Carbon Footprint of Renewable and Nonrenewable Materials

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Outline

1. Understanding the US Ecological Footprint
2. The carbon footprint – what is it?
3. The carbon footprint and life cycle assessment
4. The renewable and non-renewables footprint.
5. Implications for utility pole industry
The Ecological Footprint

A measure of consumption of bioresources in terms of the area of the earth’s surface required to support that consumption.

Did you know...

E.U. countries are often listed as offering a higher or comparable quality of life than the U.S.

The Ecological Footprint of the U.S. is substantially higher than all 27 countries of the E.U.
Greater amount of raw materials
More paper products
The United States leads the world in consumption of almost everything in both per capita and absolute terms.
ENERGY and more specifically cheap energy. Why?
### Per Capita Energy Consumption

<table>
<thead>
<tr>
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<th>Energy Consumption (kg oil equivalent per person)</th>
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<tbody>
<tr>
<td>United States</td>
<td>7,886</td>
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<tr>
<td>Weighted E.U. Average</td>
<td>3,773</td>
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Air Emissions
The Carbon Footprint - What is it?

A carbon footprint is the overall amount of carbon dioxide (CO2) and other greenhouse gas (GHG) emissions associated with a product.
Greenhouse Gas Emissions

Earth's most abundant greenhouse gases are:

- Water vapor
- Carbon dioxide
- Methane
- Nitrous oxide
- Ozone
- CFCs
Life Cycle Assessment

- Installation
- Maintenance and Use
- Recycling and Disposal
- Pole manufacturing/Treating Processes
- Forest Growth and Harvesting

Inputs of materials, energy, resources
Wastes and emission
Material transfers and transportation
A carbon footprint is a life cycle assessment with the analysis limited to emissions that have an effect on climate change.
Global Warming Potential (GWP)

A GWP is an indicator that reflects the relative effect of a greenhouse gas in terms of climate change considering a fixed time period.

http://www.ewww.ipcc.chl
Carbon Footprint Comparisons
Carbon footprint of Residential Above Grade Wall Designs
Carbon Footprint of Utility Poles

Kunniger and Richter. LCA of Utility Poles. A Swiss case study/

Kunniger and Richter

Puettmann

Steel Poles

Wood Poles

Steel Poles

Distribution Pole

GWP kg CO2 Equivalent per pole

Kunniger and Richter

Puettmann

Wood Poles

-641
Energy Requirement (MJ/pole)

- **Treated Wood**
  - Kunniger and Richter: 2,674
  - Li and Yogendran: 3,937
  - Puettmann unpublished: 4,024

- **Tubular Steel**
  - Kunniger and Richter: 8,615
  - Li and Yogendran: 7,441
  - Puettmann unpublished: 11,851
Lowering Carbon Footprint

1. Product choice needs to remain a viable option.
2. Choose products with low embodied energy.
3. Choose products that use renewable fuels during production
4. Increase service life by better product choices and maintenance
5. Improve recycling options
Something to take with you

Don’t let qualitative judgments determine your products environmental performance or carbon footprint.
Questions?

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