

2007 Municipal Energy Use and Greenhouse Gas Baseline Report Cape Elizabeth, Maine

Prepared for the Town of Cape Elizabeth,
Maine by the Greater Portland Council of
Governments with assistance from
Clean Air-Cool Planet
February 2010





BACKGROUND

- Cape Elizabeth Alternative Energy Committee
- Greater Portland Council of Governments and ICLEI
- Assistance from Clean Air-Cool Planet
- ICLEI Cities for Climate Protection (CCP) Campaign



5 Milestones for Energy Savings

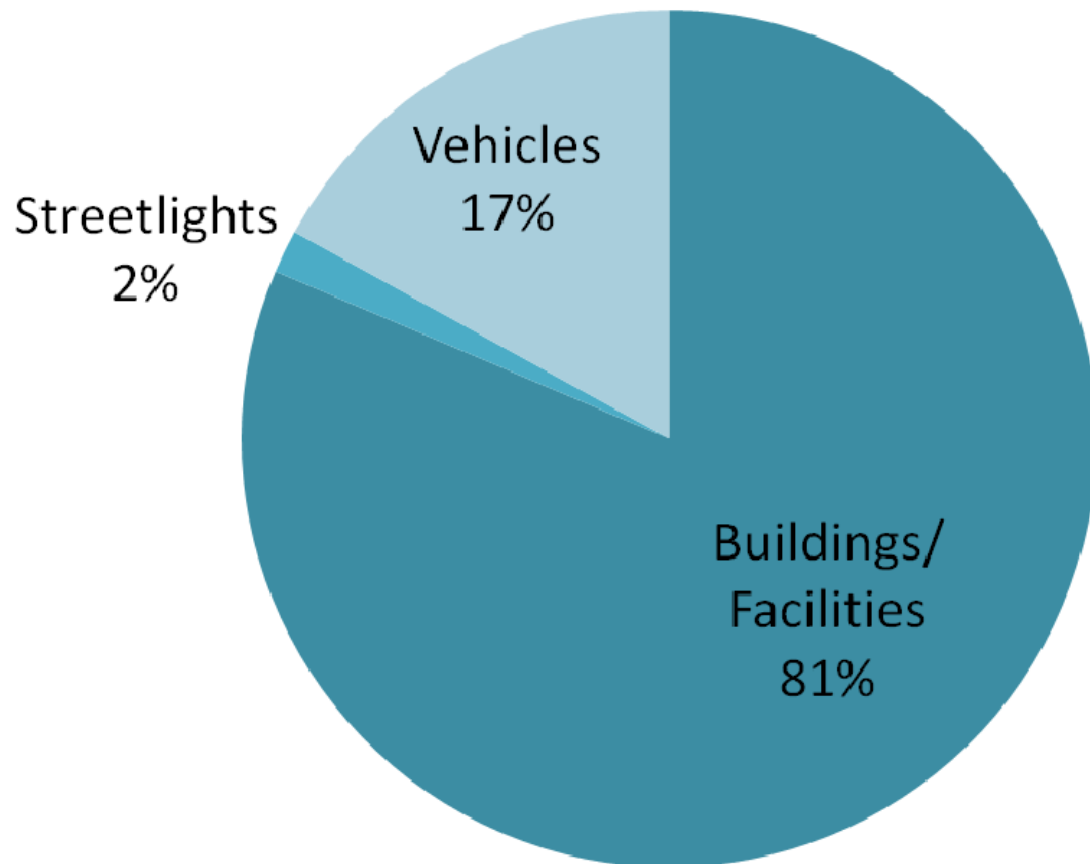
- 1) Conduct a baseline emissions inventory and forecast
- 2) Adopt an emissions reduction target
- 3) Develop a local action plan to meet the target
- 4) Implement the policies and measures within the local action plan
- 5) Monitor and verify results



