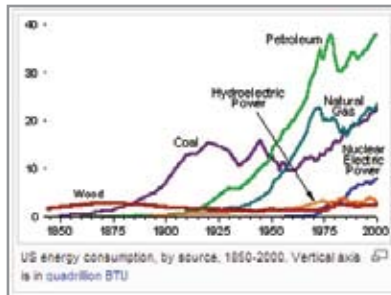


SpatialMMS

Over the last several years, there has been an effort to engage property owners, building managers and tenants in developing an awareness of the environmental and fiscal impacts of how we build and operate facilities. It has been shown that 60% of the buildings that will exist 30 years from now have already been built. With the increasing costs of energy and other operating expenses, there is increasing pressure to begin to monitor, manage and reduce the use of energy in our automobiles, transit systems, buildings and homes.

At the same time, there has been an effort on the part of the federal government, states, counties, municipalities, corporations, and individuals to attempt to minimize the adverse impacts to our environment associated with continued development and the associated use of energy. It has been shown that in U.S. buildings account for:

- 48% of the total energy use in the country
- 12% of the total water consumption
- 68% of the total electrical consumption
- 38% of CO₂ emissions
- 60% of non-industrial waste



The United States consumes over four times as much energy per capita as the world average and considerably more than most other developed countries. The federal government has begun several initiatives to attempt to require federal facilities to become less energy dependent. The government has also attempted to entice state and local government organizations, commercial interests and private individuals to reduce the amount of energy used.

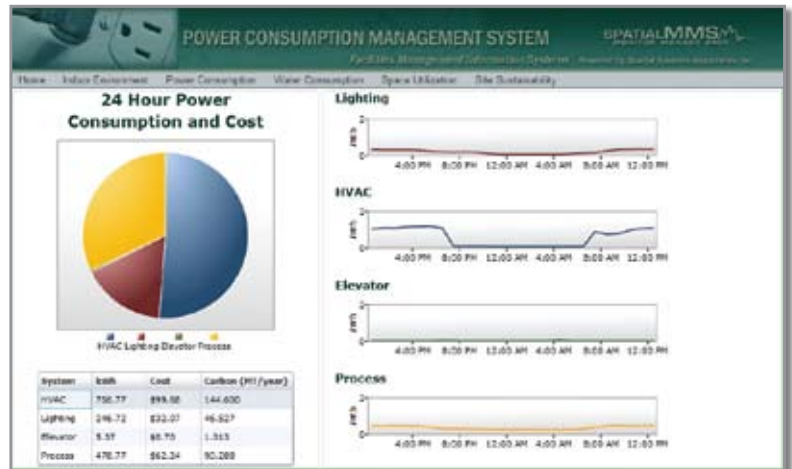
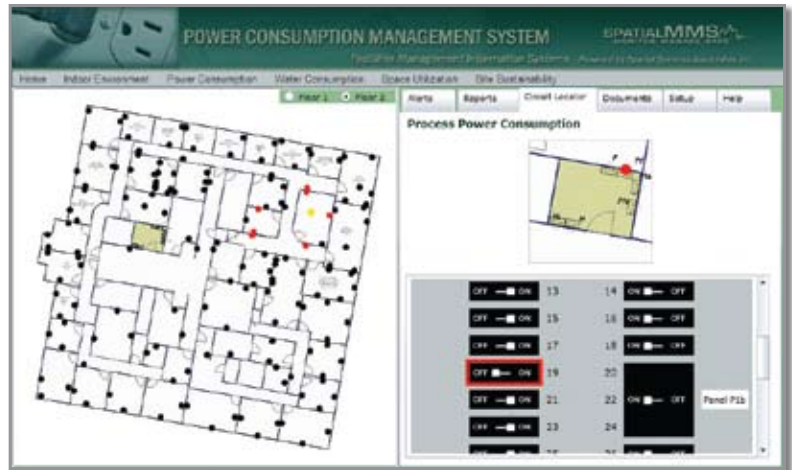
A variety of executive orders, legislation, and rating systems such as those promulgated by the US EPA and US Green Building Council (USGBC) attempt to encourage sustainable development and operation of infrastructure, thus minimizing impacts on the environment while encouraging minimal use of land, energy and water.

Establishing guidelines and regulations are a start in an effort to reduce energy and water consumption while minimizing environmental impacts; however without a system to evaluate the effectiveness of implementing the theory, building operators really don't know whether or not the long term objectives are being met. Spatial Systems Associates, Inc., a Columbia, Maryland based systems integrator and an Esri Gold Partner, has developed a product, SpatialMMS, to address many of the needs of the building operator.



SpatialMMS, an Esri-based sustainability information system

- Monitors and analyzes indoor environmental data for a facility, including temperature, humidity and CO₂ levels
- Monitors and analyzes power consumption information to a high degree of detail, allowing operators to understand where and when energy is being consumed
- Monitors and analyzes water consumption for a building or subspaces in a building
- Tracks and reports space utilization, including tenant and common space assignments, leases, furniture inventory and equipment inventory
- Monitors site sustainability characteristics of a facility, including locations of underground utilities, tree inventory, parking space inventory, stormwater inlet and piping, grade and drainage, impervious surface area, and outdoor lighting
- Provides a comparison of utility bill charges and observed consumption
- Integrates a complete document management capability for equipment, operating manuals, as-built drawings, etc.
- SpatialMMS is a web-based application that requires the use of Esri's Enterprise Server technology. Because the system is web-based, clients without dedicated computer systems can take advantage of the capabilities of the system. All that is required is access to the internet and a standard web browser.



The user interface begins with a dashboard that depicts, with colored buttons, the current status of subsystems in the building. Subsystems are accessed via pull-down menus for Indoor Environment, Power Consumption, Water Consumption, Space Utilization, and Site Sustainability.

The system also provides the ability to generate alerts when operational parameters fall outside of user-defined ranges.

The ability to Monitor and Manage operational characteristics allows the building manager to save real dollars on an ongoing basis.