Oyster River Cooperative School District

Ecological Footprint Report

Period: July 1, 2010 through June 31, 2011

April 2012

Oyster River Sustainability Committee
“Cooperating to Sustain the Oyster River Community”

Prepared by: John Doyle
University of New Hampshire-2012
Environmental Conservation Studies, Sustainable Living
I. INTRODUCTION

A. The Sustainability Committee

The Oyster River Cooperative School District’s (ORCSD) Sustainability Committee was established after the pass of Warrant Article #7 in March 2011. The Committee, nicknamed “The Green Oyster,” consists of 19 members from the ORCSD schools, the school board, the University of New Hampshire, and the three towns. The Committee’s mission statement is “…to facilitate a sustainability forum…with the five principles of sustainability (Renewability, Substitution, Interdependence, Adaptability, and Institutional Commitment) in the areas of food, energy, transportation, school curriculum and community outreach.”

The ORCSD consists of the following schools and facilities:

Mast Way Elementary School (K-4)  Oyster River High School (9-12)
Moharimet Elementary School (K-4)  SAU Office
Oyster River Middle School (5-8)  Service Building

The schools reside in three adjacent towns along the New Hampshire seacoast area: Durham (Oyster River Middle and High School), Lee (Mast Way Elementary), and Madbury (Moharimet Elementary).

B. Purpose of this Document

The purpose of this document is for ORCSD Sustainability Committee to create an ecological footprint of the district by benchmarking the following sectors:

Solid Waste & Recycling  Energy (Natural Gas and Transportation)
Transportation  Electricity
Water Consumption

C. Layout of this Document

This document is divided into three sections. Part I represents the total measurements for the five sectors in terms of cost and metric tons of carbon dioxide equivalent emitted (MTCO2E). Totals were determined for the entire district and, where applicable, totals were compared to previous fiscal schools years. Part II is for an individual school assessment that incorporates each school and facility across the five sectors and, again, compares previous fiscal school years where applicable. Part III concludes with recommendations about decreasing the ORCSD’s ecological footprint, suggestions to include in the footprint in the future, and the remaining appendices.
Part 1:
Total Measurements for: Solid Waste & Recycling, Transportation, Water Consumption, Energy, and Electricity
II. TOTALS

A. Total Costs (FY 2010-11)

<table>
<thead>
<tr>
<th>Costs</th>
<th>Solid Waste</th>
<th>Recycling</th>
<th>Fleet: Upkeep</th>
<th>Water:</th>
<th>Energy:</th>
<th>Electricity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast Way</td>
<td>$3,761.17</td>
<td>$1,884.48</td>
<td></td>
<td></td>
<td>$53,054.76</td>
<td>$35,072.18</td>
</tr>
<tr>
<td>Moharimet</td>
<td>$9,519.16</td>
<td>$2,001.89</td>
<td></td>
<td></td>
<td>$29,430.84</td>
<td>$48,365.79</td>
</tr>
<tr>
<td>Middle School</td>
<td>$3,759.44</td>
<td>$1,758.10</td>
<td></td>
<td>$1,758.10</td>
<td></td>
<td>$73,430.37</td>
</tr>
<tr>
<td>High School</td>
<td>$4,546.35</td>
<td>$1,710.10</td>
<td></td>
<td>$1,710.10</td>
<td></td>
<td>$125,021.73</td>
</tr>
<tr>
<td>SAU</td>
<td>(Included in HS)</td>
<td>(Included in HS)</td>
<td>-</td>
<td>$312.31</td>
<td>-</td>
<td>$7,725.60</td>
</tr>
<tr>
<td>SB</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>$322.23</td>
<td>-</td>
<td>$3,606.37</td>
</tr>
<tr>
<td>Totals</td>
<td>$21,586.12</td>
<td>$7,354.57</td>
<td>$202,690.08</td>
<td>$4,102.74</td>
<td>$82,485.60</td>
<td>$202,058.47</td>
</tr>
</tbody>
</table>