General Methods

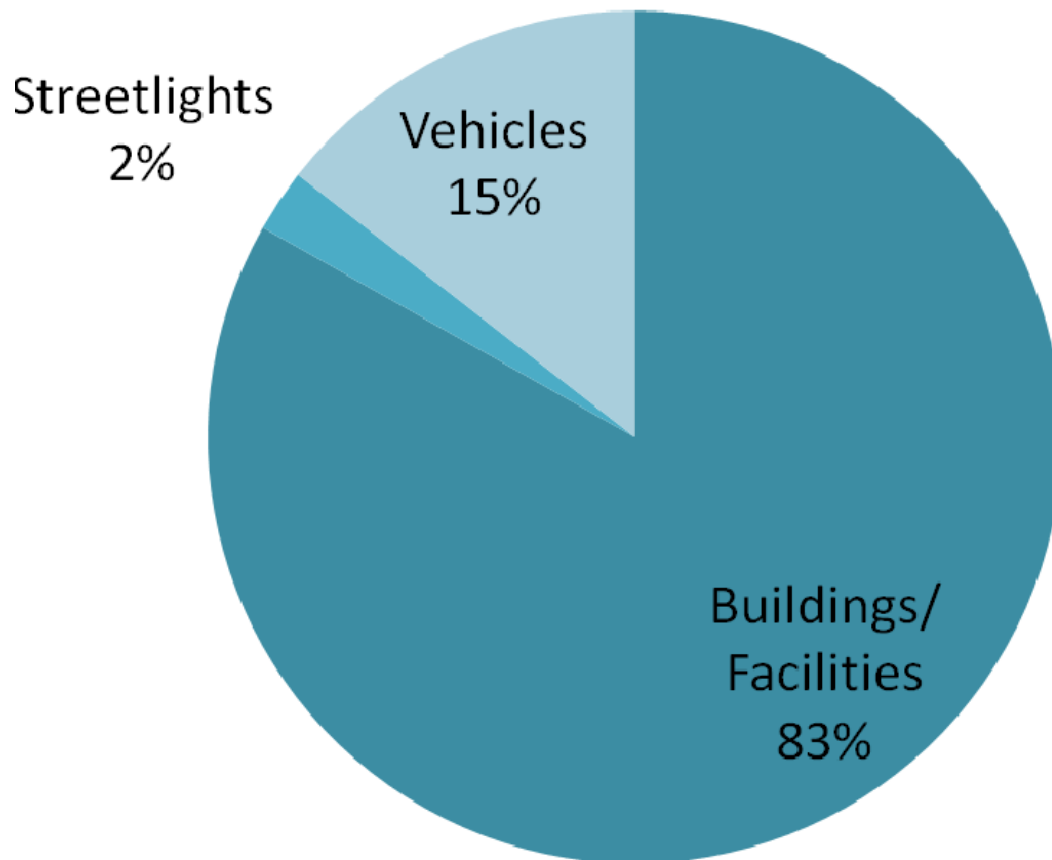
- Analyzed 2007 electricity and fuel consumption data for municipal:
 - Buildings
 - Vehicles
 - Streetlights
- ICLEI and EPA software used to determine GHG emissions and energy use
- CO₂, N₂O, and CH₄ all converted to CO₂ equivalent (CO₂e) values

Total Energy Use



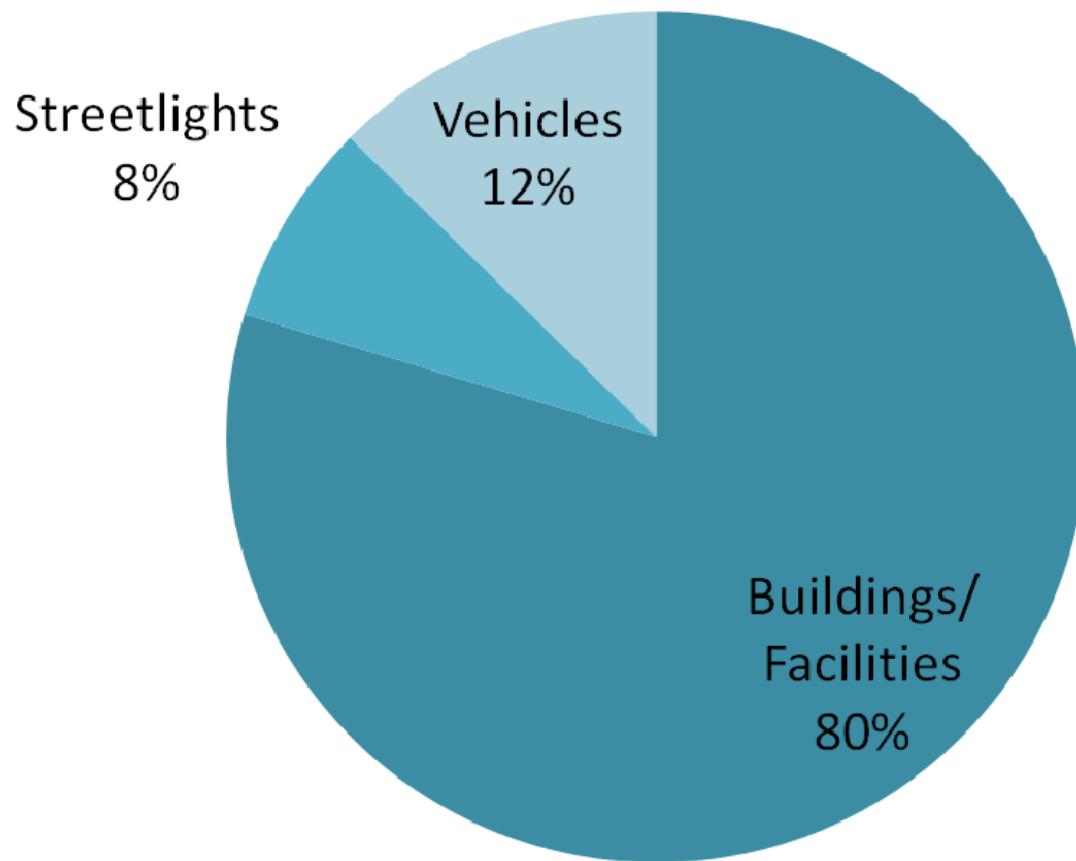
Municipal Sector	Energy Use (MMBtu)
Buildings	34,007
Streetlights	681
Vehicle Fleet	7093
Total	41,781

