



**Green Pavements:
have we gone too far?
Getting Back to Basics**

Continuing to improve asphalt's environmental sustainability


- RAP
- Shingles
- Porous
- Smooth
- Perpetual





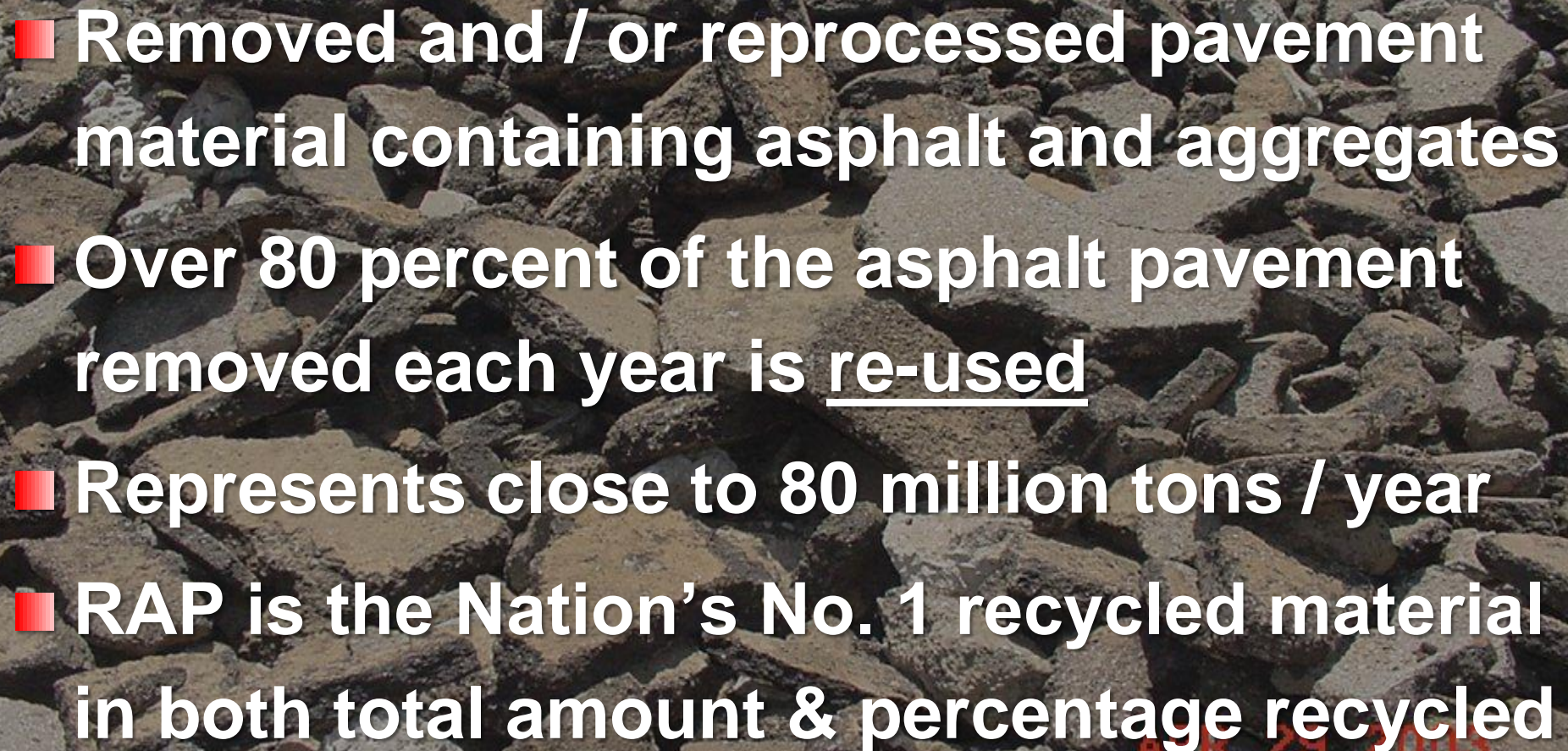
- Porous pavements manage stormwater
- Not just for parking lots anymore

I-35 San Antonio

- 
- Friction improved 200%
 - Smoothness improved 60%
 - Noise cut by up to 14 decibels
 - Major accidents cut in HALF!