Total Cost (FY 2010-2011): $971,714.36

B. MTCO\textsubscript{2}E (FY 2010-2011)

<table>
<thead>
<tr>
<th>MTCO\textsubscript{2}E</th>
<th>Waste:</th>
<th>Fleet:</th>
<th>Water</th>
<th>Energy:</th>
<th>Electricity:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Propane</td>
<td>Natural Gas</td>
</tr>
<tr>
<td>Mast Way</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>147.69</td>
<td>-</td>
</tr>
<tr>
<td>Moharimet</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>82.58</td>
<td>-</td>
</tr>
<tr>
<td>Middle School</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>231</td>
</tr>
<tr>
<td>High School</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>446</td>
</tr>
<tr>
<td>SAU (Included in HS)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>75.8</td>
</tr>
<tr>
<td>Totals</td>
<td>-</td>
<td>1,131</td>
<td>-</td>
<td>230.27</td>
<td>689</td>
</tr>
</tbody>
</table>

Total MTCO\textsubscript{2}E of all Sectors (FY 2010-2011): 4,073.77
III. SOLID WASTE & RECYCLING

Waste Management Companies:
The operating companies involved in the collection of the ORCSD’s solid waste are Waste Management and Casella for the district’s recycling. In June 2011, Casella merged with the recycling company Pine Tree. As of currently, Pine Tree collects the District’s recycling on a flat rate basis: explaining the relative consistent monthly costs for removal.

Additional Offices:
The solid waste and recycling costs and total tons accumulated generated by the SAU office, located on Coe Drive near the High School, are included in the High Schools averages.

Discrepancy with Moharimet Elementary School Averages:
Moharimet Elementary School previously had two (2) 10-yard containers and paper totes that were continuously emptied: resulting in higher costs for waste removal than the other schools in the district. Moharimet currently has one (1) 10-yard container for the 2011-2012 school year.

Oyster River High School Waste Compactor:
The High School currently uses a trash compactor for its solid waste that is emptied when it is full. This may not be done during consecutive months and for months when it is not emptied no cost is averaged into the school’s totals (See ‘Solid Waste: Monthly Cost’ graph).

A. Solid Waste and Recycling: Total Costs (FY 2010-11)

<table>
<thead>
<tr>
<th>School</th>
<th>Solid Waste</th>
<th>Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast Way Elementary</td>
<td>$3,761.17</td>
<td>$1,884.48</td>
</tr>
<tr>
<td>Moharimet Elementary</td>
<td>$9,519.16</td>
<td>$2,001.89</td>
</tr>
<tr>
<td>Middle School</td>
<td>$3,759.44</td>
<td>$1,758.10</td>
</tr>
<tr>
<td>High School</td>
<td>$4,546.35</td>
<td>$1,710.10</td>
</tr>
<tr>
<td>Totals ($)</td>
<td>$21,586.12</td>
<td>$7,354.57</td>
</tr>
</tbody>
</table>

Total Cost (Solid Waste and Recycling) $28,940.69
B. Solid Waste: Monthly Costs

![Solid Waste: Monthly Costs](image)

D. Recycling: Monthly Costs

![Recycling: Monthly Costs](image)
F. Tons of Solid Waste

Table 2: Tons of Solid Waste (FY 2010-11)

<table>
<thead>
<tr>
<th>School</th>
<th>Tons of Solid Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moharimet</td>
<td>9.36</td>
</tr>
<tr>
<td>High School</td>
<td>29.14</td>
</tr>
<tr>
<td>Mastway</td>
<td>4.68</td>
</tr>
<tr>
<td>Middle School</td>
<td>5.46</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48.64</strong></td>
</tr>
</tbody>
</table>

Solid Waste Totals: Tons/Month

- Moharimet
- High School
- Mast Way
- Middle School

Month/Year

Solid Waste Totals: Tons/Month

- July '10
- August
- September
- October
- November
- December
- January '11
- February
- March
- April
- May
- June
Note: Graph excludes High School data for better representation of remaining schools
IV. TRANSPORTATION FLEET

