

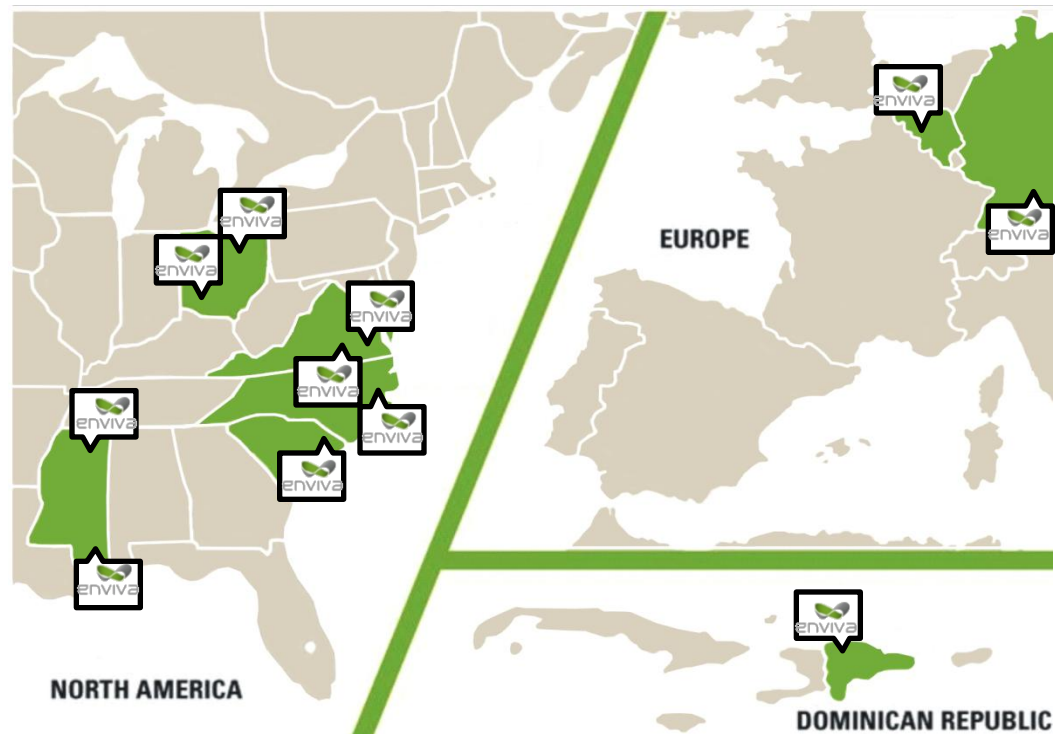


PERSPECTIVES ON BIOMASS GOVERNOR'S CONFERENCE ON ENERGY

13 October 2010

ENVIVA – ONE OF THE WORLD’S LEADING PROVIDERS OF SUSTAINABLY GENERATED, CLEAN BIOMASS

- By connecting biomass sources to energy consumers, Enviva reliably provides customers throughout the world with sustainably generated, clean biomass to improve the environmental profile of energy generation.
- Enviva manufactures and delivers well over 1 million tons of woody biomass fuel products each year to industries, utilities, and residences throughout the United States, Europe, Latin America, and the Caribbean.
- Enviva’s product catalog includes Enviva Wood Chips, Enviva Mini Chips, Enviva Micro Chips, and Enviva Pellets, as well as alternative biomass feedstock like rice hulls and coconut shells.





WHAT IS BIOMASS?

bio·mass noun \ˈbī-ō-,mas\

1 : the amount of living matter (as in a unit area or volume of habitat)

2 : *plant materials and animal waste used especially as a source of fuel*

WHAT DOES BIOMASS LOOK LIKE?



