

FY 2009 RESEARCH PROBLEM STATEMENT

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TITLE

GHE-09-27 Sustainable Strategy on the Economics of Disposal /Re-use of Creosoted Crossties and Bridge Timber

PROBLEM (Description of need)

As railroads replace old, creosoted wooden crossties, bridge timbers, and as highway projects replace old treated timbers, a large inventory of treated wood is being amassed regionally and nationwide. Storage and re-use of these timbers is an increasing economic and environmental challenge. They cannot readily be used as garden berms due to the friable nature of much of the material (which is, after all, why it's being replaced); co-generation plants cannot burn them without special smoke-stack scrubbers that may not be cost-effective; the sheer cost of hauling the creosoted material to an accepting co-gen plant may itself be cost-prohibitive.

Although the balance of this description of need focuses on the used railroad tie problem, all creosoted materials recovered face the same problems in disposal. Railroad bridge materials, highway signposts and guardrails that are treated lumber must also be disposed of in an environmentally safe manner.

Used crossties come in three categories: Relay, Landscape quality and Landfill quality (scrap).

Relay ties are graded and reused in the track infrastructure. Shortline railroad crosstie projects almost never result in massive tie counts, like the 90,000-plus job UP just finished in the Willamette Valley. The number of relay ties that are available is in direct proportion to the maintenance and renewal program on each railroad. Condition, level of rail traffic and available capital are also key elements. On the Portland & Western Railroad normal crosstie replacement program is about 25,000 per year while the smaller railroads in the State of Oregon would replace between 5,000 and 15,000 crossties annually.

Landscape quality ties are those not good enough to be "relay" but can be used for landscaping. These ties eventually show up at Fred Meyer Garden Centers, Home Depot, Loews and lumber yards where one will pay \$8 to \$10 apiece for them.

Landfill quality ties are those with no usable life remaining. They are either in pieces or so rotten and splintered that no one would think twice about buying them for their yard. The railroads used to burn them but can't do that any more due to air pollution regulations. So they primarily are hauled to landfills or just stacked on railroad right of way. Not just any landfill, as the recipient has to be licensed to accept hazardous waste because ties contain creosote and/or other preservative chemicals.

The railroads used to sell old ties to anyone who was interested for a buck or two apiece. Problem was, the ties were cherry-picked for the best landscapers and the non-starters just hung around forever. Now, most railroads contract with vendors who agree to take all of the ties being replaced, good and

bad. They make their money on the good ones and properly dispose of the bad ones.

We estimate the removal cost in our tie renewal program to be in the range of \$6.00 per tie. In our case alone this represents \$150,000 per year for disposal. Additional cost is incurred by the some Railroads to cover the cost of picking up the ties with railroad forces and congregating them at a place where the vendor can safely load them out.

There are a lot of BTUs in an old tie. For this reason there are places that want to grind up and burn old ties for fuel and this can be an alternative to a landfill for disposing of them. However, a universal problem is that steel spikes and the occasional tie plate still affixed to the tie do not mix well with machinery designed to grind wood but not steel. So that's been a drawback of significance in developing a large market for chipping ties into burnable fuel.

Supply does not appear to exceed demand on landscape ties. If it did, the retail price for ties would be lower than it is now. A lot of ties replaced just don't meet standards for landscaping and that keeps supply more or less in concert with demand.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

The proposed research includes:

1. Literature search of US, Canadian, European and Australia/ New Zealand reports for helpful background and case studies on treated timber disposal.
2. Gathering and analysis of pertinent ODEQ and EPA regulations and reports on disposal of creosoted items and identification of the specific problems that result for old, treated timbers.
3. Working with selected co-gen plants to develop clearer information on the costs and the quantity threshold that make adding scrubbers worthwhile if old ties are burned.
4. Inventorying the quantities of landfill – quality ties in storage now and coming on the market, by surveying the short lines and class 1s in Oregon (20-25 surveys).
5. Analyzing the pros, cons and costs of any alternatives to burning such as chipping for weed control areas, using for building materials or other options that may be in practice in US, Canadian, European and Australia/ New Zealand.
6. Developing a report describing methods, results and conclusions, and an implementation strategy for each viable option.

BENEFITS

1. Reduce inadvertent environmental contamination.
2. Reduce cost and create new revenue source to railroads
3. Provide new power source , new alternative fuel
4. Free up railroad space for other uses.
5. Application of the above benefits to State and Local transportation departments for the disposal or reuse of used bridge timbers.

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