A. Totals: All Variables for the Transportation Fleet

<table>
<thead>
<tr>
<th></th>
<th>Miles Driven</th>
<th>Fuel Consumed (Gallons)</th>
<th>Maintenance ($)</th>
<th>Repairs ($)</th>
<th>Body Work ($)</th>
<th>Tires ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>539,068.00</td>
<td>127,251.70</td>
<td>30,878.72</td>
<td>160,423.82</td>
<td>11,388.29</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total Costs ($)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$202,690.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Total Carbon Dioxide Emissions

<table>
<thead>
<tr>
<th>Fuel Consumed (Gallons)</th>
<th>MTCO₂E</th>
</tr>
</thead>
<tbody>
<tr>
<td>127,251.70</td>
<td>1,131</td>
</tr>
</tbody>
</table>

C. Monthly Fuel Consumption

![Graph of Fuel Consumption (FY 2010-2011)]
D. Annual Comparison of Miles Driven by the Fleet

![Annual Comparison of Miles Driven](image)

Fiscal School Year

Miles Driven

FY 05  FY 06  FY 07  FY 08  FY 09  FY 10
V. WATER CONSUMPTION

Omitted Data: Due to Mast Way and Moharimet Elementary Schools’ water source being drawn from a well, they were excluded from this report. The amount and cost of water consumed by the High School, Middle School, SAU Office, and the Service Building are the only facilities included in this report.

<table>
<thead>
<tr>
<th>School/Building</th>
<th>September-11</th>
<th>March-11</th>
<th>April-11</th>
<th>September-10</th>
<th>April-10</th>
<th>September-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>43,601</td>
<td>-</td>
<td>65,091</td>
<td>33,454</td>
<td>63,558</td>
<td>40,880</td>
</tr>
<tr>
<td>Middle School</td>
<td>41,000</td>
<td>62,000</td>
<td>-</td>
<td>29,000</td>
<td>57,000</td>
<td>34,000</td>
</tr>
<tr>
<td>Service Building</td>
<td>3,541</td>
<td>-</td>
<td>2,404</td>
<td>5,960</td>
<td>2,608</td>
<td>3,157</td>
</tr>
<tr>
<td>SAU Office</td>
<td>2,470</td>
<td>-</td>
<td>2,578</td>
<td>1,922</td>
<td>2,710</td>
<td>3,150</td>
</tr>
</tbody>
</table>

Water & Sewer

Cost of Water & Sewer

<table>
<thead>
<tr>
<th>School/Building</th>
<th>Water</th>
<th>Sewer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>$1,543.47</td>
<td>$2,424.11</td>
<td>$3,967.58</td>
</tr>
<tr>
<td>Middle School</td>
<td>$1,451.40</td>
<td>$2,279.60</td>
<td>$3,731.00</td>
</tr>
<tr>
<td>Service Building</td>
<td>$125.35</td>
<td>$196.88</td>
<td>$322.23</td>
</tr>
<tr>
<td>SAU Office</td>
<td>$87.54</td>
<td>$224.77</td>
<td>$312.31</td>
</tr>
</tbody>
</table>

Rates (per 100 cubic feet)

<table>
<thead>
<tr>
<th></th>
<th>Water</th>
<th>Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$3.54</td>
<td>$5.56</td>
</tr>
</tbody>
</table>
Cost of Water & Sewer (FY 2010-2011)
VI. ENERGY

<table>
<thead>
<tr>
<th>School</th>
<th>Energy Type</th>
<th>Total</th>
<th>Cost</th>
<th>MTCO₂E</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>Natural Gas (Therms)</td>
<td>89,192.96</td>
<td>$125,021.73</td>
<td>446</td>
</tr>
<tr>
<td>Middle School</td>
<td>Natural Gas (Therms)</td>
<td>45,499.65</td>
<td>$73,430.37</td>
<td>227</td>
</tr>
<tr>
<td>Mast Way</td>
<td>Propane (Gallons)</td>
<td>25,438.30</td>
<td>$53,054.76</td>
<td>148</td>
</tr>
<tr>
<td>Moharimet</td>
<td>Propane (Gallons)</td>
<td>14,224.10</td>
<td>$29,430.84</td>
<td>83</td>
</tr>
<tr>
<td>Service Building</td>
<td>Natural Gas (Therms)</td>
<td>2,398.37</td>
<td>$3,606.37</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>MTCO₂E</th>
<th>916</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total: Cost</td>
<td>$284,544.07</td>
<td></td>
</tr>
</tbody>
</table>