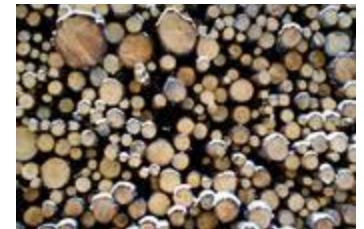
Wood processing residues



In-forest residues



Agricultural residues



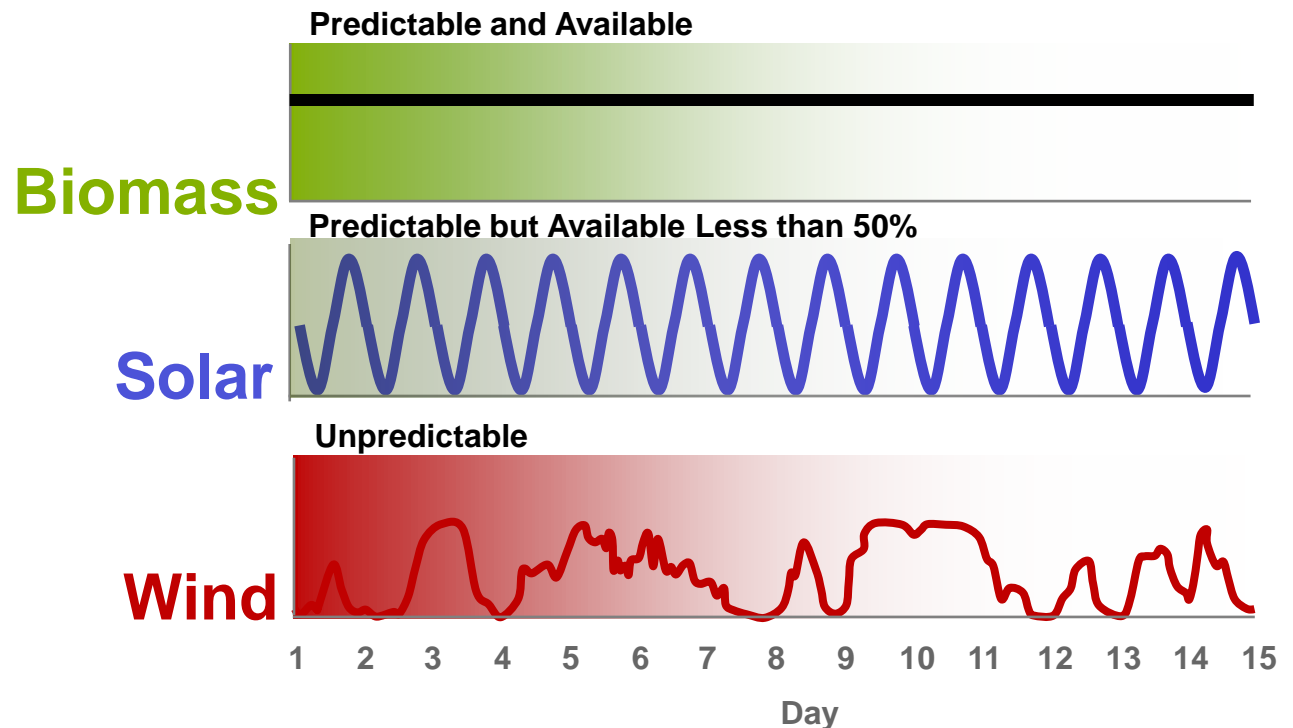
Whole log or "pulpwood"

WHY BIOMASS FOR ENERGY?

