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February 22, 2010



Ms. Renne Vance, Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, North Carolina 27603

RE: Docket No. SP-165, Sub 3
EPCOR USA North Carolina LLC – Additional Primary Source Data for Tire-Derived Fuel

Dear Ms. Vance:

Enclosed for filing please find the original and 25 copies of EPCOR USA North Carolina LLC's Additional Primary Source Data for Tire-Derived Fuel pursuant to the December 17, 2009, Order in the above-referenced docket.

Also enclosed is one copy to be file-stamped and returned with our courier. Thank you for your assistance in this matter. Please do not hesitate to call should you have any questions.

Sincerely,

Mary Lynne Grigg

MLG:kjg

Enclosures

cc: Gisele L. Rankin, Esq.

MH
AC
7 Comm.
Bennink
Kirby
Watson
Gibson
Jones
Legal
2 Elec.
Eng.

STATE OF NORTH CAROLINA
UTILITIES COMMISSION

DOCKET NO. SP-165, SUB 3



BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

| | |
|---|---|
| In the Matter of: | ) |
| | ) |
| EPCOR USA North Carolina LLC | ) |
| Application For Certification and Registration | ) |
| as New Renewable Energy Facilities Under | ) |
| North Carolina Utilities Commission Rule | ) |
| R8-66, Request For Approval of Proposed | ) |
| Renewable Energy Resource, and Request to | ) |
| Amend Certificates of Public Convenience | ) |
| and Necessity | ) |

**ADDITIONAL PRIMARY SOURCE DATA FOR TIRE-DERIVED FUEL**

In the Commission's December 17, 2009, Order accepting the registration of EPCOR USA North Carolina LLC's (now known as CPI USA North Carolina LLC[1]) Southport and Roxboro facilities as "new renewable energy facilities," the Commission stated:

> "As noted by EPCOR and the reports it cites, some portion of the [Tire Derived Fuel] TDF is derived from natural rubber, an organic material, and meets the definition of biomass. The reports cited by EPCOR for the quantity of natural rubber in TDF, however, fail to reference or cite any studies or analyses to support their estimates. The Commission therefore, concludes that EPCOR should be allowed to earn RECs for that percentage of TDF that can be demonstrated, through the submission of appropriate additional primary reference materials in this docket, to be derived from natural rubber." See Order, p. 3-4.

By this filing, CPI USA North Carolina LLC is providing the primary source materials, including reports and data, as well as the necessary calculation, underlying the 25% natural rubber estimate provided in the Rubber Manufacturers Association and World Business Council reports filed with its registration application.

The Rubber Manufacturers Association ("RMA") and its member companies are the leading source of data on tire composition and scrap tire markets. As it is impossible to accurately measure the natural rubber content in TDF by grab samples, the RMA has developed data on typical TDF composition based on a study of the material purchase and use records of its member companies. The RMA's Scrap Tire web page includes an analysis based on its members' data titled "Typical Composition By Weight" which is broken down by passenger

[1] EPCOR USA North Carolina LLC was renamed CPI USA North Carolina LLC effective November 16, 2009. The Company's name was changed as part of a rebranding initiative following the transfer of EPCOR Utilities Inc.'s power generation assets to Capital Power Corporation in July 2009.

(light duty) and truck (heavy duty) tires.[2] **(Exhibit A hereto)** In addition, the RMA compiles scrap tire generation rates by tire class. The RMA's 2007 and 2008 scrap tire generation data is provided in **Exhibits B and C hereto.**[3] These sources of information can be used to calculate the percent of natural rubber in the tire waste stream which is processed into tire-derived fuel. See **Exhibits D hereto**.

While the natural rubber content in each type of tire remains constant (14% in passenger tires and 27% in truck tires), the number of scrap tires produced in each vehicle class varies somewhat. Nonetheless, as can be seen from the calculations provided in **Exhibits D hereto**, the overall natural rubber content in TDF does not vary significantly despite fluctuations in the volumes of passenger versus truck scrap tires produced each year.

| Year | Percent of Scrap Tires in Waste Stream by Vehicle Class | Percent Natural Rubber in TDF |
|---|---|---|
| 2007 | 85% passenger/15% truck | 23.5% |
| 2008 | 83% passenger /17% truck | 24.1% |

Overall natural rubber use in tires is projected to remain at this level and may even increase. The RMA tracked overall natural rubber and synthetic rubber usage in tires between1939 and 2003. See RMA Factbook 2009, p.10. **(Exhibit E hereto)** As can be seen from the RMA data, synthetic rubber displaced most of the natural rubber in tires during World War II, but natural rubber use steadily increased thereafter, approaching the 40% level in the 1990's through the end of the last century. In 2002 and 2003, natural rubber use jumped to almost 60%, likely due to increases in the price of oil, a primary constituent of synthetic rubber. Assuming that petroleum prices will generally increase in this century, natural rubber use in the tire industry can be expected to remain high for the foreseeable future.

