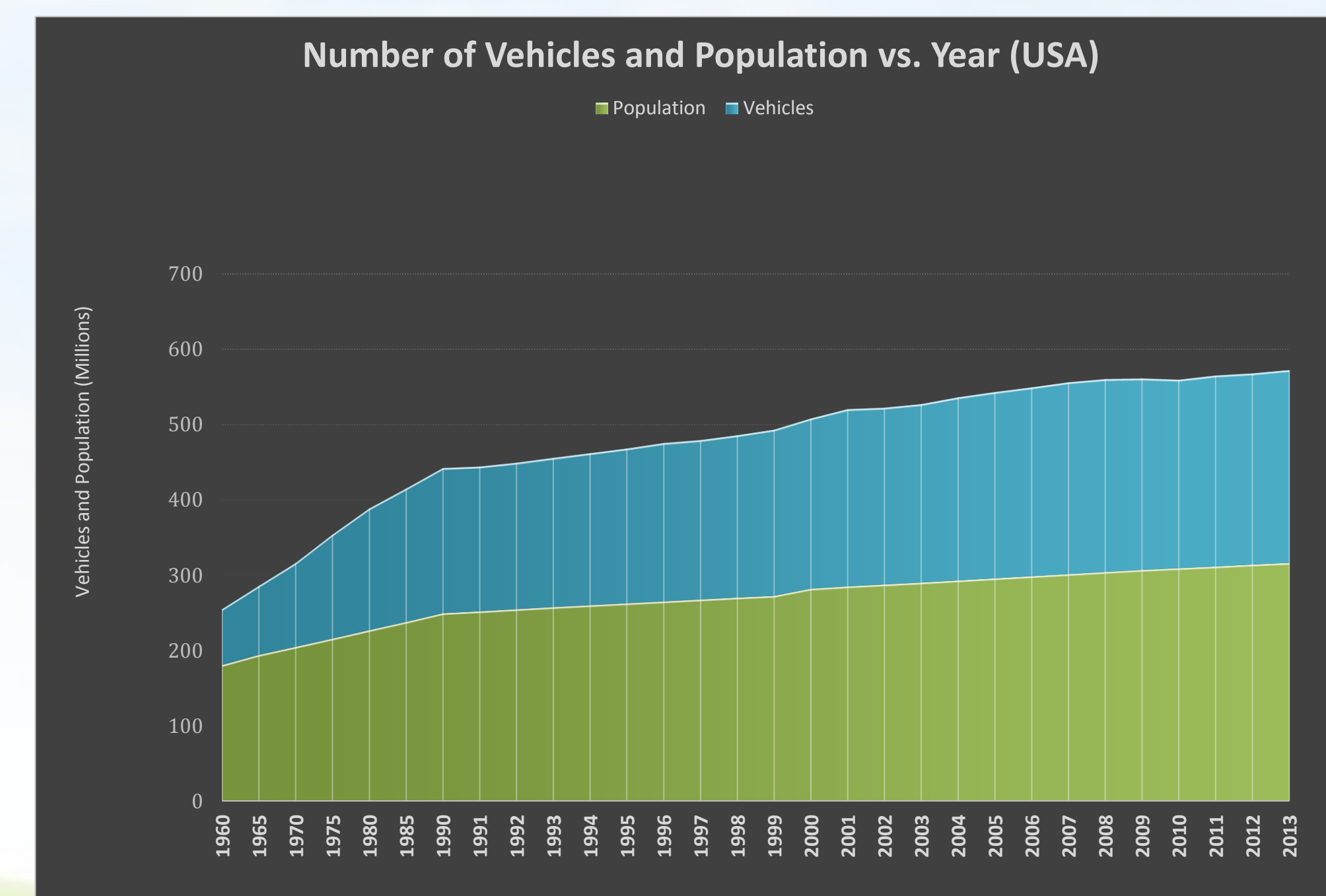
## Synopsis

The current business model for automotive manufacturers produces far too much waste. Our group has looked into creating a system that produces less waste through a system known as a circular economy. This system does not allow for any waste, and is accomplished by repurposing or recycling the materials used in a product.



## Methods for Sustainable Development

- Reduce ASR amount entering landfills/year.
- Create a US policy that increases amount of an ELV to be recovered and recycled
- Advocate for the for a policy to reduce amount of materials wasted in ELV's
- Set deadlines for automotive recycling similar to the EU
- Show why cars need to be made from recyclable materials



## Ideal Automotive Circular Loop



## What is the Issue?

- 12,000,000+ vehicles scrapped/year in the US, rendering them end of life vehicles (ELVs)
  - Due to age, abandonment, or accident
- Currently 75-80% vehicle weight is recovered
- Remaining 20-25 weight-percent of vehicle waste increases with car production
  - Equates to 5,400,000 tons of landfilled material/year in the US
- This material is auto shredder residue (ASR) and is landfilled due to cost effectiveness<sup>4, 5</sup>