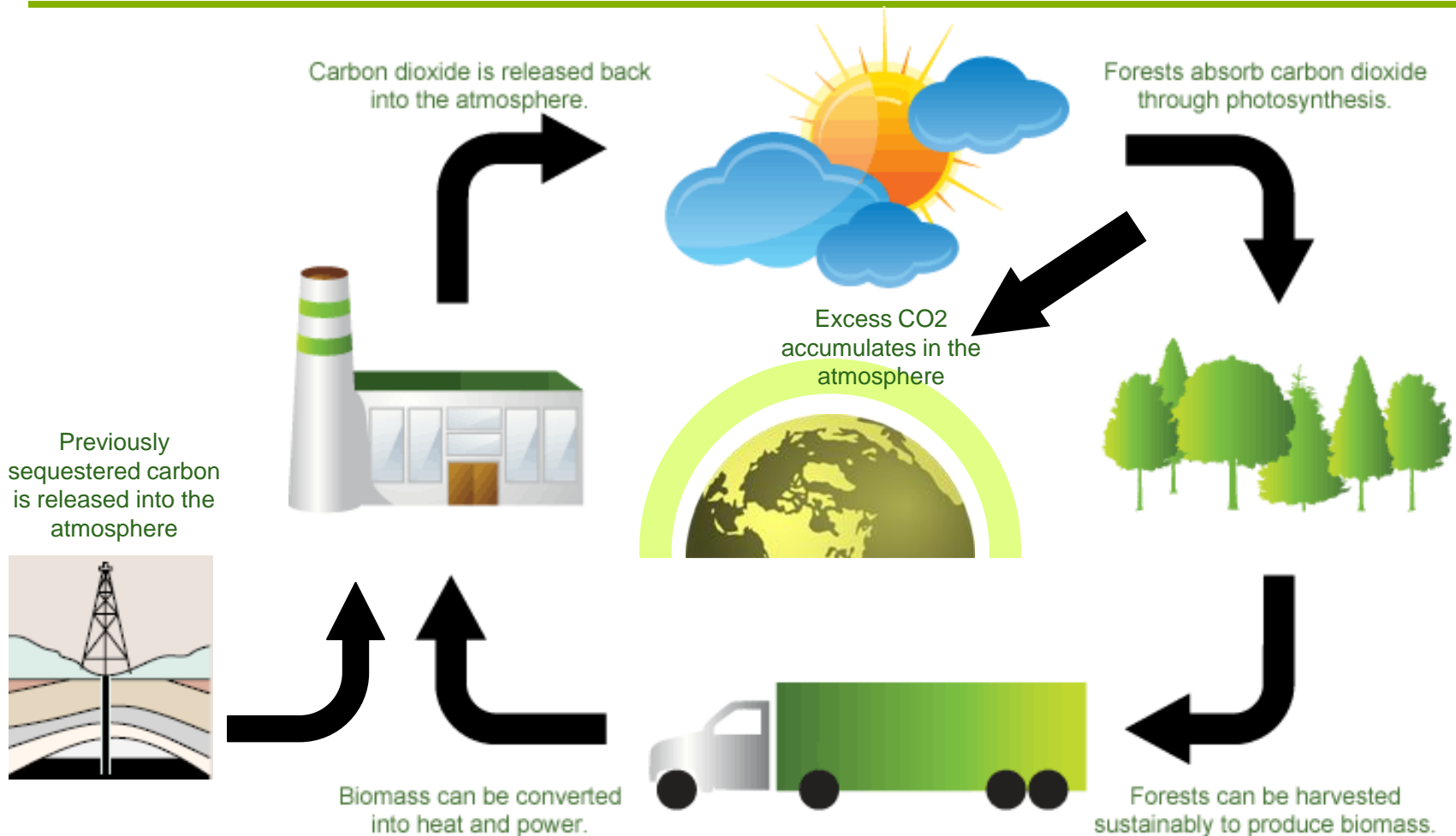
Biomass Is:

- Dispatchable, Firm Capacity
- Available 24x7
- Predictable, Reliable, Scalable and Controllable

