LCA PAVE TOOL AND CONCRETE PAVING SUSTAINABILITY

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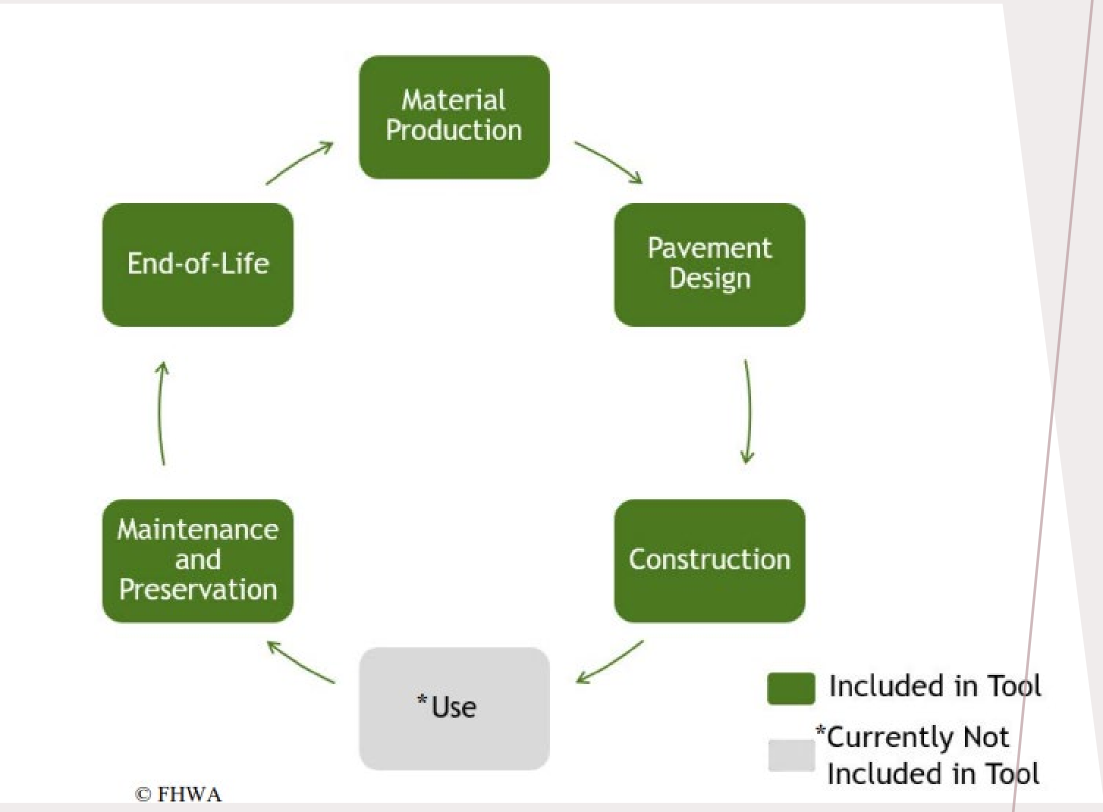
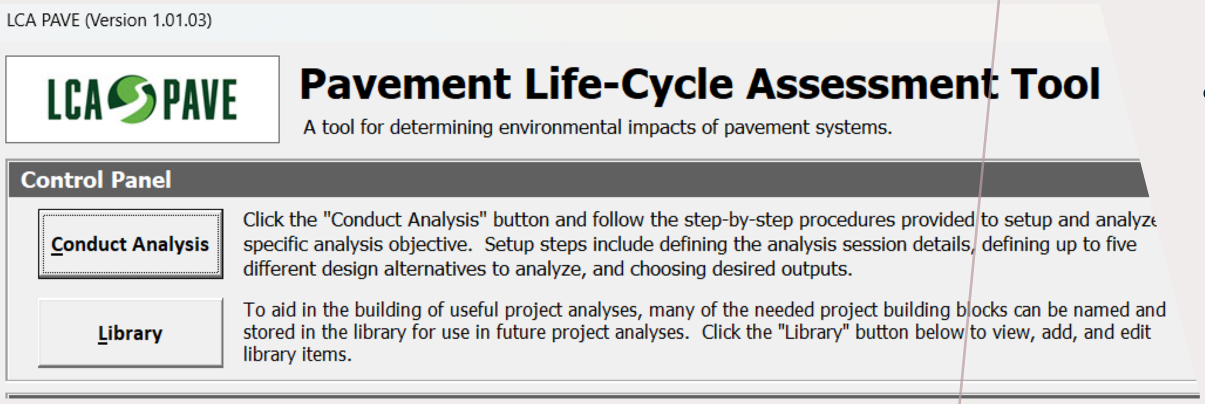
WHY IS THIS IMPORTANT?