Respectfully submitted this the 22nd day of February, 2010.

Mary Lynne Grigg
McGuire Woods LLP
2600 Two Hannover Square
Raleigh, North Carolina 27601

*Attorney for CPI USA North Carolina LLC*

[2] The RMA's member companies' purchasing records which are the basis of the RMA's "Typical Composition by Weight" figures contain proprietary information and not publicly available.

[3] The RMA's 2009 data is not available at this time.

EXHIBIT

A



1. Typical Materials Composition of a Tire
2. Typical Composition by Weight
3. Densities of Shredded and Whole Tires
4. Rubber weight by tire component.
5. Steel Tire Cord Analysis

**1. Typical Materials Composition of a Tire**

| This table lists the typical types of materials used to manufacture tires. |
|---|
| Typical Composition of a Tire |
| Synthetic Rubber |
| Natural Rubber |
| Sulfur and sulfur compounds |
| Silica |
| Phenolic resin |
| Oil: aromatic, naphthenic, paraffinic |
| Fabric: Polyester, Nylon, Etc. |
| Petroleum waxes |
| Pigments: zinc oxide, titanium dioxide, etc. |
| Carbon black |
| Fatty acids |
| Inert materials |
| Steel Wire |

**2. Typical Composition by Weight**

This lists the major classes of materials used to manufacture tires by the percentage of the total weight of the finished tire t material class represents.

**Passenger Tire**

| | |
|---|---|
| Natural rubber | 14 % |
| Synthetic rubber | 27% |
| Carbon black | 28% |
| Steel | 14 - 15% |
| Fabric, fillers, accelerators, antiozonants, etc. | 16 - 17% |
| Average weight: | New 25 lbs, Scrap 22.5 lbs. |

**Truck Tire**

| | |
|---|---|
| Natural rubber | 27 % |

| | |
|---|---|
| Synthetic rubber | 14% |
| Carbon black | 28% |
| Steel | 14 - 15% |
| Fabric, fillers, accelerators, antiozonants, etc. | 16 - 17% |
| Average weight: | New 120 lbs., Scrap 110 lbs. |

**3. Densities of Shredded and Whole Tires**

| LOOSELY PACKED | APPROXIMATE DENSITIES | DENSELY PACKED |
|---|---|---|
| 550-600 lbs/yd$^3$ | single pass | 1220-1,300 lbs/yd$^3$ |
| 850-950 lbs/yd$^3$ | 2" shred | 1,350-1,450 lbs/yd$^3$ |
| 1,000-1,100 lbs/yd$^3$ | 1 1/2" shred | 1,500-1,600 lbs/yd$^3$ |
| 100/10Yd$^3$ | WHOLE TIRES (PASSENGER/LIGHT TRUCK) | 500/10Yd$^3$ |
| | 10 MESH- 29 lbs/ft$^3$ | |
| | 20 MESH- 28 lbs/ft$^3$ | |
| | 30 MESH- 28 lbs/ft$^3$ | |
| | 40 MESH- 27 lbs/ft$^3$ | |
| | 80 MESH- 25-26 lbs/ft$^3$ | |

**4. Rubber weight by tire component.**

*A tire is manufactured from several separate components, such as tread, innerliner, beads, belts, etc. This table shows whic* account for the rubber used to make the tire.

**RUBBER PERCENT BY WEIGHT IN A NEW RADIAL PASSENGER TIRE**

| | |
|---|---|
| TREAD | 32.6% |
| BASE | 1.7% |
| SIDEWALL | 21.9% |
| BEAD APEX | 5.0% |
| BEAD INSULATION | 1.2% |
| FABRIC INSULATION | 11.8% |
| INSULATION OF STEEL CORD | 9.5% |
| INNERLINER | 12.4% |
| UNDERCUSHION | 3.9% |
| | 100.0% |

**5. Steel Tire Cord Analysis**

The tire industry uses ASTM 1070 and above tire cord quality wire rod in the manufacture of new tires. There are approxim pounds of steel belts and bead wire in a passenger car tire.