Typical Energy Output Over Time



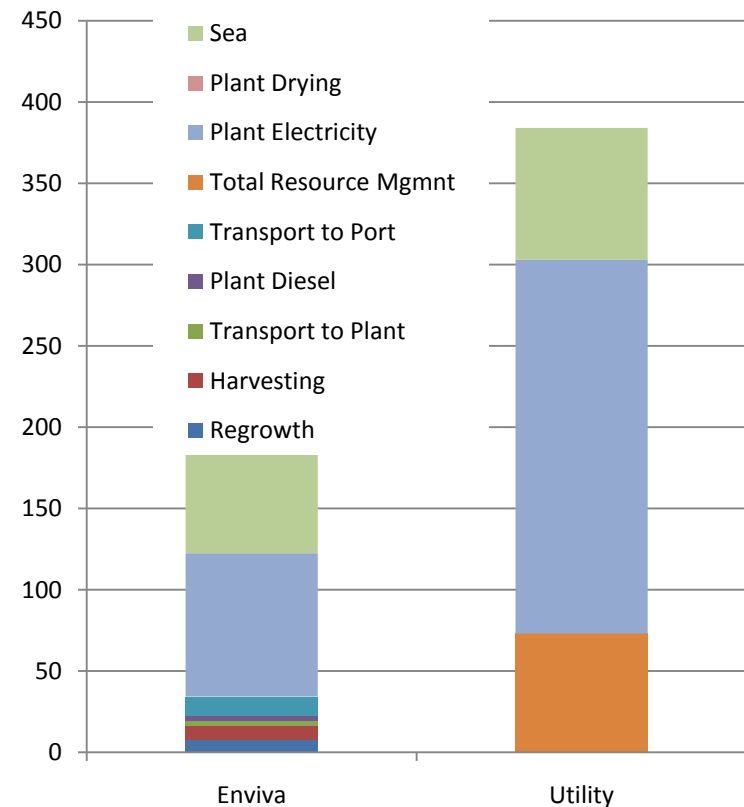
WHY BIOMASS FOR RENEWABLES?



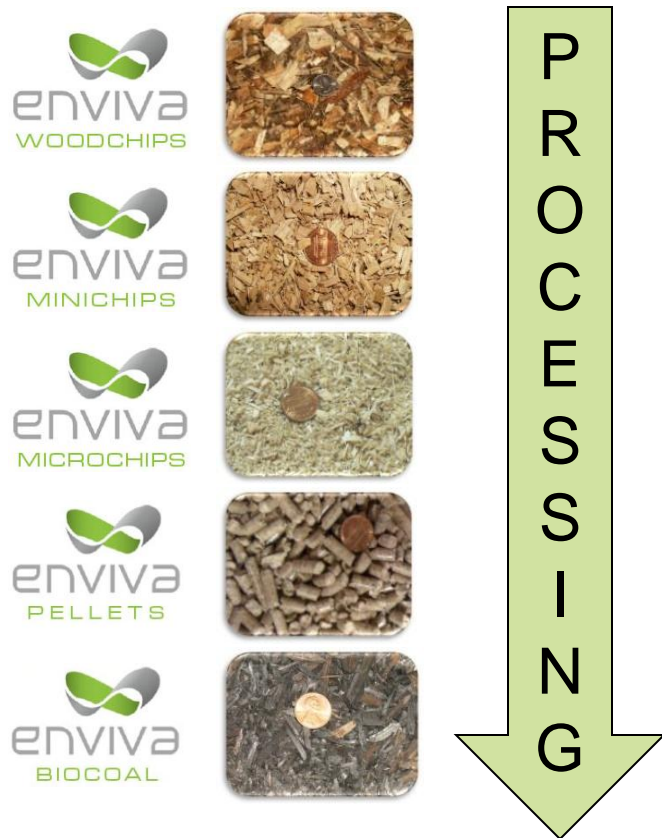
THE POWER OF PELLETS IS COMPELLING,
 DISPLACING 1.5 TONS OF CO2 PER MWh,
 WITH SHIPMENTS AS FAR AS 3,000 MILES

	Enviva	Utility
Baseline CO2 Offset	1,500 kg	1,500 kg
Regrowth	- 1	
Harvesting	- 8	
Transport to Plant	- 3.2	
Plant Diesel	- 3.3	
Transport to Port	- 12	
Total Resource Mgmt	-27.5	- 73
Plant Electricity	- 88	- 230
Plant Drying	- 322	
Sea	- 65	- 81
Total "Leakage"	- 180.5	-384
Net CO2 Offset	1,320 (88%)	1,100 (75%)