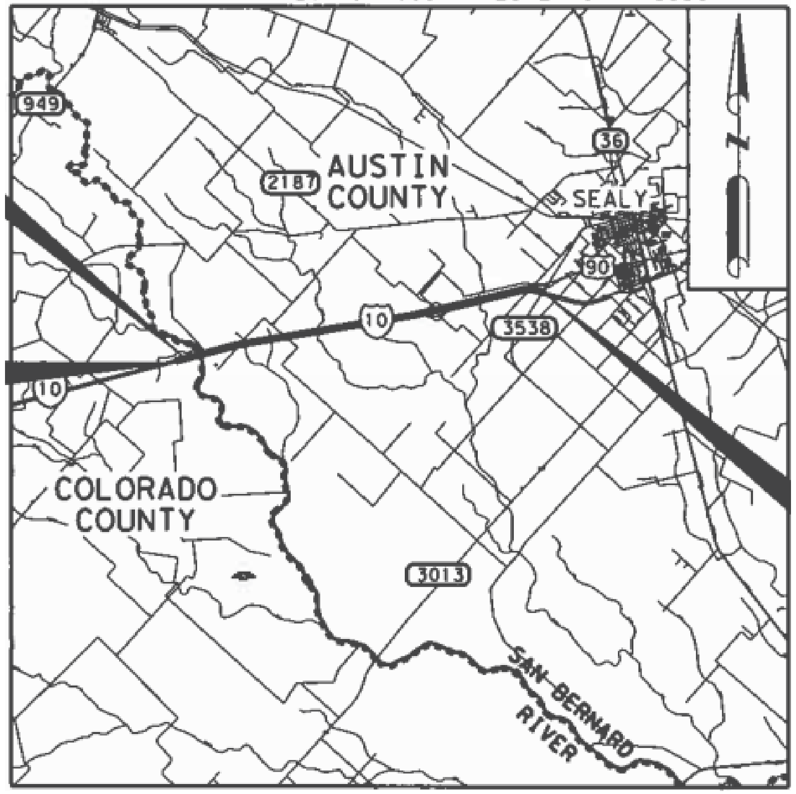
- More sustainable construction projects
- Benchmarking and aiming to minimize emissions
- Concrete paving's role
- Facilitating sustainable decision making

