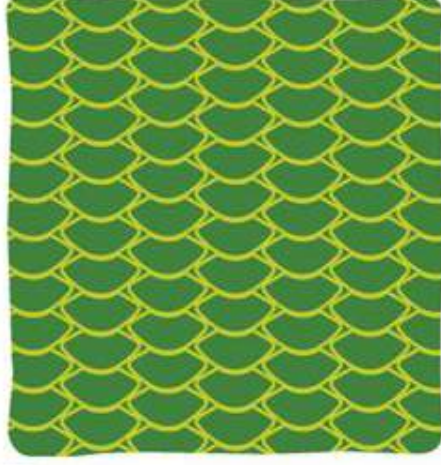
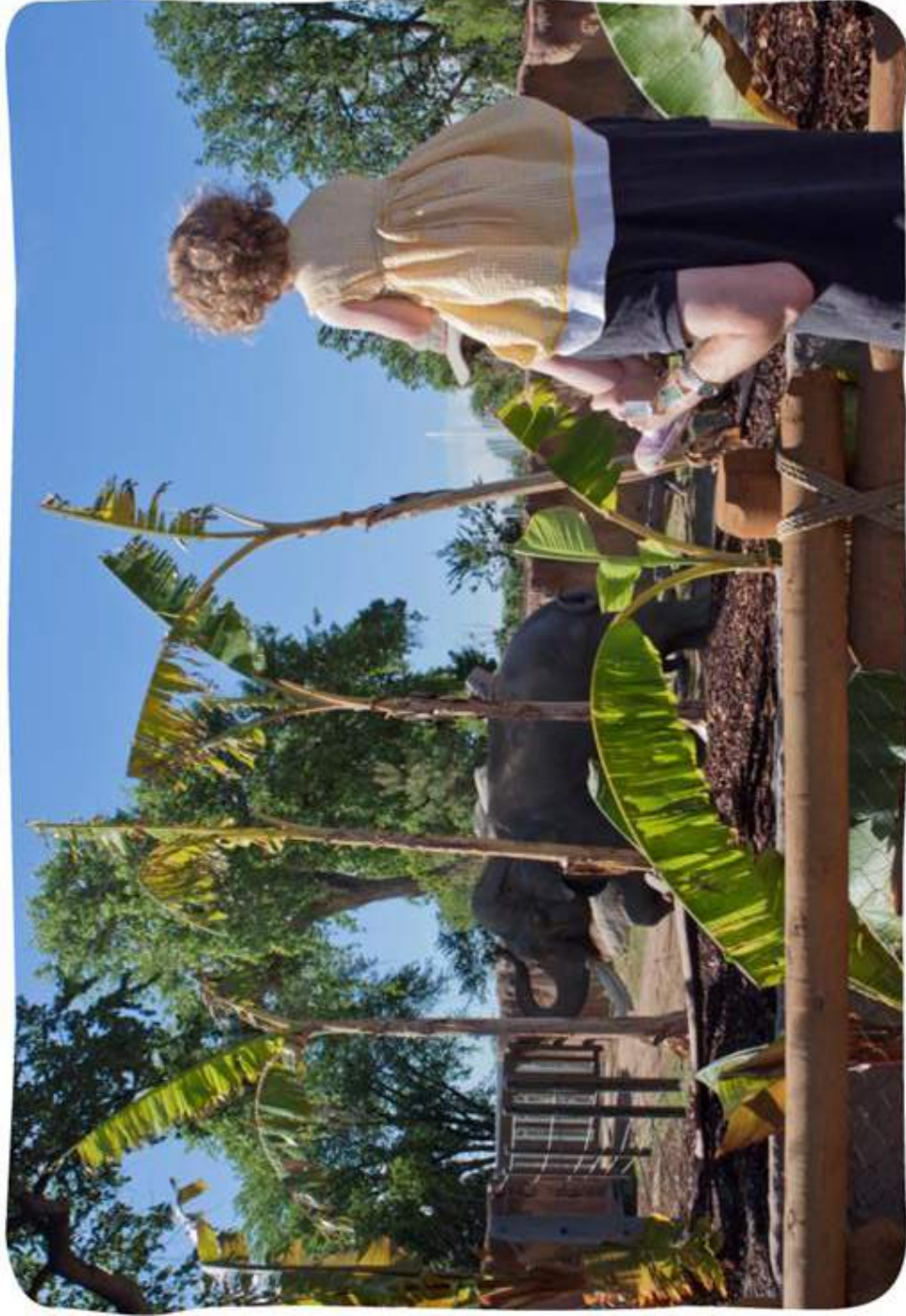