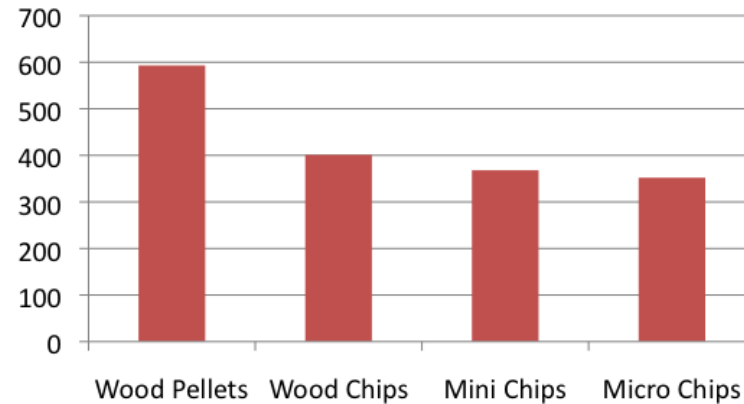
Leakage Estimates (kg CO2)



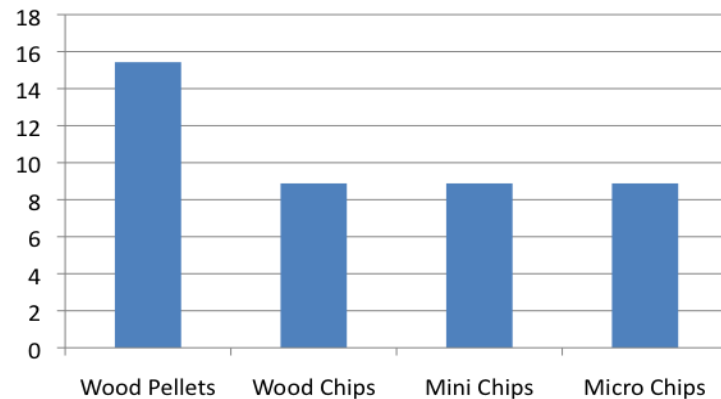
IN THE US, BIOMASS IS TYPICALLY WOODY FIBER AND BYPRODUCTS FROM FOREST INDUSTRIES



Bulk Density kg/m³



Calorific Value MMBTU/ton





ENVIVA IS ONE OF THE WORLD'S LARGEST WOOD PELLET MANUFACTURERS



- Energy-dense, uniform, fuel made from high-quality wood products (sawdust, pulpwood)
- Efficient, reliable and round-the-clock
- Can be manufactured to any size specification
- Calorific value is typically ~17MJ/kg
- Low moisture content (7% vs. 47% for undensified wood)
- Low ash (1-2% vs. 5% for undensified wood)
- Lower emission level than fossil fuels and unprocessed woody materials
- Pellet's geometric uniform shape makes for easy and economic transportation