A. Energy Usage (FY 2010-2011)

![Energy Use Chart (July 2010-June 2011)]
B. Annual Comparison of Energy Usage

![Annual Comparison of Energy Use](chart)

- **Natural Gas** (Therms)
- **Propane** (Gallons)

- Fiscal Year:
  - 2004-2005
  - 2005-2006
  - 2006-2007
  - 2007-2008
  - 2008-2009
  - 2009-2010
  - 2010-2011
VII. ELECTRICITY

<table>
<thead>
<tr>
<th>School</th>
<th>kWh</th>
<th>MTCO₂E</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>1,676,400</td>
<td>1,156</td>
<td>$252,612.66</td>
</tr>
<tr>
<td>Middle School</td>
<td>586,200</td>
<td>404</td>
<td>$92,630.84</td>
</tr>
<tr>
<td>Mast Way</td>
<td>247,840</td>
<td>171</td>
<td>$35,072.18</td>
</tr>
<tr>
<td>Moharimet</td>
<td>277,120</td>
<td>191</td>
<td>$42,330.13</td>
</tr>
<tr>
<td>SAU Office</td>
<td>37,200</td>
<td>25.7</td>
<td>$7,725.60</td>
</tr>
<tr>
<td>Service Building</td>
<td>109,870</td>
<td>75.8</td>
<td>$14,745.76</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>2,934,630</td>
<td>2,024</td>
<td><strong>$445,117.17</strong></td>
</tr>
</tbody>
</table>

A. Electricity Use (FY 2010-2011)

B. Annual Comparison of Electricity Use
Part 2:
Individual School Assessment
I. MAST WAY ELEMENTARY

A. Solid Waste & Recycling

i. Totals

Mast Way had the lowest costs for both solid waste and recycling disposal as well as the lowest tons of solid waste generated.

<table>
<thead>
<tr>
<th>Solid Waste</th>
<th>Tons of Solid Waste</th>
<th>Recycling</th>
<th>Total (FY 2010-2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3,761.17</td>
<td>4.68</td>
<td>$1,884.48</td>
<td>$5,645.65</td>
</tr>
</tbody>
</table>

![Mast Way: Monthly Cost of Solid Waste & Recycling](image)

ii. Seasonal Data

<table>
<thead>
<tr>
<th>Season</th>
<th>Solid Waste</th>
<th>Recycling</th>
<th>Tons of Solid Waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>$890.56</td>
<td>$453.91</td>
<td>1.17</td>
<td>$1,344.47</td>
</tr>
<tr>
<td>Fall</td>
<td>$906.39</td>
<td>$463.66</td>
<td>1.17</td>
<td>$1,370.05</td>
</tr>
<tr>
<td>Winter</td>
<td>$926.61</td>
<td>$474.84</td>
<td>1.17</td>
<td>$1,401.45</td>
</tr>
<tr>
<td>Spring</td>
<td>$1,037.61</td>
<td>$492.07</td>
<td>1.17</td>
<td>$1,529.68</td>
</tr>
</tbody>
</table>

B. Water Consumption

Due to Mast Way Elementary’s water being extracted from a well, its averages and patterns of consumption are not included in this report.
C. Energy

1. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Utility Data: Mast Way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Propane (Gallons)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

---

iii. Annual Comparison of Energy Use

---

Mast Way: Annual Comparison of Propane Use

---

Fiscal Year
D. Electricity

i. Totals & Monthly Uses

Electricity: High School

<table>
<thead>
<tr>
<th>Start Date</th>
<th>June 15, 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Date</td>
<td>June 14, 2011</td>
</tr>
<tr>
<td>Usage (kWh)</td>
<td>247,840.00</td>
</tr>
<tr>
<td>Cost</td>
<td>$35,072.18</td>
</tr>
</tbody>
</table>