EXHIBIT

B

# SCRAP TIRE MARKETS IN THE UNITED STATES

# 9th BIENNIAL REPORT

## May 2009

RUBBER manufacturers association

1400 K Street, NW
Washington, DC 20005
tel (202) 682-4800
fax (202) 682-4854
http://www.rma.org/scrap_tires/

terms of total weight ("thousands of tons" is the metric used in this report), RMA needed to calculate an average weight across all scrap tire categories. Due to the difficulty in obtaining broad, representative weight information across the U.S. new tire market, RMA chose instead to collect information from various scrap tire processors throughout the country.

RMA surveyed six scrap tire processors to determine average scrap tire weights for two broad classes of scrap tires: light duty tires (including passenger and light truck categories) and commercial tires (including medium, wide base and heavy truck and bus tires). For the light duty category, the average scrap tire weight is 22.5 pounds. This number serves as the revised passenger tire equivalent ("PTE") value, described in greater detail later in this chapter. For the commercial tire class, the average reported scrap tire weight is 120 pounds.

RMA used these two values to calculate an average tire weight across all classes of tires certified for on-road use by the U.S. Department of Transportation.

As illustrated in Table 1, the average tire weight in the United States across all on-road tire categories and classes is 37.1 pounds. Due to precision limitations inherent in these calculations, RMA then rounded this number to the nearest whole number for purposes of converting data provided in terms of "millions of scrap tires" to weights. Consequently, in every instance where a conversion from units to weights was necessary, 37 pounds was used to represent the average weight of a scrap tire.

| Tire Class | Millions of Tires | Market % | Weight (lbs) |
|---|---|---|---|
| Light Duty Tires | 257.8 | 85.03% | 22.5 |
| Passenger tire replacements[1] | 196.2 | 64.70% | |
| Light truck tire replacements[1] | 33.6 | 11.08% | |
| Tires from scrapped Cars[2] | 28.0 | 9.24% | |
| Commercial Tires | 45.4 | 14.97% | 120 |
| Medium, wide base, heavy truck replacement tires[1] | 10.9 | 3.57% | |
| Tires from scrapped trucks and buses[2] | 28.6 | 9.40% | |
| Total scrapped tires | 303.2 | 100.0% | 37.1 |

[1] 2008 RMA Tire Industry Facts, Factbook 2007. Industry total replacement tire shipments.

[2] Ward's Motor Vehicle Facts and Figures, 2008. Includes the number of vehicles removed from service in the car/light truck, truck and bus categories in 2007. Assumes 4 tires scrapped from light duty vehicles and 6 tires scrapped from trucks and buses.

**Table 1: Average Tire Weight Calculations, 2007.**

## Revised Passenger Tire Equivalent (PTE) Value

The "passenger tire equivalent" or "PTE" has become a valuable tool used to estimate scrap tire weights and volumes for a variety of purposes, including assessing scrap tire stockpiles and scrap tires used in market applications. Historically, the scrap tire community, including industry and regulators, has used an average scrap tire weight of 20 pounds to represent one PTE. This standard for PTE is no longer valid, since sizes for new tires, and consequently scrap tires, are trending larger.

In order to revise the PTE to reflect current tire sizes, RMA staff contacted six of the largest scrap tire processors in the U.S. RMA obtained average tire weights for the scrap passenger and light truck tires received by each company within a limited period of time. RMA

EXHIBIT

exhibit C

**Scrap Tire Distribution by Tire Class - 2008**

| Tire Class | Millions of Tires | Market % |
|---|---|---|
| **Light Duty Tires** | **250.7** | **83.22%** |
| *Passenger tire replacements*[1] | *193.8* | *64.33%* |
| *Light truck tire replacements*[1] | *29.4* | *9.76%* |
| *Tires from scrapped cars*[2] | *27.5* | *9.13%* |
| **Commercial Tires** | **50.5** | **16.78%** |
| *Medium, wide base, heavy truck replacement tires*[1] | *14.8* | *4.91%* |
| *Tires from scrapped trucks and buses*[2] | *35.7* | *11.87%* |
| **Total scrapped tires** | **301.2** | **100.0%** |

[1] 2005 RMA Tire Industry Facts, Factbook 2009. Industry total replacement tire shipments.