Total Emissions



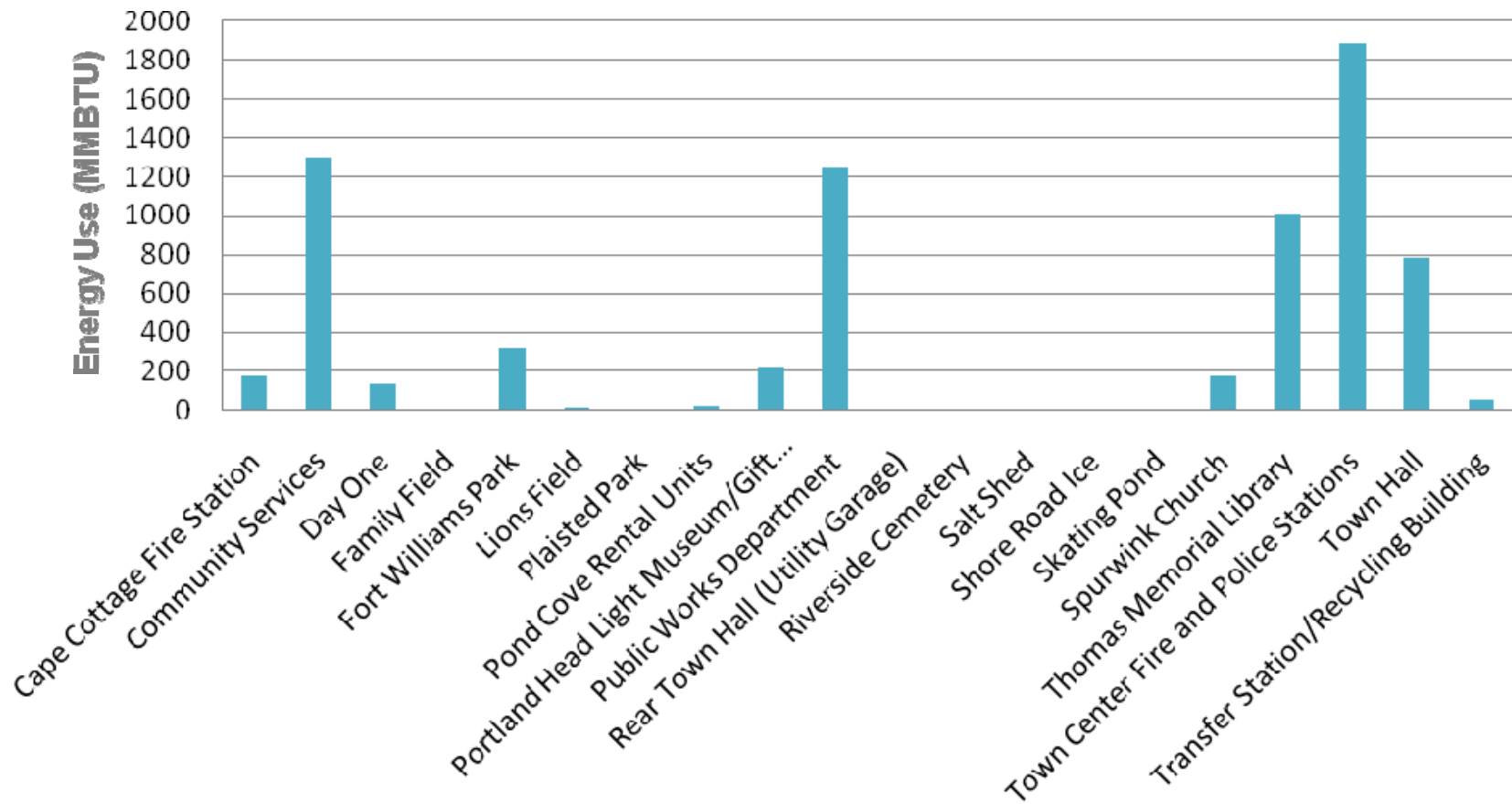
Municipal Sector	Emissions (CO ₂ e)
Buildings	2,983
Streetlights	85
Vehicle Fleet	518
Total	3,586