Electricity: Mast Way (June 15, 2010-June 14, 2011)

ii. Annual Comparisons of Electricity Use
II. MOHARIMET ELEMENTARY SCHOOL

A. Solid Waste & Recycling

i. Totals

<table>
<thead>
<tr>
<th>Solid Waste</th>
<th>Tons of Solid Waste</th>
<th>Recycling</th>
<th>Total (FY 2010 - 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$9,519.16</td>
<td>9.36</td>
<td>$2,001.89</td>
<td>$11,521.05</td>
</tr>
</tbody>
</table>

Moharimet: Monthly Cost of Solid Waste & Recycling

![Chart showing monthly costs of solid waste and recycling]

ii. Seasonal Data

<table>
<thead>
<tr>
<th>Season</th>
<th>Solid Waste</th>
<th>Recycling</th>
<th>Tons of Solid Waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>$2,486.70</td>
<td>$445.03</td>
<td>2.34</td>
<td>$2,931.73</td>
</tr>
<tr>
<td>Fall</td>
<td>$2,297.70</td>
<td>$456.25</td>
<td>2.34</td>
<td>$2,753.95</td>
</tr>
<tr>
<td>Winter</td>
<td>$2,322.54</td>
<td>$461.10</td>
<td>2.34</td>
<td>$2,783.64</td>
</tr>
<tr>
<td>Spring</td>
<td>$2,412.22</td>
<td>$639.51</td>
<td>2.34</td>
<td>$3,051.73</td>
</tr>
</tbody>
</table>

B. Water Consumption

Similar to Mast Way Elementary, Moharimet Elementary’s water is extracted from a well and not recorded or included in this report.
C. Energy

i. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Utility Data: Moharimet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Propane (Gallons)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

ii. Annual Comparison of Energy Use
D. Electricity

i. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Electricity: Moharimet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Usage (kWh)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

ii. Annual Comparison of Electricity Use
III. OYSTER RIVER MIDDLE SCHOOL

A. Solid Waste & Recycling

i. Totals

<table>
<thead>
<tr>
<th>Solid Waste</th>
<th>Tons of Solid Waste</th>
<th>Recycling</th>
<th>Total (FY 2010 -2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3,759.44</td>
<td>5.46</td>
<td>$1,758.10</td>
<td>$5,517.54</td>
</tr>
</tbody>
</table>

ii. Seasonal Data

<table>
<thead>
<tr>
<th>Season</th>
<th>Solid Waste</th>
<th>Recycling</th>
<th>Tons of Solid Waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>$1,198.82</td>
<td>$380.43</td>
<td>1.56</td>
<td>$1,579.25</td>
</tr>
<tr>
<td>Fall</td>
<td>$783.57</td>
<td>$385.33</td>
<td>1.17</td>
<td>$1,168.90</td>
</tr>
<tr>
<td>Winter</td>
<td>$880.22</td>
<td>$397.61</td>
<td>1.17</td>
<td>$1,277.83</td>
</tr>
<tr>
<td>Spring</td>
<td>$896.83</td>
<td>$594.73</td>
<td>1.56</td>
<td>$1,491.56</td>
</tr>
</tbody>
</table>

B. Water Consumption

<table>
<thead>
<tr>
<th>School/Building</th>
<th>Read Date</th>
<th>Usage (per 100 cubic feet)</th>
<th>Cost of Water &amp; Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle School</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-11</td>
<td>41,000</td>
<td>Water $1,451.40, Sewer $2,279.60, Total $3,731.00</td>
</tr>
<tr>
<td></td>
<td>March-11</td>
<td>62,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-10</td>
<td>29,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>April-10</td>
<td>57,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-09</td>
<td>34,000</td>
<td></td>
</tr>
</tbody>
</table>
C. Energy

i. Totals & Monthly Uses

<table>
<thead>
<tr>
<th>Utility Data: Middle School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Natural Gas (Therms)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

Middle School: Energy Usage (June 26, 2010 - June 25, 2011)

ii. Annual Comparison of Energy Use
D. Electricity

i. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Electricity: Middle School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Usage (kWh)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

ii. Annual Comparison of Electricity Use
IV. OYSTER RIVER HIGH SCHOOL

A. Solid Waste & Recycling (including SAU Office)

i. Totals

<table>
<thead>
<tr>
<th>Solid Waste</th>
<th>Tons of Solid Waste</th>
<th>Recycling</th>
<th>Total (FY 2010 -2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4,546.35</td>
<td>29.14</td>
<td>$1,710.10</td>
<td>$6,256.45</td>
</tr>
</tbody>
</table>