# Denver Zoo ..... Waste to Energy System



# Denver Zoo Waste to Energy System



## Historical Background



- Toyota Elephant Passage – A Vision for Renewable Energy
- 10 Years Research & Development in collaboration with City and County of Denver, NREL, CDPHE, Colorado School of Mines & University of Colorado



# Denver Zoo Waste to Energy System



## Benefits



Trash + Poop = POWER

- Utilizing Gasification Technology
- Clean Energy
- Will produce 20% of zoo energy needs
- Will eliminate 90% zoo waste from landfill = 1.5 million pounds
- Will save \$150,000 annually
- Helps us reach our goal to become Zero Waste by 2025

# Denver Zoo Waste to Energy System



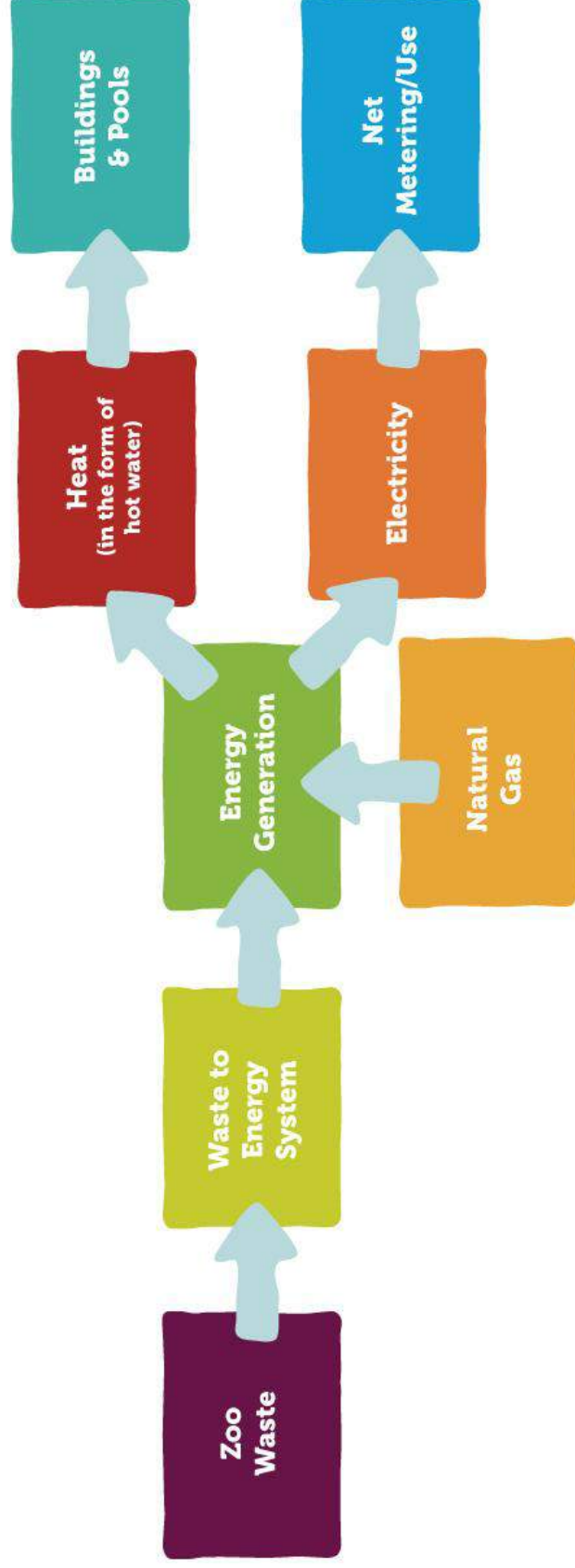
## The Most Important Thing...

- Biomass gasification involves the thermo chemical conversion (high temperature, low oxygen process) of biomass, or in the zoo's case, zoo waste, into a combustible gas, called synthetic gas or syngas.
- Syngas contains hydrogen, carbon monoxide, methane, and other inert gases. This gas provides a fuel source to power a generator to produce electrical energy and heat.
- Gasification is safe and has been used for more than 100 years. Our process will meet stringent emission standards.



# Denver Zoo Waste to Energy System

## Process



# Denver Zoo Waste to Energy System

## By-Products



- Ash is the single largest bi-product. It is being tested for use in commercial composting or as an ingredient in concrete.
- Minimal air emissions will be consistently monitored to ensure standards are met.



# Denver Zoo Waste to Energy System



## Working Prototypes



# Denver Zoo Waste to Energy System



## Working Prototypes





# Denver Zoo Waste to Energy System

Where we are now



# Denver Zoo Waste to Energy System



## Sharing Our Story



- City Council Individual Members
- Parks & Rec Advisory Board
- Neighborhood Groups
- Open House

## Denver Zoo Waste to Energy System



Any questions? How can we help you?



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