

TDF Use in Cement Industry

9th Scrap Tire Conference

Louis Baer

Senior Director & Counsel, Government Affairs

Portland Cement Association

Portland Cement Association

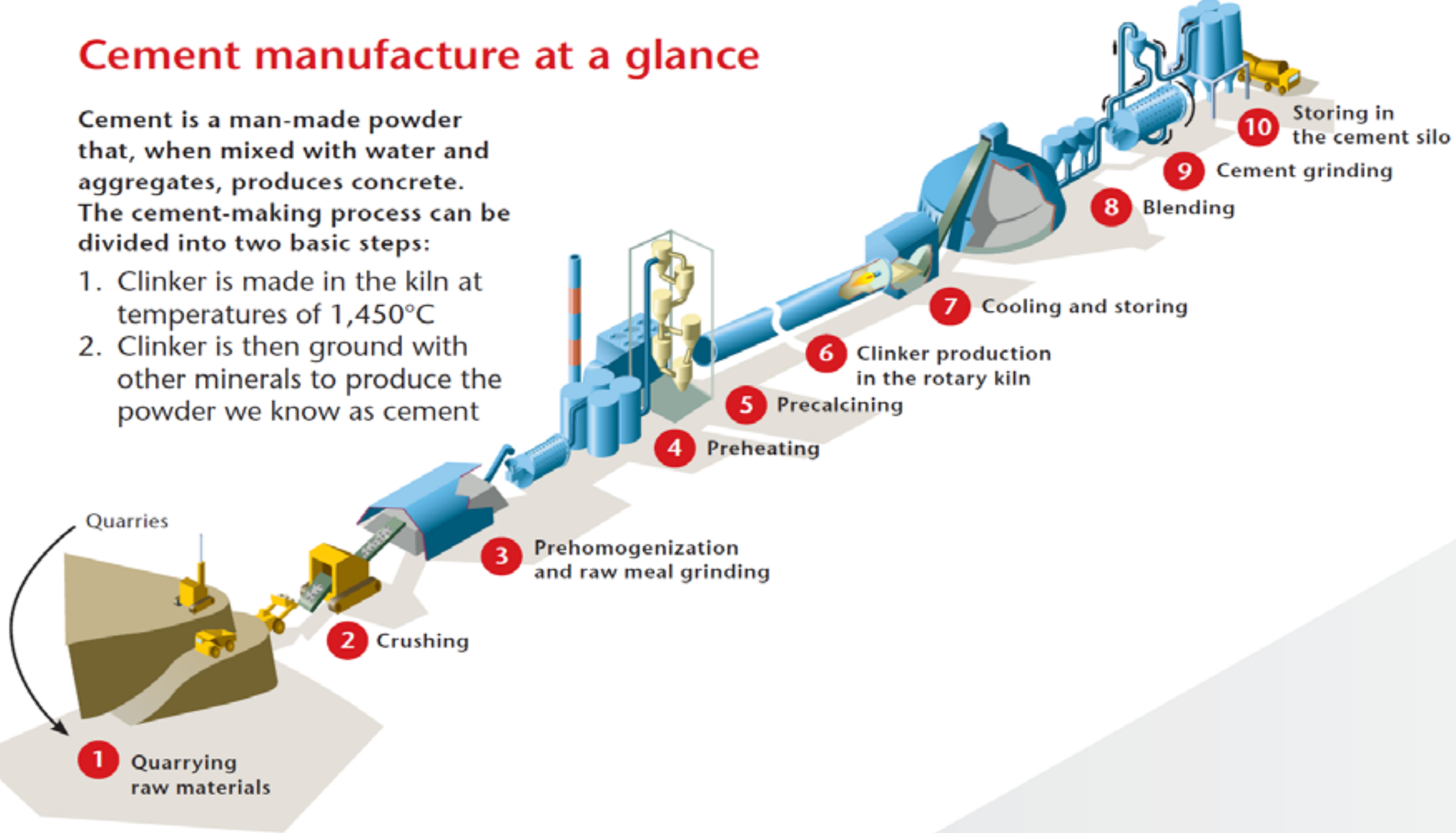
- Since 1916, PCA has been the premier policy, research, education, and market intelligence organization serving America's cement manufacturers
- Represents majority of domestic production capacity
- **Mission:** promote safety, sustainability, and innovation in all aspects of operations, foster continuous improvement in cement manufacturing and distribution, and generally promote economic growth and sound infrastructure investment
- Cement and concrete manufacturing, directly and indirectly, employs over 600,000 people and contributes over \$100 billion to the economy