Reclaimed Asphalt Pavement "RAP"



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- Removed and / or reprocessed pavement material containing asphalt and aggregates
 - Over 80 percent of the asphalt pavement removed each year is re-used
 - Represents close to 80 million tons / year
 - RAP is the Nation's No. 1 recycled material in both total amount & percentage recycled

APR 29 2005



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70 - 6,000 Gallon Transport Trailers
and 28,200 Tons of Clean Aggregate



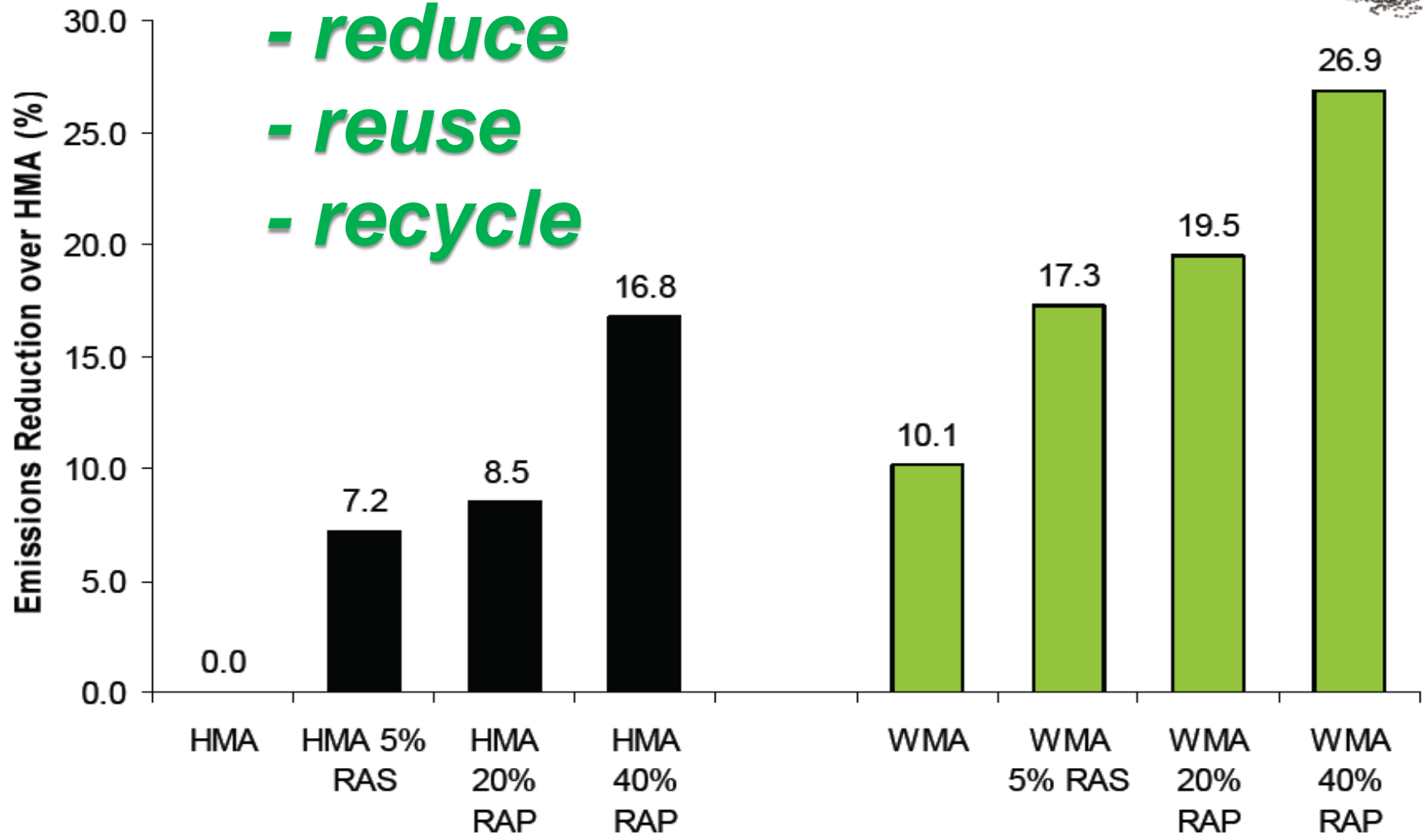
- **Shingles**
- **Crumb / Tire Rubber**
- **Glass**
- **Slag**
- **Foundry sand**
- **Different stages of utilization / evaluation**

- **At least 15 % production energy savings**
- **Savings on application / compaction**
- **Other construction benefits**
- **Allows for higher RAP content**
- **Technologies continue to reduce energy**
- **Performance appears superior**
- **Will be the norm in near future**