Total Energy Costs

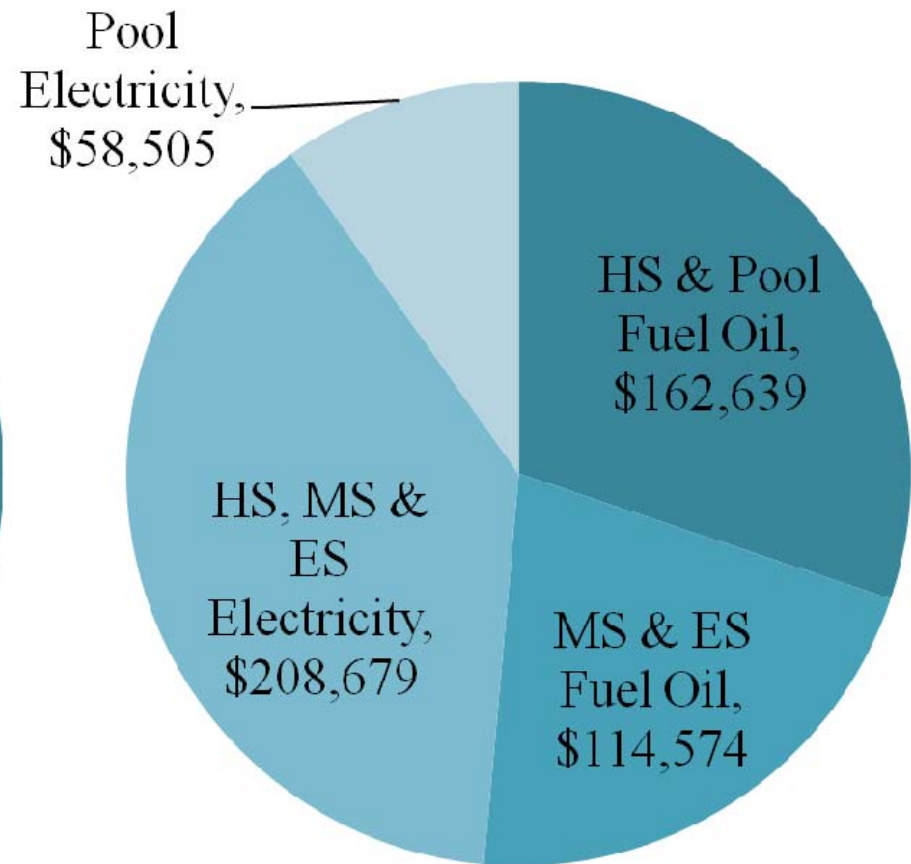
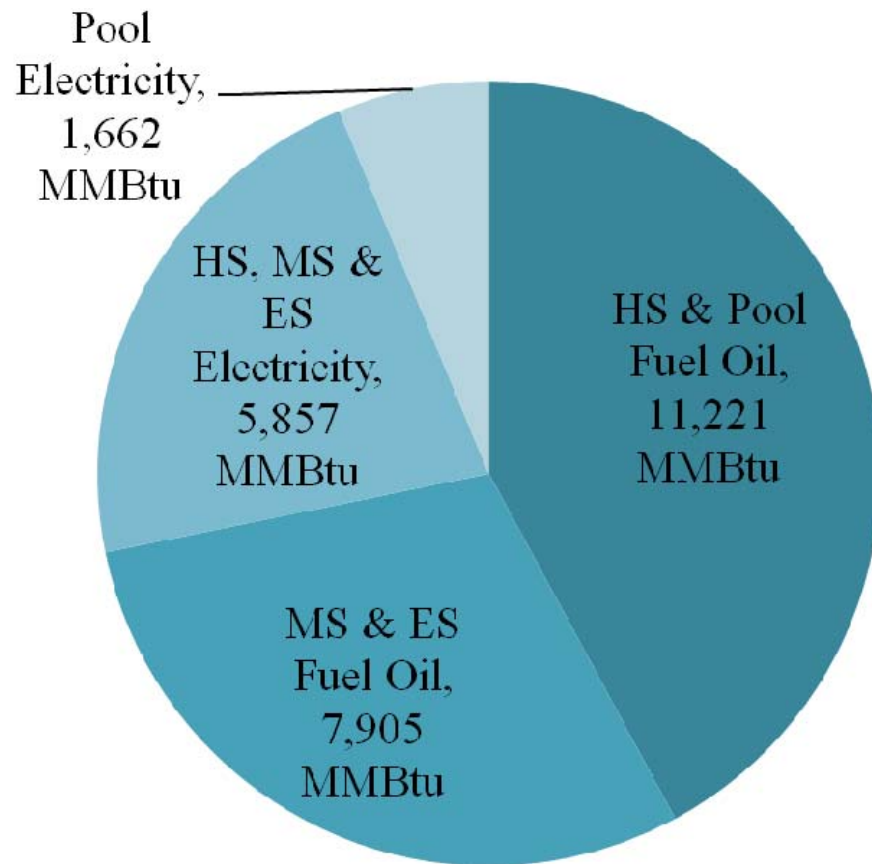


Municipal Sector	Costs (\$)
Buildings	\$666,575
Streetlights	\$64,907
Vehicle Fleet	\$105,427
Total	\$836,909

