

Earth Rangers – Energy Efficiency

ABOUT EARTH RANGERS

Earth Rangers is a non-profit organization dedicated to educating and inspiring children to Bring Back the Wild™. Their focus is to communicate to children a positive science-based message on the importance of protecting biodiversity and adopting more sustainable behaviours. Every year, Earth Rangers reaches hundreds of thousands of children through their interactive live animal shows performed in school, at the Royal Ontario Museum and at community events.

They also engage children through a national outreach

campaign on YTV and via their online community of over 60,000 Earth Rangers. Through these programs, they are creating a generation of environmental stewards to help protect endangered species and their habitats. The Earth Rangers centre is located in the Kortright Centre for Conservation north of Toronto's Pearson International Airport.



Aerial view of the Earth Rangers Facility

LOCATION

ADDRESS: 9520 Pine Valley Drive, Vaughan, Ontario

PHONE: 905 417 3447

EMAIL: info@earthrangers.com

WEBSITE: www.earthrangers.org

ENERGY EFFICIENCY – PROCESS IMPROVEMENTS

The Earth Rangers' 9.3 square metre (100 square feet) Data Centre is proof that it's possible to build a small data centre without sacrificing performance and stability. With the help of Dell, Avaya, Pillar, VMware, Microsoft and Falconstor, Earth Rangers has created a data centre that is 10 times smaller than it would have been if built with conventional methods.

Completed in December 2008, the main goal in developing the data centre was to remain energy efficient and affordable without sacrificing the speed and efficiency at which the machines operate. Since installing the new system, performance has increased by 10 times, while the energy required

to power the system has only doubled. The electricity required for computing (nearly 100 kWh per day) is offset by the energy generated from the building's 88 kW photovoltaic arrays.

Located on the ground floor of the Earth Rangers Centre, the data room includes storage servers from Pillar, Dell's processing servers and virtual personal machines using VMware's View software. Avaya's Power over Ethernet (PoE) switching facilitates the transfer of electrical power and data across the infrastructure.

Virtualization has reduced the need for expensive, energy-intensive desktops as the majority of storage and processing power is now coming from the data centre. As well, new software and upgrades are easily provided to all staff from a single location.

The Virtual Private Network (VPN) technology from Nortel allows more than half of Earth Rangers' staff to work from home, saving travel time, increasing employee attraction and retention, and reducing pollution associated with employee commuting. While Earth Rangers' carpool network helps reduce the organization's indirect carbon emissions, it is estimated that its VPN capabilities will help eliminate over 23 metric tonnes of greenhouse gas emissions per year.

The Earth Rangers data centre is recognized as one of the world's greenest. In 2010, the centre received a Storage Networking World Best Practices Award for "Green Computing, Energy Efficiency and the Data Centre" for upgrades to its data centre and systems. The awards are sponsored by Computerworld magazine and the United States-based Storage Networking Industry Association.

Now equipped with the latest technologies following the upgrades, the data centre is expected to reduce electricity use by 111 000 kilowatt hours (kWh) annually, thus realizing annual savings (at current prices) of \$258,000 and reducing its annual carbon footprint by 26 tonnes of greenhouse gas (GHG) emissions.



The new high efficiency low impact Earth Rangers Data Centre