Cement manufacture at a glance

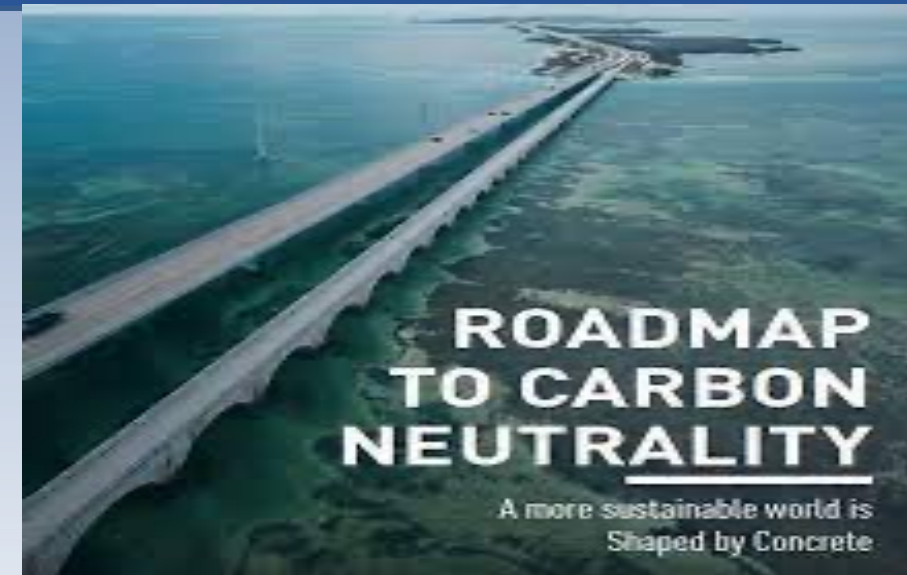
Cement is a man-made powder that, when mixed with water and aggregates, produces concrete. The cement-making process can be divided into two basic steps:

1. Clinker is made in the kiln at temperatures of $1,450^{\circ}\text{C}$
2. Clinker is then ground with other minerals to produce the powder we know as cement

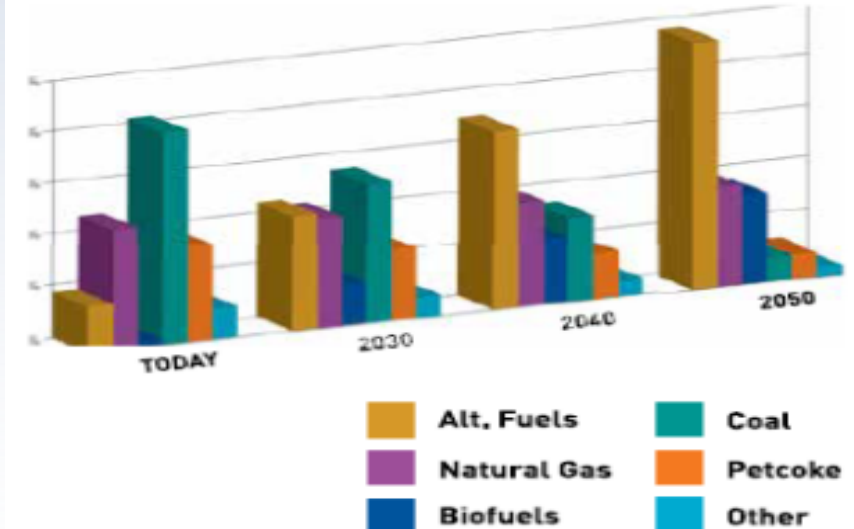


Roadmap to Carbon Neutrality

- Cement industry committed to goal of reaching carbon neutrality across cement and concrete supply chain by 2050
- Key levers to carbon neutrality at cement plant:
 - **Alternative Fuels/Fuel Switching**
 - Increased use of decarbonated/pre-calcined raw materials like slag, fly ash, and other CCRs
 - Transformative fuels and technologies: H₂, plasma heating, oxyfuel/oxy-calcination, electric calcination...
 - CCUS: solvents, sorbents, membranes, algae...