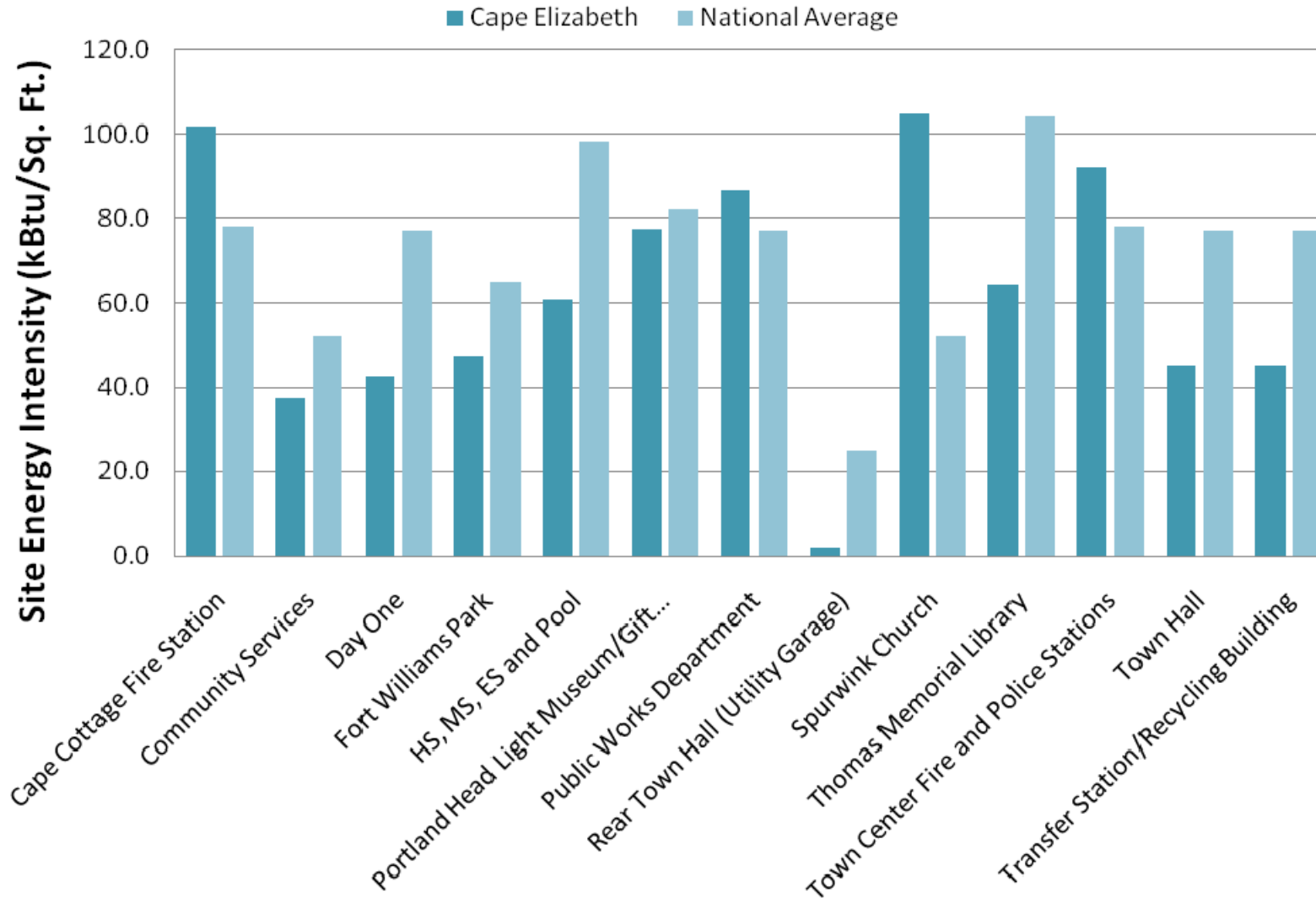
Building Performance



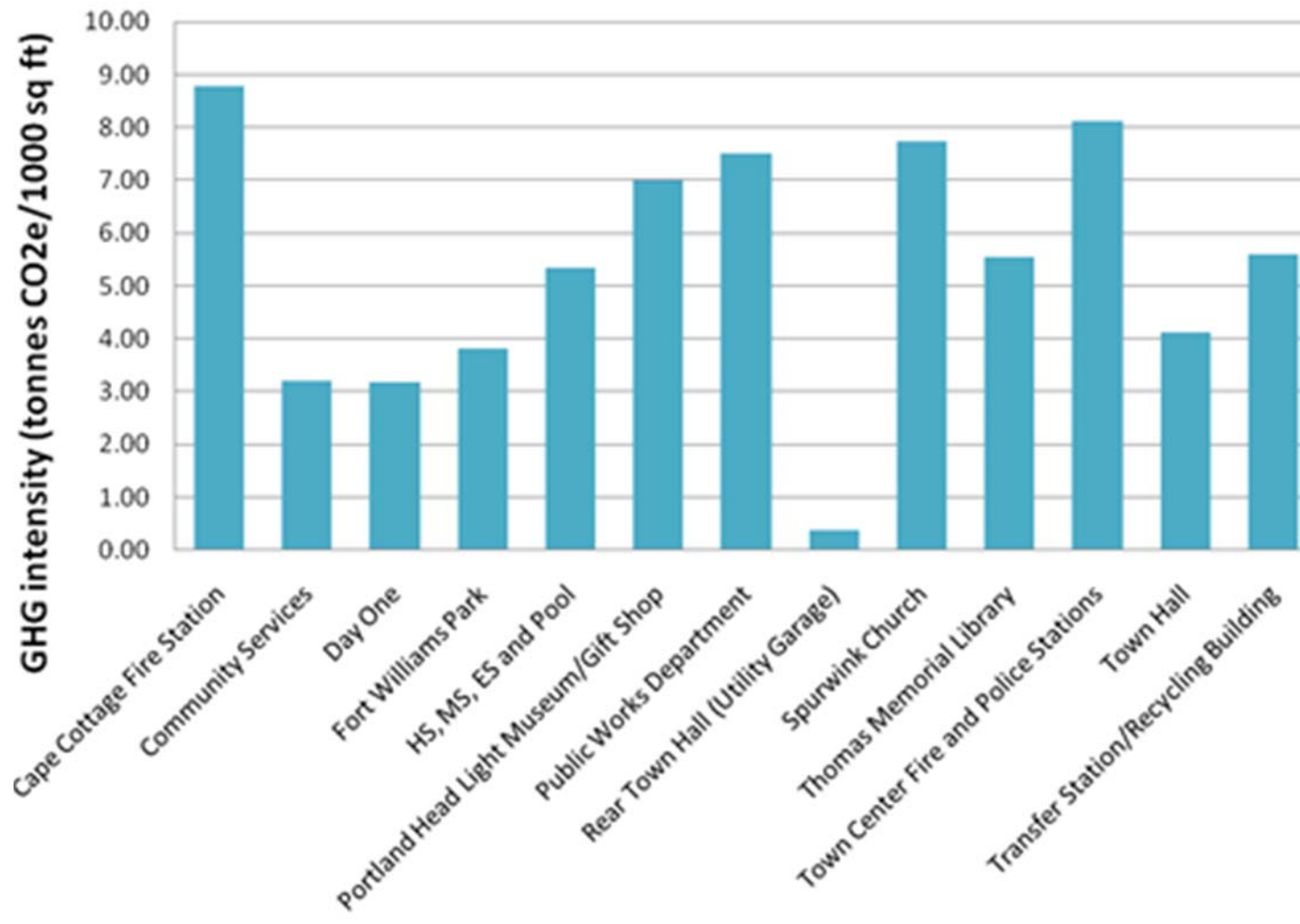
Building Performance - Schools



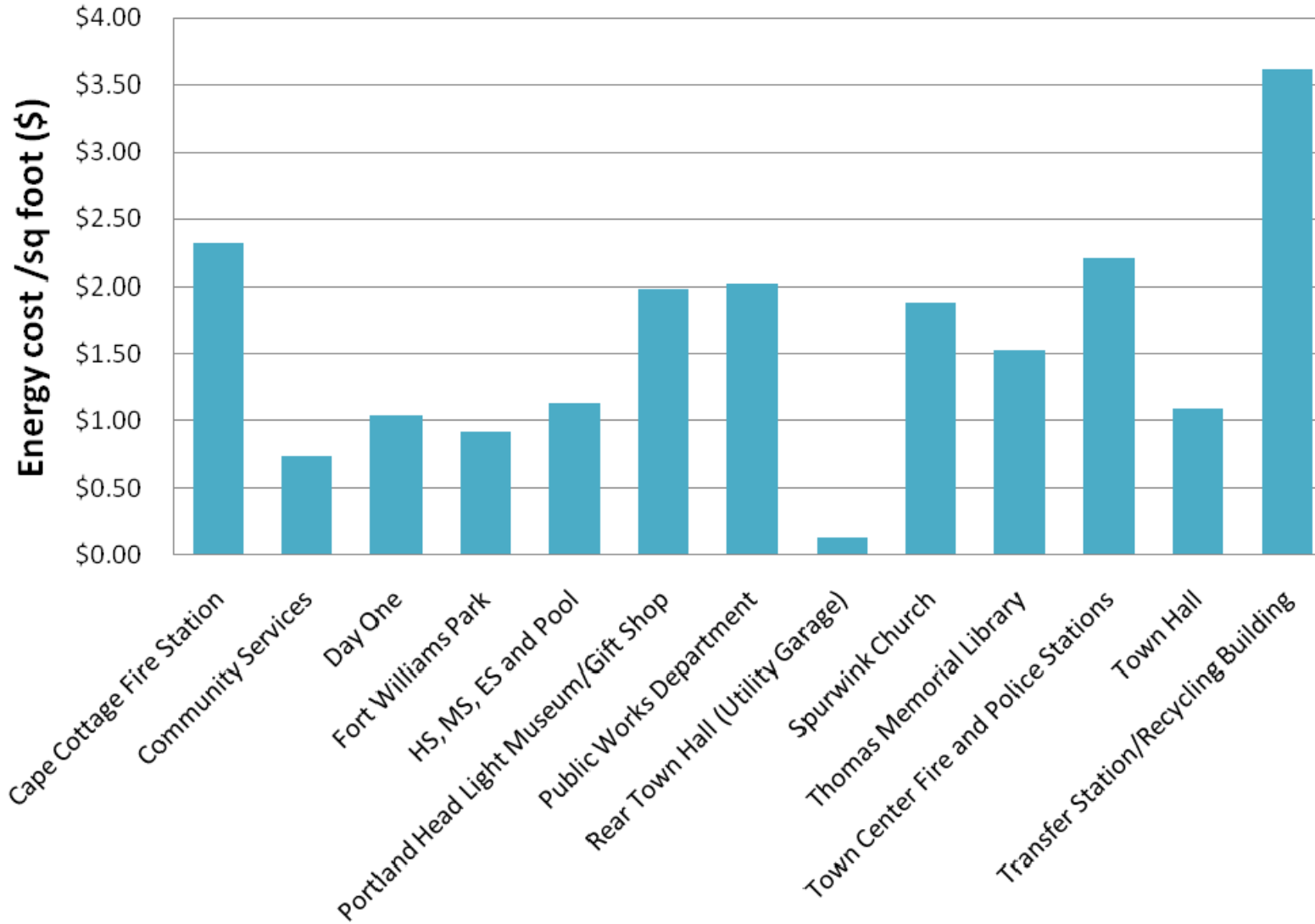
Building Energy Use Intensity



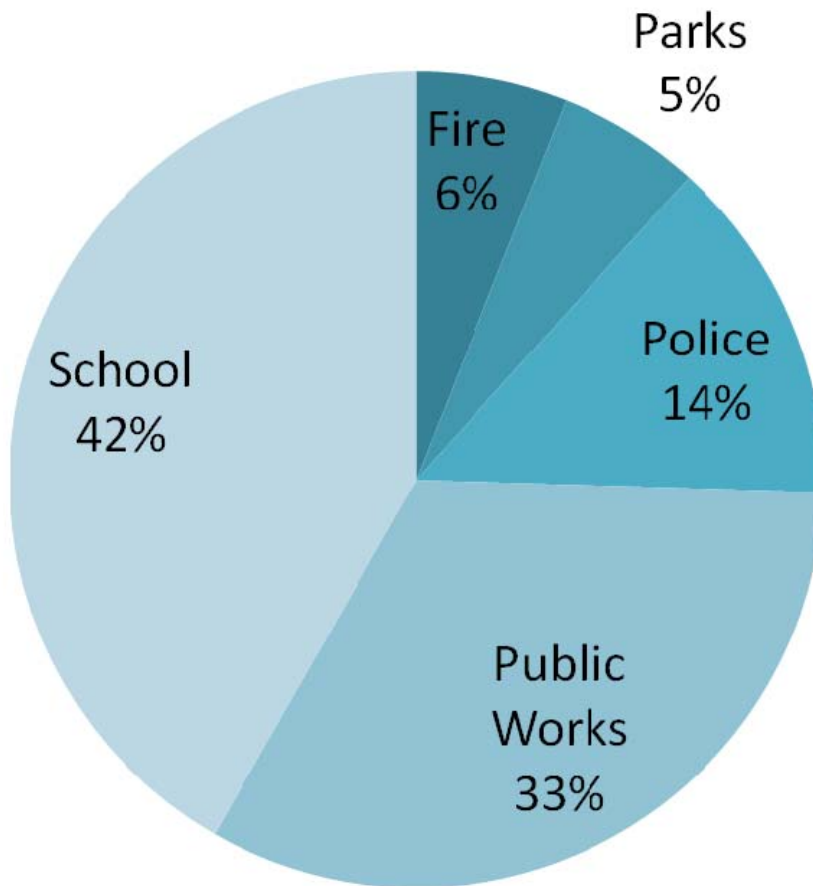
Greenhouse Gas Intensity



Building Energy Cost Intensity



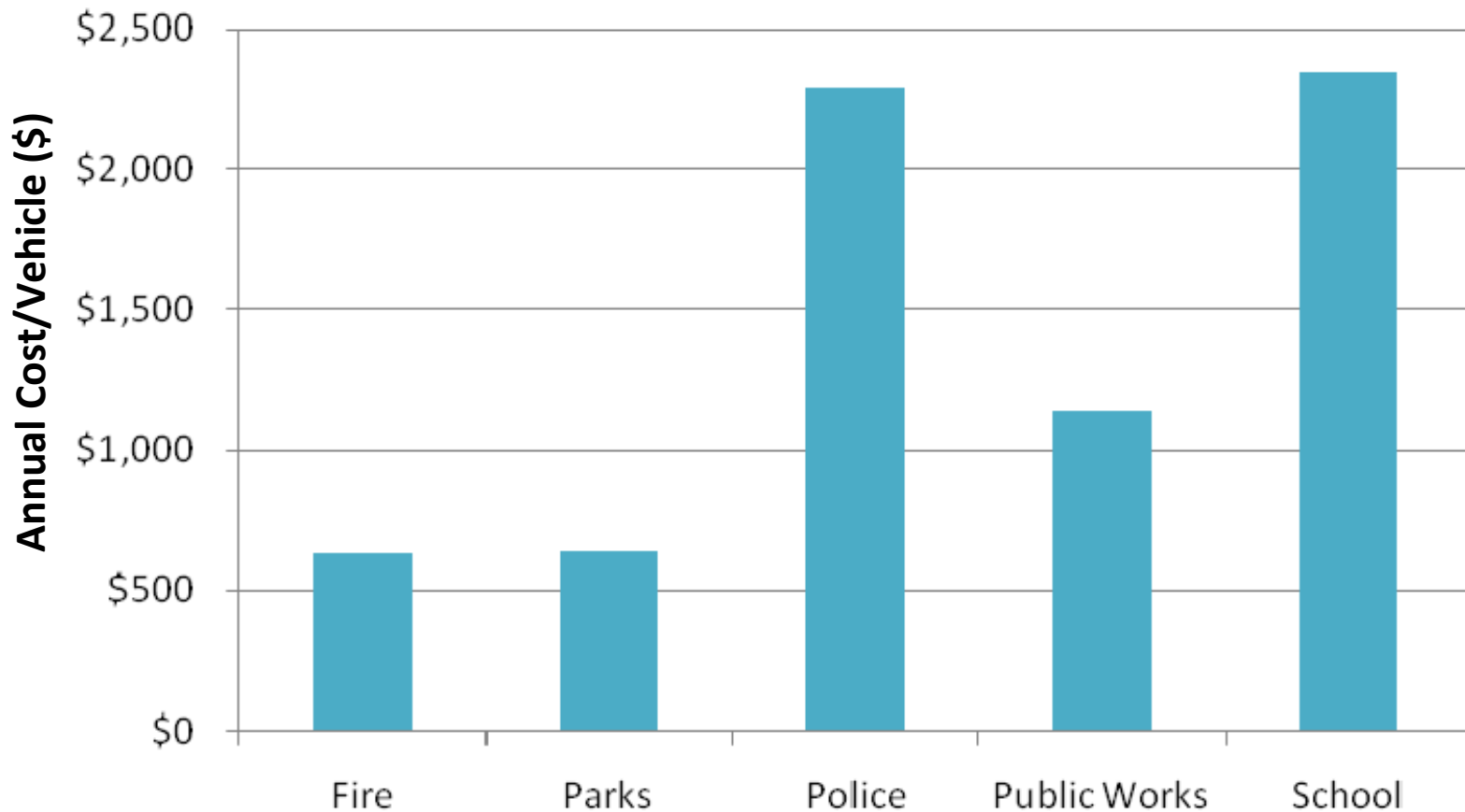
Vehicle Performance



Energy Use by Dept (MMBTU)

Vehicle Dept	Number of Vehicles	Energy Use (MMBtu)	Energy Costs (\$)