**High School: Monthly Costs of Solid Waste & Recycling**

![Graph showing monthly costs of solid waste and recycling]

ii. Seasonal Data

<table>
<thead>
<tr>
<th>Season</th>
<th>Solid Waste</th>
<th>Recycling</th>
<th>Tons of Solid Waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>$815.46</td>
<td>$380.43</td>
<td>0</td>
<td>$1,195.89</td>
</tr>
<tr>
<td>Fall</td>
<td>$713.36</td>
<td>$390.51</td>
<td>13.36</td>
<td>$1,103.87</td>
</tr>
<tr>
<td>Winter</td>
<td>$942.95</td>
<td>$394.61</td>
<td>7.35</td>
<td>$1,337.56</td>
</tr>
<tr>
<td>Spring</td>
<td>$1,079.12</td>
<td>$546.73</td>
<td>8.43</td>
<td>$1,625.85</td>
</tr>
</tbody>
</table>

B. Water Consumption

<table>
<thead>
<tr>
<th>School/Building</th>
<th>Read Date</th>
<th>Usage (per 100 cubic feet)</th>
<th>Cost of Water &amp; Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Water</td>
</tr>
<tr>
<td>High School</td>
<td>Sep-11</td>
<td>43,601</td>
<td>$1,543.47</td>
</tr>
<tr>
<td></td>
<td>April-11</td>
<td>65,091</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-10</td>
<td>33,454</td>
<td></td>
</tr>
<tr>
<td></td>
<td>April-10</td>
<td>63,558</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-09</td>
<td>40,880</td>
<td></td>
</tr>
</tbody>
</table>
C. Energy

i. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Utility Data: High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Natural Gas Usage (Therms)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

High School: Energy Use (June 26, 2010- June 25, 2011)

ii. Annual Comparison of Energy Use

High School: Annual Comparison of Natural Gas Usage

Fiscal Year

31
D. Electricity

i. Totals & Monthly Use

<table>
<thead>
<tr>
<th>Electricity: High School</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
<td>June 23, 2010</td>
</tr>
<tr>
<td>End Date</td>
<td>June 26, 2011</td>
</tr>
<tr>
<td>Usage (kWh)</td>
<td>1,676,967</td>
</tr>
<tr>
<td>Cost</td>
<td>$252,896.61</td>
</tr>
</tbody>
</table>

ii. Annual Comparison of Electricity Use
V. SAU OFFICE

A. Solid Waste & Recycling

The SAU Office’s solid waste & recycling is included in the High School totals.

B. Water Consumption

<table>
<thead>
<tr>
<th>School/Building</th>
<th>Read Date</th>
<th>Usage (per 100 cubic feet)</th>
<th>Cost of Water &amp; Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAU Office</td>
<td>September-11</td>
<td>2,470</td>
<td>Water: $87.54</td>
</tr>
<tr>
<td></td>
<td>April-11</td>
<td>2,578</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-10</td>
<td>1,922</td>
<td></td>
</tr>
<tr>
<td></td>
<td>April-10</td>
<td>2,710</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-09</td>
<td>3,150</td>
<td></td>
</tr>
</tbody>
</table>

C. Energy

N/A

D. Electricity

i. Totals & Monthly Uses

<table>
<thead>
<tr>
<th>Electricity: SAU Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>End Date</td>
</tr>
<tr>
<td>Usage (kWh)</td>
</tr>
<tr>
<td>Cost</td>
</tr>
</tbody>
</table>

Electricity: SAU Office (June 22, 2010-June 21, 2011)

![Graph of Electricity: SAU Office (June 22, 2010-June 21, 2011)]
ii. Annual Comparison of Electricity Use

SAU Office: Annual Comparison of Electricity Use

- Electricity (kWh)
- Cost

Fiscal Year

- 09/00
- 09/01
- 01/02
- 02/03
- 03/04
- 04/05
- 05/06
- 06/07
- 07/08
- 08/09
- 09/10
- 10/11

$10,000
$8,000
$6,000
$4,000
$2,000
$0
VI. SERVICE BUILDING

A. Solid Waste & Recycling

Similar to the SAU Office, the Service Building’s solid waste and recycling costs and tonnage is included in the High School’s averages.