[2] Ward's Motor Vehicle Facts and Figures, 2008. Includes the number of vehicles removed from service in the car/light truck, truck and bus categories in 2007. Assumes 4 tires scrapped from light duty vehicles and 5 tires scrapped from trucks and buses.

**EXHIBIT**

**D**

| Column | | Passenger Tire | Truck Tire | Combined |
|---|---|---|---|---|
| | **Tire Weight (w/metal)** | | | |
| a | Weight/Tire (wi metal)[1,2] | 25 lbs | 120 lbs | |
| | **Natural Rubber** | | | |
| b | Percent Natural Rubber/Tire[3] | 14% | 27% | |
| c | Weight Natural Rubber/Tire [a*b] | 3.5 lbs | 32.4 lbs | |
| | **Metal** | | | |
| d | Percent Metal/Tire[3] | 15% | 15% | |
| e | Weight Metal/Tire | 3.8 lbs | 18.0 lbs | |
| f | Tire Weight (w/o metal) [a-e] | 21 lbs | 102 lbs | |
| g | Natural Rubber Content of Scrap Tires (w/o metal) [c/f] | 16% | 32% | |
| **2007** | **Scrap Tire Generation** | | | |
| h | Percent Scrap by Class[4] | 85% | 15% | |
| i | Average Weight of Scrap Tire [sum of f*h columns] | | | 33 lbs |
| j | Weight of Natural Rubber in Average Scrap Tire [sum of f*h*g columns] | | | 8 lbs |
| | **Percent Natural Rubber 2007** [j/i] | | | **23.5%** |
| ***2008*** | **Scrap Tire Generation** | | | |
| k | Percent Scrap by Class[4] | 83% | 17% | |
| l | Average Weight of Scrap Tire [sum of f*k columns] | | | 35 lbs |
| m | Weight of Natural Rubber in Average Scrap Tire [sum of f*k*g columns] | | | 8 lbs |
| | **Percent Natural Rubber 2008** [m/l] | | | **24.1%** |

[1] Based on Rubber Manufacturers Association, Scrap Tire Characteristics, "Typical Composition by Weight" (attached) derived from its member tire manufacturers' material usage records. (Exhibit A hereto)

[2] Note that this analysis uses new tire weight in order to correlate with the new tire composition data which is the basis of the RMA study. Scrap tires weigh less due to the loss of tread. However, according to the RMA, natural rubber is not used in tread because it is not as durable as synthetic rubber. The weight of the natural rubber in scrap tires is calculated based on the rubber composition in new tires and therefore a conservative estimate.

[3] See prior footnote.

[4] Based on Rubber Manufacturers Association, "Scrap Tire Markets in the United States, 9- Biennial Report," p4 Table 1 :Average Tire Weight Calculations, 2007. (Exhibit B hereto)