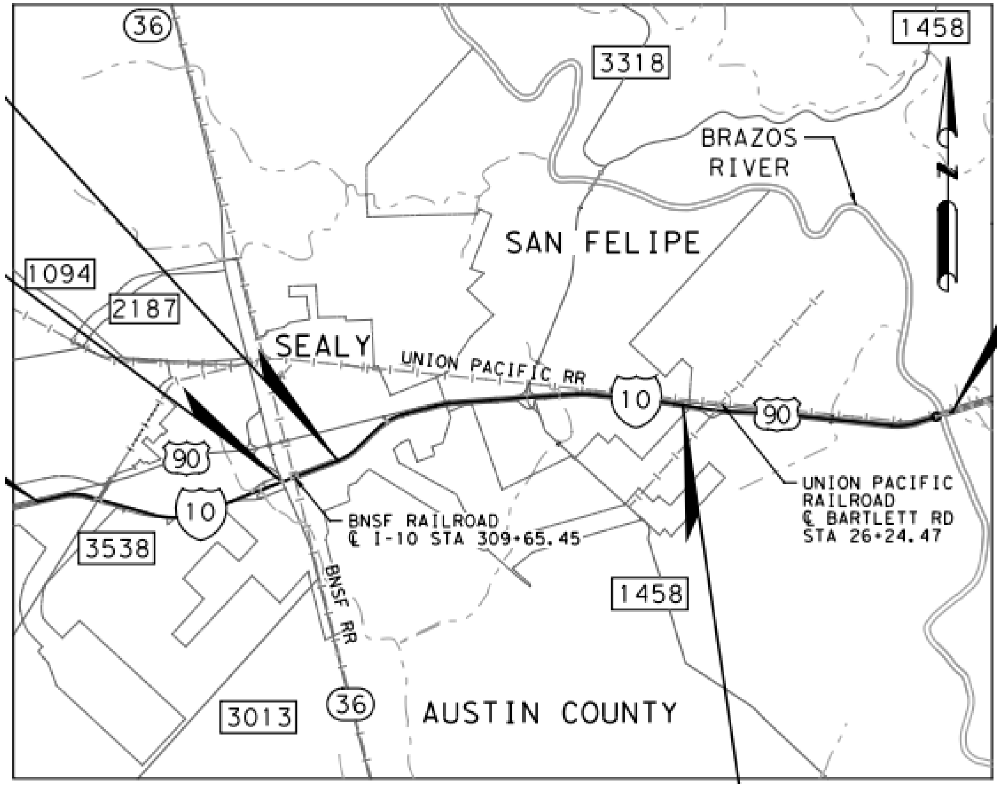




WHAT IS LCA PAVE TOOL

- LCA: LIFE CYCLE ASSESSMENT
- EXCEL BASED
- FHWA PROGRAM



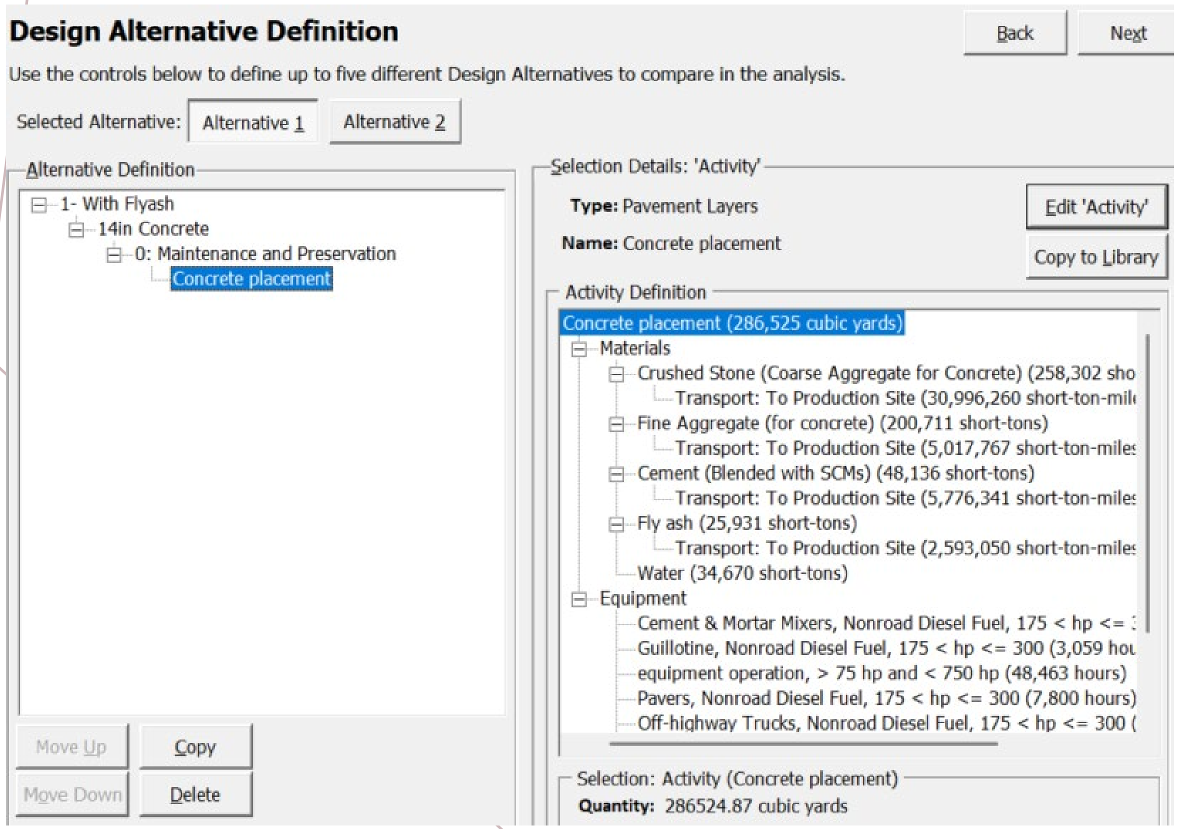


PROJECT OVERVIEW

- YOAKUM DISTRICT ON IH 10
- 10.128 TOTAL MILES

BACKGROUND INFO

- Fly ash is a byproduct of coal combustion
- Partially replaces cement for more sustainable concrete



INPUTS AND ASSUMPTIONS

- Road length and width
- Concrete depth
- Materials
- Transportation of Materials
- Equipment