B. Water Consumption

<table>
<thead>
<tr>
<th>School/Building</th>
<th>Read Date</th>
<th>Usage (per 100 cubic feet)</th>
<th>Cost of Water &amp; Sewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Building</td>
<td>September-11</td>
<td>3,541</td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>April-11</td>
<td>2,404</td>
<td>Sewer</td>
</tr>
<tr>
<td></td>
<td>September-10</td>
<td>5,960</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>April-10</td>
<td>2,608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September-09</td>
<td>3,157</td>
<td></td>
</tr>
</tbody>
</table>

C. Energy

i. Totals & Monthly Use

**Utility Data: Service Building**

- Start Date: July 14, 2010
- End Date: July 15, 2011
- Natural Gas Usage (Therms): 2,398.37
- Cost: $3,606.37
ii. Annual Comparison of Natural Gas Use

![Graph: Service Building: Annual Comparison of Natural Gas Use](image)

D. Electricity

i. Totals & Monthly Use

| Electricity: Service Building |
| Start Date | June 22, 2010 |
| End Date | June 21, 2011 |
| Usage (kWh) | 109,870 |
| Cost | $14,745.76 |

![Graph: Electricity: Service Building (FY 10-11)](image)
ii. Annual Comparison of Electricity Use

![Graph showing annual comparison of electricity use and cost from 2003/04 to 2010/11. The graph displays the trend of electricity consumption and cost over the fiscal years.]
Part 3: Recommendations, Appendices
I. RECOMMENDATIONS

- Utilize the Ecological Footprint document as a tool to identify leverage points in each of the five sectors to meet the sustainable goals of the Committee. Suggested points include:
  1. The cost invested in electricity throughout the district: being about 47% of total costs in all the sectors during the FY 2010-2011 and an increase from past fiscal years after a pattern of declined consumption.
  2. The increase in solid waste and recycling costs and tonnage in each school subsequent to the timing of winter and summer school breaks (specifically in December and June).
  3. The High School’s energy and electricity consumption: being the highest in the district for both variables.
  4. The increased consumption of water in the High School, Middle School, Service Building and SAU Office, which increased during FY 2010-2011 from previous years.

- Record missing data measurements to be incorporated into future fiscal school year’s ecological footprints, specifically for:
  o Total monthly tonnage of recycling for each school
  o Water consumption for Mast Way and Moharimet Elementary Schools
  o Cost of fuel consumption for the transportation fleet
  o Investment costs of Biodiesel 20 (B20) by the transportation fleet
  o Use of hydration centers in the schools
|   | Gallons (gasoline) | $7,354.57 | 127,252 | 48.64 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
Appendix B: Calculations and Sources

The following measurements were used for the calculations in this report as cited by the Environmental Protection Agency’s (EPA) Greenhouse Gas Equivalencies Calculator (found at: http://www.epa.gov/cleanenergy/energy-resources/calculator.html):

- **Electricity: KiloWatt Hours (kWh):**
  6.8956 x 10\(^{-4}\) metric tons CO\(_2\) / kWh

- **Transportation Fleet: Gallons of Gasoline**
  0.125 mmbtu/gallon * 71.35 kg CO\(_2\)/mmbtu * 1 metric ton/1,000 kg = 8.92*10\(^{-3}\) metric tons CO\(_2\)/gallon of gasoline

- **Energy**
  - **Natural Gas (Therms)**
    0.1 mmbtu/1 therm * 14.47 kg C/mmbtu * 44 g CO\(_2\)/12 g C * 1 metric ton/1000 kg = 0.005 metric tons CO\(_2\)/therm
  - **Propane (Gallons)**
    12.8 pounds CO\(_2\)/Gallon propane * 2204.62 pounds CO\(_2\)/MTCO2E