US TIRE INDUSTRY FACTS

# FACTBOOK 2009

## US TIRE SHIPMENT ACTIVITY REPORT FOR STATISTICAL YEAR 2008

EXHIBIT
tabbies
E

RUBBER manufacturers association

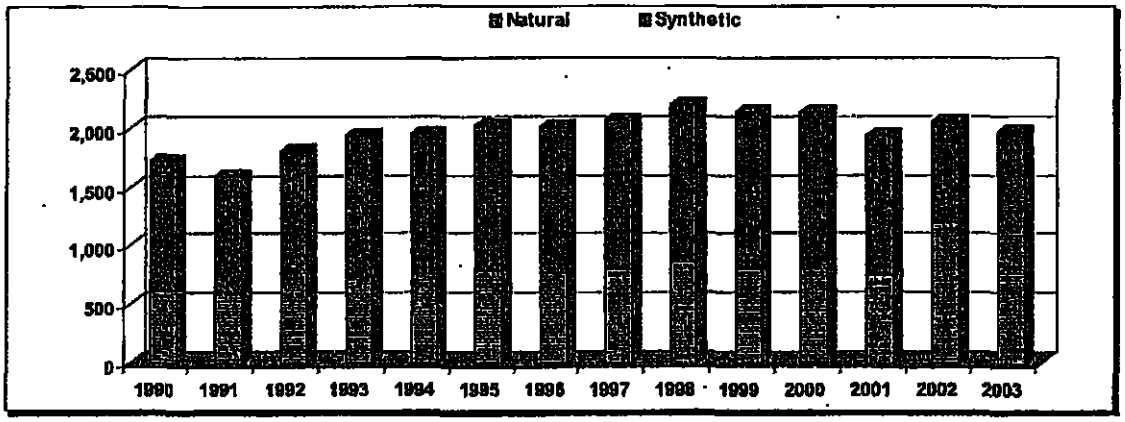
### *STATISTICAL CATEGORIES*

EMPLOYMENT & WAGE DATA
RUBBER CONSUMPTION
PASSENGER TIRES
LIGHT TRUCK TIRES
COMMERCIAL TRUCK TIRES
RETREADED TIRES
INNER TUBES
U.S. TIRE FACILITIES
*TIRE SIZE POPULARITY*
SCRAP TIRES

*A Rubber Manufacturers Association Publication*

1400 K. Street, NW - Washington, DC 20005 Tel 202-682-4860 Fax 202-682-4870 www.rma.org

# NATURAL (NR) & SYNTHETIC (SR) RUBBER USAGE
## IN THE US TIRE INDUSTRY
(In 000's of Metric Tons)




RMA tracking of natural and synthetic rubber usage dates from 1939. Prior to the discovery of synthetic rubber, all rubber used in tire production was natural.

In 1975, the amount of NR/SR used in tires had reached a high of nearly 2 million metric tons. During this period, the automotive industry looked to the tire manufacturers for assistance in meeting reductions in vehicle weight to achieve increased mileage. The impact of this program can be judged from the fact that while total tire production increased, the total volume of rubber used by the tire industry fell.

Since the early 80's, natural rubber usage in tires has continued to increase towards the 40% level. Expectations are for natural rubber consumption to remain at the 40% level through the turn of the century.

| Year | Natural Rubber | % | Synthetic Rubber | % | Total NR/SR Rubber |
|---|---|---|---|---|---|
| 1939 | 460 | 100.0% | 0 | 0.0% | 460 |
| 1945 | 88 | 27.8% | 228 | 72.2% | 316 |
| 1950 | 216 | 29.7% | 511 | 70.3% | 727 |
| 1955 | 417 | 42.7% | 559 | 57.3% | 976 |
| 1960 | 329 | 32.5% | 682 | 67.5% | 1,011 |
| 1965 | 361 | 27.2% | 966 | 72.8% | 1,327 |
| 1970 | 393 | 24.5% | 1,210 | 75.5% | 1,603 |
| 1975 | 561 | 28.6% | 1,404 | 71.5% | 1,965 |
| 1980 | 439 | 28.9% | 1,082 | 71.1% | 1,521 |
| 1985 | 554 | 34.8% | 1,059 | 65.7% | 1,613 |
| 1990 | 622 | 36.1% | 1,102 | 63.9% | 1,724 |
| 1991 | 591 | 37.1% | 1,002 | 62.9% | 1,593 |
| 1992 | 680 | 37.6% | 1,129 | 62.4% | 1,809 |
| 1993 | 739 | 38.0% | 1,205 | 62.0% | 1,944 |
| 1994 | 759 | 38.8% | 1,197 | 61.2% | 1,956 |
| 1995 | 792 | 39.0% | 1,238 | 61.0% | 2,030 |
| 1996 | 776 | 38.6% | 1,232 | 61.4% | 2,008 |
| 1997 | 803 | 38.8% | 1,269 | 61.2% | 2,072 |
| 1998 | 862 | 39.1% | 1,341 | 60.9% | 2,203 |
| 1999 | 798 | 37.4% | 1,338 | 62.6% | 2,136 |
| 2000 | 799 | 37.2% | 1,339 | 62.3% | 2,150 |
| 2001 | 754 | 38.8% | 1,191 | 61.2% | 1,945 |
| 2002 | 1,212 | 59.1% | 838 | 40.9% | 2,050 |
| 2003* | 1,165 | 59.2% | 802 | 40.8% | 1,967 |
| 2004** | ** | | ** | | ** |

* *Data are estimated.*
** *Data are no longer collected.*