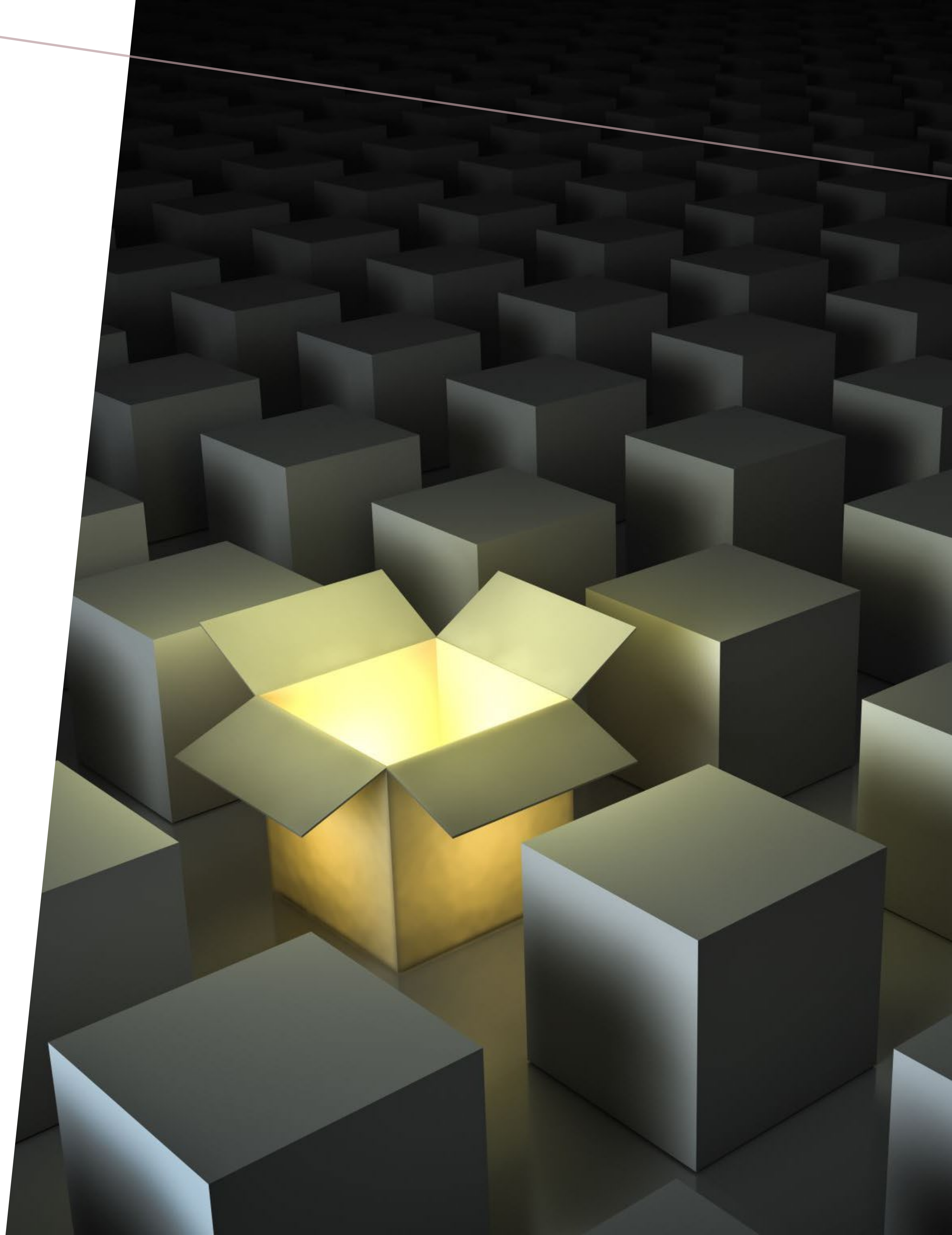
Impact Indicator	Alternative 1	Alternative 2	Units
Renew. Energy (Non Raw Matl)	11,329,351	15,205,435	MJ
Renew. Energy (Raw Matl)	2,572	2,572	MJ
Total Renew. Energy Use	11,331,916	15,208,000	MJ
Nonrenew. Energy (Non-Raw Matl)	586,285,462	700,761,211	MJ
Nonrenew. Energy (Raw Matl)	0	0	MJ
Total Nonrenew. Energy	586,285,462	700,761,211	MJ
Recycled Matl. Use	36,760	16,664	Short-tons
Disposed Non-Hazardous Waste	550	822	Short-tons
Disposed Hazardous Waste	2.61	3.87	Short-tons
Disposed Radio-Active Waste	0	0	Short-tons
Net Use of Fresh Water	471,663	669,396	Cubic meters
SCM Usage	25,931	0	Short-tons
Acidification	188,212	237,014	kg SO2 eq
Ecotoxicity	4,456,970	4,508,912	CTUeco/kg
Eutrophication	63,486	88,908	kg N eq
Fossil Fuel Depletion	22,778	22,778	MJ surplus
Global Warming	59,718,112	80,468,642	kg CO2 eq
Human Health - Cancer	0.0046	0.0047	CTU/kg
Human Health - NonCancer	0.2705	0.2735	CTU/kg
Human Health - Particulates	3,305	3,315	kg PM2.5 eq
Ozone Depletion	1.43	1.98	kg CFC-11 eq
Smog Formation	4,521,450	5,472,395	kg O3 eq

Analysis Period:	50 yrs	50 yrs
Total Lane-Miles:	50.64 ln-mi	50.64 ln-mi
Total Area:	6,631,004 sf	6,631,004 sf

RESULTS

INSIGHTS

- Tools like LCA Pave support sustainable decision-making
- Adjusting variables for differing alternatives



TAKE AWAYS

- LCA Pave tool supports analysis of emissions of new construction projects emerging
- Concrete paving plays a big role in construction
- Strive for more sustainable pavements

THANK YOU

Questions?