## Results/Outcomes

### Disassembly line

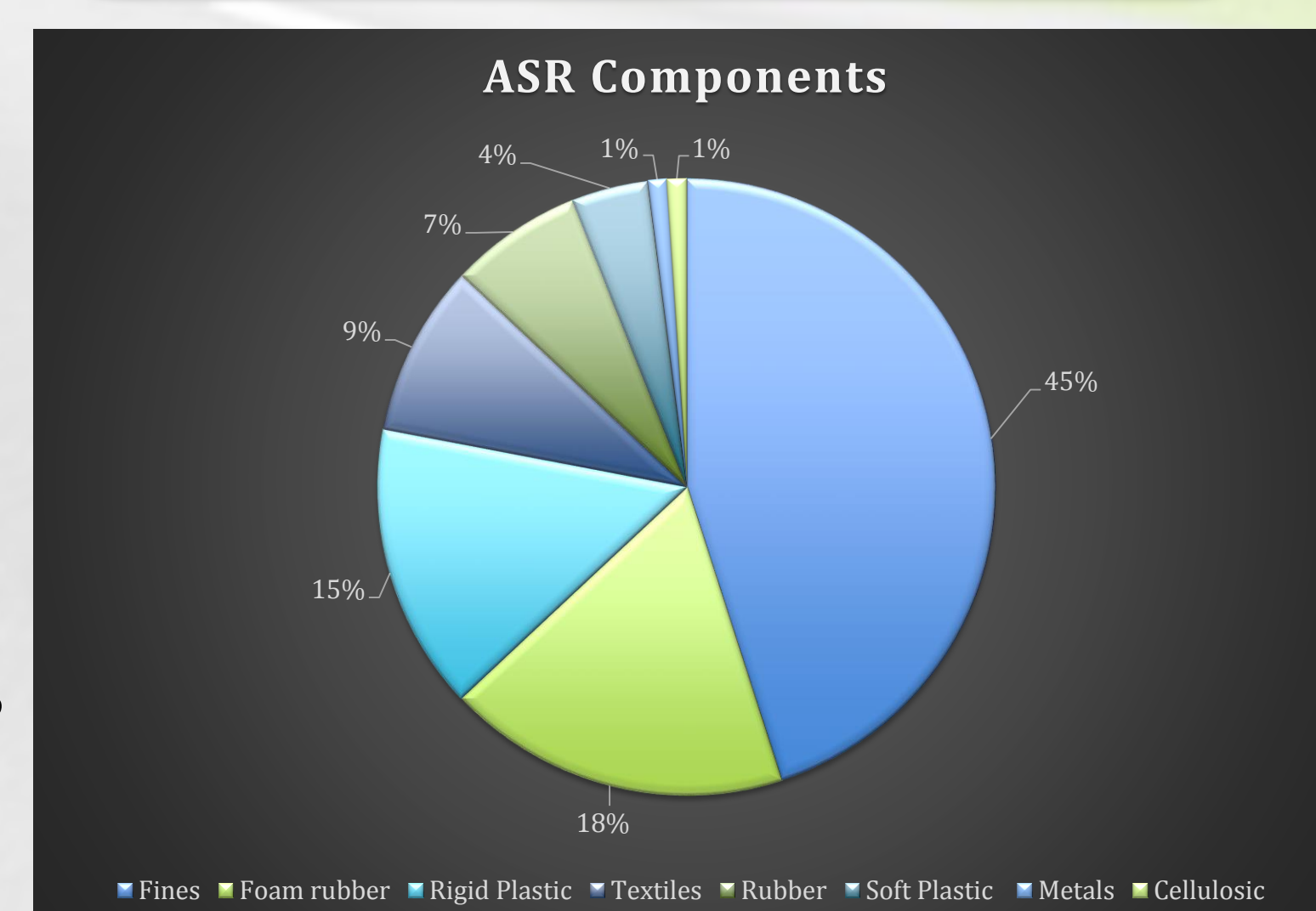
- Vehicles will be made for their disassembly.
- Taking apart a car is similar to making a car.
- Vehicles would have a used materials passport.

### ASR

- No proper ASR sorting technology currently.
- The US should restrict hardly recycled car materials.
- Not profitable part should go to shredder.

### Policy

- The EU has a goal of 95% recyclability by 2015.
- China is looking to increase car recycling rate to 95% by 2017.
- The US currently restricts hazardous ASR materials
- US legislation restriction PCB in ASR is less than 50 ppm<sup>2, 6</sup>



## Acknowledgments

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## Conclusions & Recommendations

- Value in automotive materials that enter landfills
- Room for improvement in current material recovery
- Innovation and Policy are required to improve process of US automotive material recovery
- Policy will prompt and force such innovation
- Innovation aimed at reducing amount of non-reusable car parts/material AND lowering ASR production
- Recovery of more parts and materials develops a circular economy

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