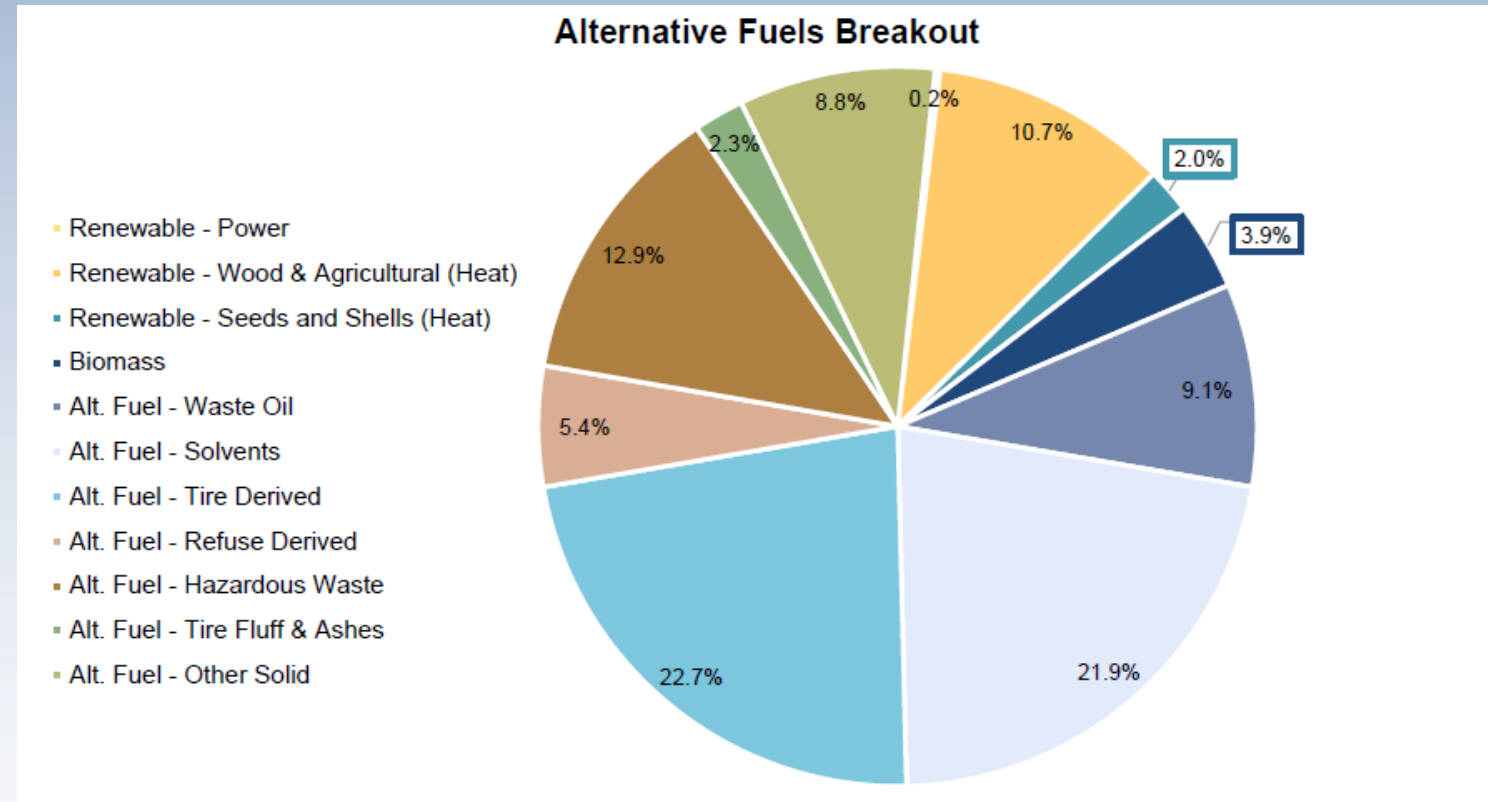


USING FUTURE FUELS TO LOWER CO₂



Alternative Fuels Use

- Cement industry is unique suited to use alternative fuels, including TDF
- Increased use of TDF and other alternative fuels to displace coal and petcoke, which are carbon intensive
- Alternative fuels make up only 15% of fuel used by domestic manufacturers, compared to over 50% in Europe
- Goal is to reach 50% alternative fuels use by 2050