THE BIOMASS INDUSTRY IS NASCENT; CUSTOMER ADOPTION DRIVEN BY STICKS AND CARROTS; BUT LONG-TERM POTENTIAL IS SIGNIFICANT

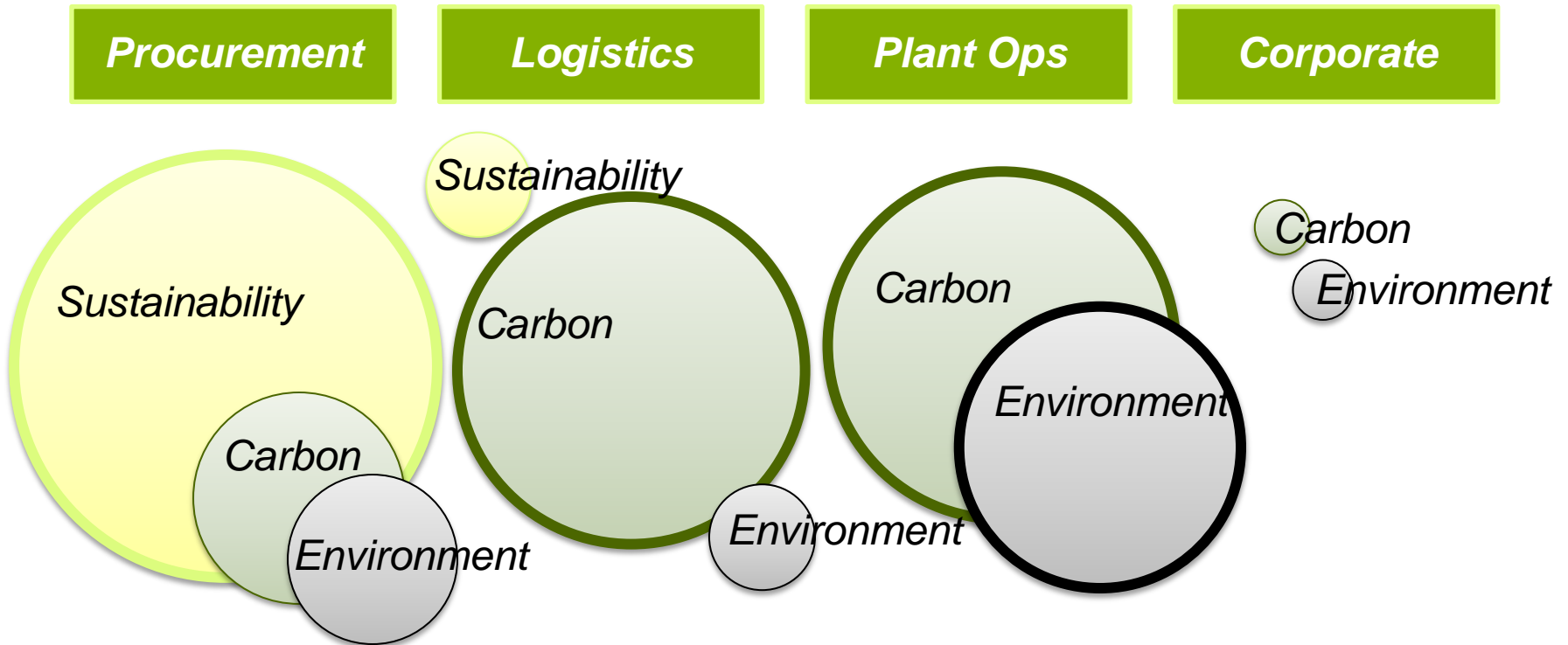
- Biomass has been burned for years, but the biomass renewable energy industry is young
- Because biomass is an intensely local business and the energy generation business is point-based, the market is tremendously fragmented
- Few industry scalable specification standards exist (moisture content, size, ash content, etc.)
- Uneven playing field vs. other “renewables” with regard to government regulation and incentives
- But the potential is tremendous, even 1% coal displacement in the US would be approximately 17 million metric tons per year; Europe is already more than 40 million metric tons annually.

THE BIOMASS BUSINESS REQUIRES RESPONSIBILITY AND SUSTAINABILITY TO BE SUCCESSFUL; ENVIVA HAS A VIEW



- Our activities can produce net-zero carbon emissions and thus dramatically reduce the environmental footprint and GHG profile of our customers.
- To do so, among other things, Enviva embraces sustainability as a core driver of its business model. The following components are key:
 - Lifecycle GHG emissions for our biomass sources, our processes and shipping
 - Local environmental impact, including impact on local wildlife and vegetation
- To address our long-term leadership position, Enviva:
 - Seeks to only procure certified sustainable feedstock.
 - Does not source feedstock from dedicated energy crops after land use change.
 - Acts to minimize CO2 emissions at its plants and offices.
 - Commits to reduce carbon emissions per ton produced every year.
- This will always be a work in process which depends on everyone at Enviva. This can't be a directive. It has to be part of our DNA.

OUR RELATIVE IMPACTS ON SUSTAINABILITY CAN BE SIGNIFICANT, ESPECIALLY IN LEADERSHIP





THANK YOU

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