

CAPE ELIZABETH ALTERNATIVE ENERGY COMMITTEE

CLEAN ENERGY OPPORTUNITIES FOR FUTURE CONSIDERATION

Natural gas. Mr. Marles expressed a strong desire to have natural gas available for use in municipal buildings. The committee briefly discussed the likely cost (+/- \$1m) of extending the natural gas line that now ends in South Portland near the Cape Elizabeth line. This was not studied further because the committee's charge is for a clean energy system. The committee recognized that natural gas burns cleaner than fuel oil, gasoline or diesel, and can be used in buildings, vehicles and in non-combustion fuel cell combined heat and power applications. Nevertheless, it is a carbon-based greenhouse-gas-producing fossil fuel and therefore not a "clean" fuel within the committee's working definition.

Biomass. This category includes a wide range of mostly wood and vegetation-based combustible materials including wood pellets, biodiesel and renewable fuel oil that can provide clean fuel solutions for both buildings and vehicles. The committee eliminated biomass from more extensive consideration because of possible supply interruptions for pellets and biodiesel and the need for stainless steel replacement boilers and tanks to use renewable fuel oil. In addition, the committee would have to resolve an on-going debate in the environmental community regarding whether these fuels are truly carbon neutral or significant contributors to the short-term build-up of greenhouse gases. The committee did note that seemingly successful biomass installations of each type are operating in Maine.

Ground source and air source heat pump-based systems and energy efficiency. The committee rejected further study of so-called geothermal systems largely because of the committee's belief that such systems would not be cost effective for existing buildings, although they should be considered in connection with any new municipal building construction. The committee also felt that its charge is to recommend a system that either generates power and/or provides fuel for vehicles. Using fixtures and equipment that reduce total power consumption, energy efficiency generally, is the functional equivalent of generating power, but studying such fixtures and equipment is a task for another day or another committee. The committee also noted that Mr. Marles does an excellent job of seeking out energy efficient equipment and installation configurations as part of his on-going responsibilities.

Combined heat, fuel and power. The committee did consider a limited micro-grid installation for providing both grid-tied and grid-independent power to a cluster of municipal buildings. The committee did not do further study on the more complex carbon-free combined heat and power (CHP) and combined heat, fuel and power installations. The appeal of these systems is their ability to store renewable power in batteries for short term use and as hydrogen for longer-term use, with the same equipment providing both carbon-free building heat and electricity and carbon-free vehicle fuel as part of a single installation. The committee rejected further study because these systems are labor-intensive to operate, require equipment not yet well-tested in the open market and, to operate at full potential, would require the acquisition of battery electric or fuel cell electric municipal vehicles.

Wind. The committee did not study wind power generation systems because (i) these installations generate extended political debate inconsistent with installing an alternative energy generation system within a reasonable time; (ii) wind resource studies require data for a period of time inconsistent with the committee's short ad hoc duration, making it impossible to recommend a site for a large wind machine/wind farm installation; and (iii) the committee is aware of poor results at a Kittery municipal wind installation despite in-depth study by the similar committee in Kittery that recommended the installation.