GHG Emissions Reductions



- reduce
- reuse
- recycle





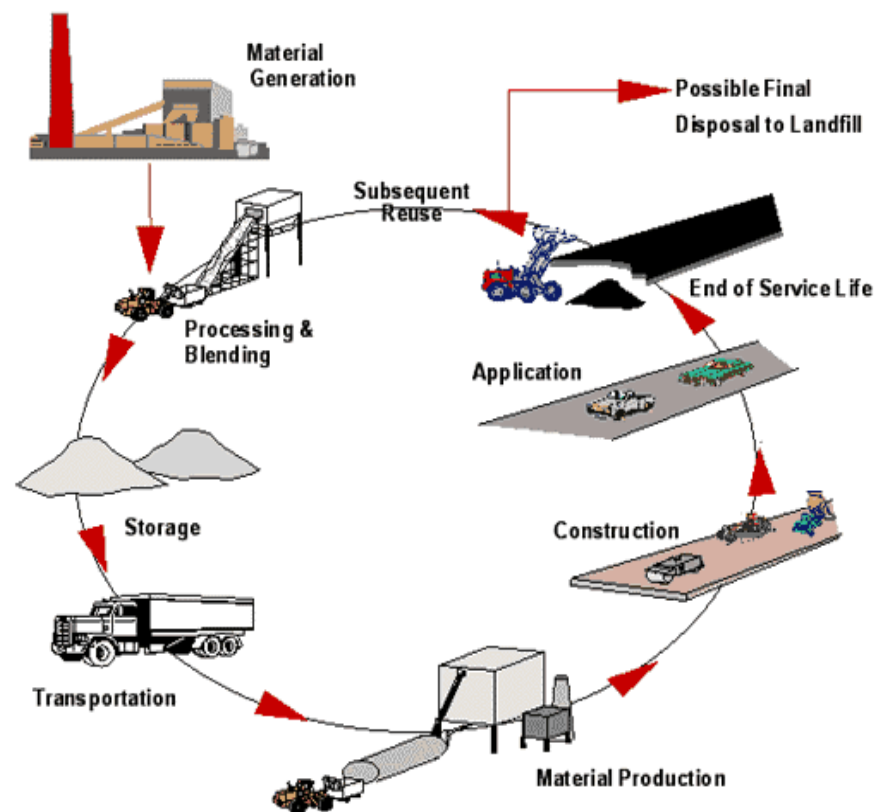
BLACK AND GREEN

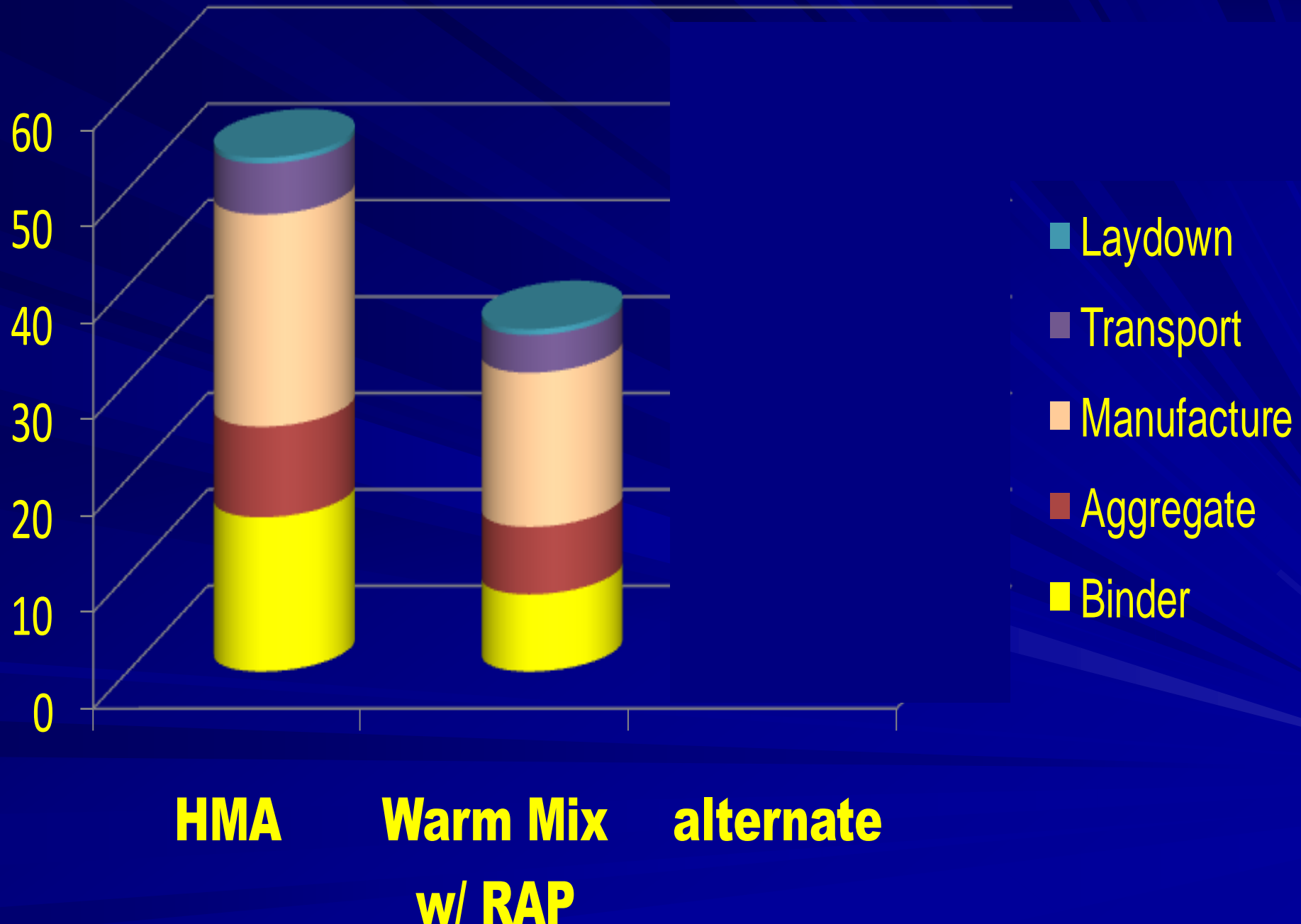


Sustainable Asphalt, Now and Tomorrow



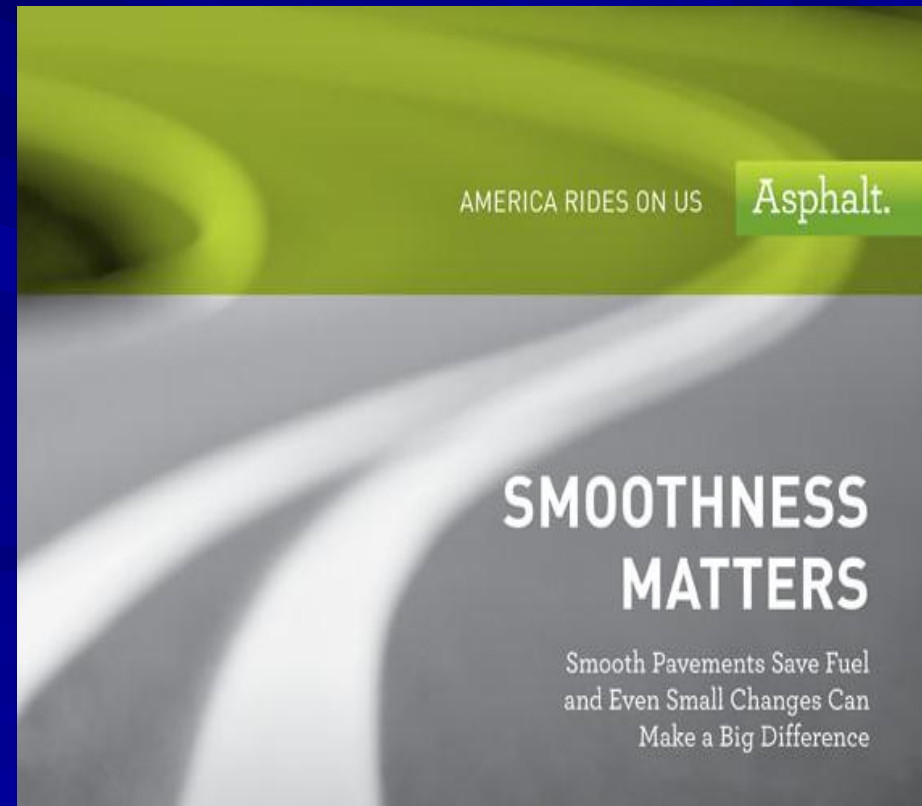
- Environmental metric tool
- Currently focuses on “carbon footprint”
 - Raw mtl / construction / maintenance
 - “use” phase”





- **Semantics on definition**
- **No doubt: vehicle emissions are huge**
 - **But are they created by USING the pavement?**
 - **Much smaller delta for pavement impacts**
- **MIT: roughness accounts for 5 – 25 percent overall carbon footprint**
 - **vs. 40 – 60 percent on initial construction**
- **pavement flexibility: not validated**

- Smooth pavements save fuel
- Designed and maintained smoother
- Intuitive; ground in decades of science
- Working with stakeholders
- Field studies show: smoothness, not pavement type



environmentally sustainable pavement

- Keep it simple: Reduce / Reuse / Recycle
- Porous pavements manage stormwater
- OGFC: safe, quiet, cool
- RAP is Nation's No. 1 recycled material
- Small carbon footprint
- Warm Mix: reduces energy consumption

RAP, porous, WMA, perpetual pavts

- **Keep it simple: reduce / reuse / recycle**
- **LCAs: carbon footprint vs other env impacts**
- **Tangible benefits now**
 - **RAP / RAS / WMA**
 - **smoother pavements**
- **Asphalt pavement sustainability info:**
 - **www.pavegreen.com**
 - **www.asphaltroads.org**