Fire	10	426	\$6,361
Parks	10	404	\$6,444
Police	7	977	\$16,054
Public Works	30	2325	\$34,292
School	18	2961	\$42,275
Total	75	7093	\$105,427

Average Fuel Costs Per Vehicle





Streetlights

- Only 2% of Cape's energy use, but 8% of costs
- \$125 per light and \$64,907 overall.
- Every 6 lights = 1 metric ton of CO₂e
- Cape has already reduced its Streetlights from 499 to 372
– anticipated savings of \$13,300



Recommendations

- Buildings:
 - Examine schools and pool for electricity efficiencies, switching of heating fuels, and separation of meters
 - Prioritize:
 - Town Center Fire and Police Stations
 - Public Works Facilities
 - Spurwink Church
 - Cape Cottage Fire Station
 - AEC conduct Walk-Through
 - Professional Energy Audit, and Facilities Recommission



Recommendations

- Vehicles:
 - Focus on school buses, followed by police cruisers
 - Conduct route analysis on school buses
 - Onboard anti-idling technology.
 - Consider purchasing fuel-efficient buses and police vehicles when retiring older vehicles
 - Fuel conversion (B20, CNG or propane)



Future Work

- Top Reporting Standard (complies with Local Government Operations Protocol). Data needs include:
 - Refrigerants (HFCs used in vehicle and building AC, refrigerators, and fire suppression)
 - Employee Commute
 - Individual Vehicle year-make, model and miles traveled
- Re-conduct Municipal Energy and Emissions Inventory in the future to assess improvements