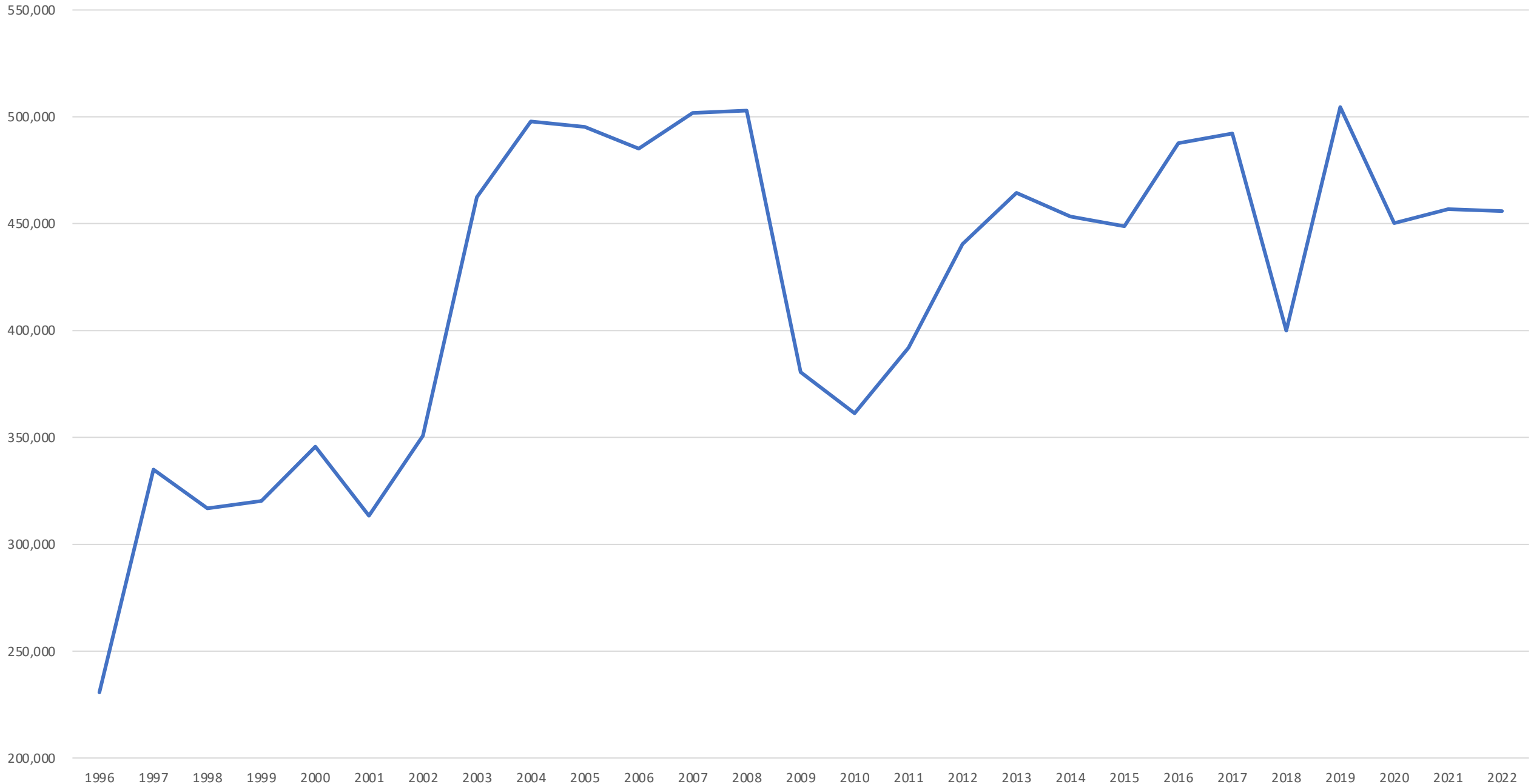


Cement Kilns Considerations for TDF Use

- Cement kilns use both whole tires and shredded tires as TDF
- TDF injected mid-kiln, back end of kiln, or above the burner pipe
- Using shredded tires in large quantities requires installing shredding equipment at the plant



TDF Use by Year – Short Tons



Technical Challenges to Using TDF

- Whole tire injection limited to one tire per revolution of the kiln, limiting # of tires used
- Tire injection at back end of kiln limited by capacity of the kiln
- Onerous air permitting process for plants not permitted for TDF or to install TDF material handling, processing, and storage equipment
- Mercury content of TDF (0.01 – 0.43 ppm)
- Shredding tires consumes significant energy and large-scale TDF processing impacts energy advantage that tires have over coal or petcoke



TDF Advocacy

- **December 2017:** EPA policy guidance determining that tires at specific tire sites in Texas collected under previously defunct tire collection program are not solid wastes and could be used as TDF
 - Policy to address approximately 11 million tires in Texas
- **February 2019:** EPA policy guidance revising processing steps for discarded tires allowing use of slow-speed shredder, screening, and removal of 2-10% metal to be used as TDF and not deemed as solid wastes
 - Policy to address approximately 5 million tires in Texas
 - Policy can be applied nationwide
- **April 2024:** EPA finalized Greenhouse Gas Reporting Rule revisions increasing default biogenic factor for TDF from 20 to 24% and removing ASTM testing requirement for facilities using more than 10% of TDF

Next Steps on TDF and Alternative Fuels Advocacy

- **DOE Alternative Fuels Study:** PCA secured language in FY24 Energy-Water Appropriations for study on alternative fuels, particularly determining GHG emissions factors for various fuels
- **Permitting:** Educate Congress and EPA on permitting burdens and consider revisions to New Source Review and Non-Hazardous Secondary Materials regulations



U.S. DEPARTMENT OF
ENERGY



Questions?