NET ZERO

Climate Change Action Plan – Carbon Neutrality
Net Zero Analysis YouTube Channel

Case Study 2

"Carbon Neutrality Plan Development"

Once the energy consumption from ***Case Study 1*** was in line, the Carbon Intensity of the subject building was now the issue. Using the Carbon Intensity Calculator, the Operations team evaluated their options and discovered they could not reduce the following items: Natural Gas, Water, Transportation Fuel (they were using electric golf carts), or electricity. Electricity was the only fuel that offered a reduction in carbon intensity over the existing utility or third party supplier. Let's review the options the operations team considered in reducing their carbon intensity:

1) Utility Grid Electrical Carbon Intensity 1.2434 lbs. of CO_2/kwh (563.996 g of CO_2/kwh)
2) Combined Heat and Power (CHP) System using Natural Gas as the primary power, CHP Electrical Carbon Intensity 0.635 lbs. of CO_2/kwh (288.031 g of CO_2/kwh)
3) Renewable Energy Bundled Physical Power Purchase Agreement (REBPPPA), defined as a Renewable Energy Plant in the same grid and offering the Power and the Renewable Energy Credits (RECs) in a long-term contract. This had a Carbon intensity of 0.1896 of CO_2/kwh (86.00 g of CO_2/kwh)
4) Renewable Energy Virtual Power Purchase Agreement or Purchasing Renewable Energy Credits (RECs) - ISO 14001 – 2015/2018 Environmental Audit views these as a REC Purchase which eliminates the opportunity to claim a reduction in Carbon Intensity for the matched electrical purchase (as this would be considered double counting).

Option Number 3 has the smallest Carbon Intensity per kwh and was selected as the best option for the majority of the building's electrical usage.

The next step was to review the monthly electrical usage and determine the electrical baseload of the building by….

comparing the monthly projected electrical usage or the historic monthly electrical usage, the baseload can be calculated.

With the baseload determined, the next step is to determine the variable electrical load which, is any electrical usage above the baseload. Once again the Carbon Intensity per kwh and various reduction options were reviewed. The building has a Commercial Natural Gas Generator and the local utility would purchase the power or they could install a battery backup system to cover

the variable electrical load. Both options are called “peaking shaving.” There is a cost associated with both options to reconfigure the Commercial Natural Gas Generator and to purchase and install the battery backup.

The least expensive option was to install the battery backup system for the variable electrical load and to charge the batteries overnight when the building is closed for 9 hours, then use the Commercial Natural Gas Generator to recharge the batteries during the day if the variable load was above the expected usage.