

# Ethicon Team – Carbon Reduction Challenge

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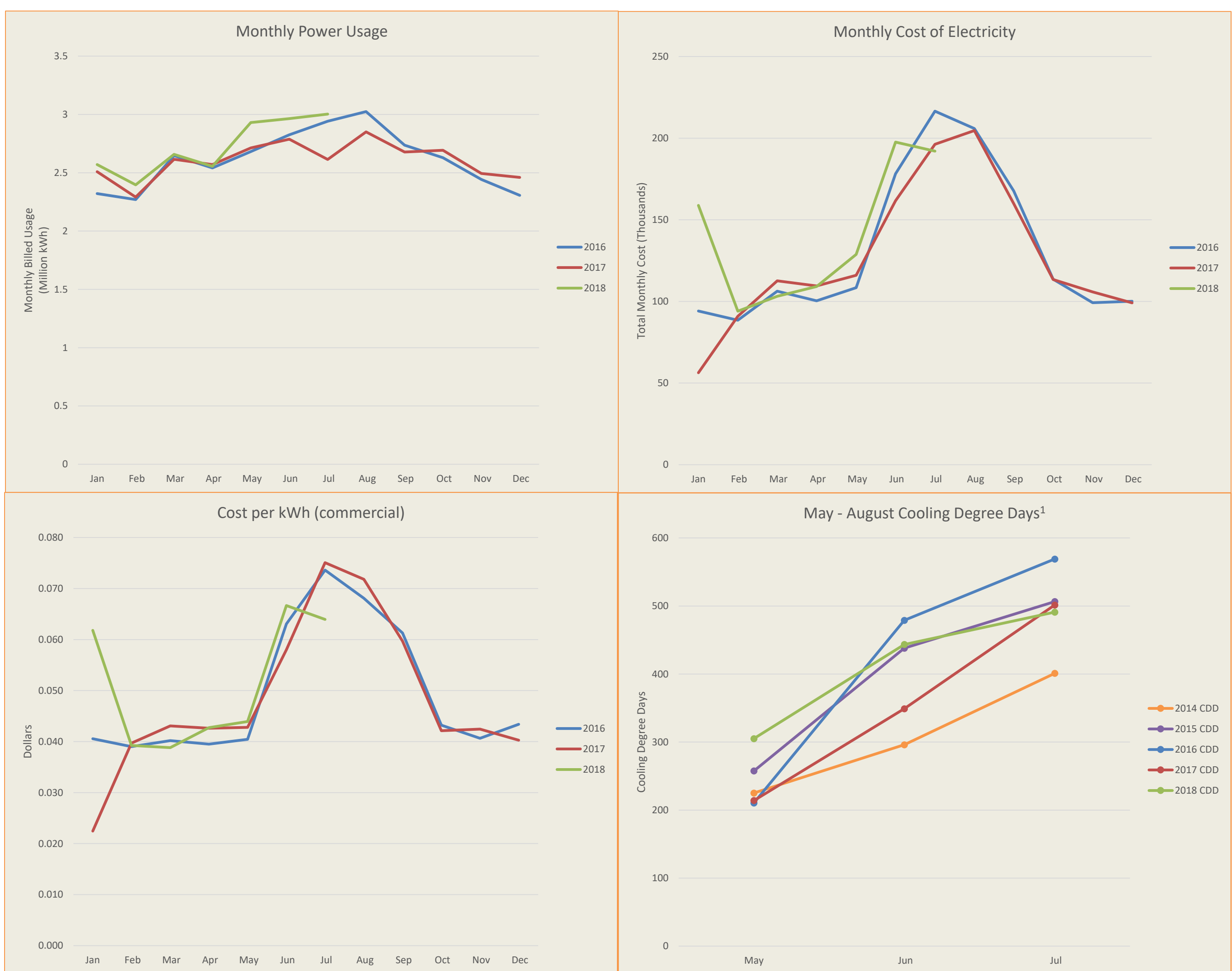
## BACKGROUND

- Ethicon is a Johnson & Johnson Medical Device company that manufactures biomaterial components and surgical devices.
- The Ethicon Cornelia location is a semi-finished goods manufacturing facility. The site is approximately 200,000 sq. ft. and produces 80% of the world's suture supply.
- Johnson & Johnson employees live by Our Credo, in which “protecting the environment and natural resources” is an important part of our company's values.



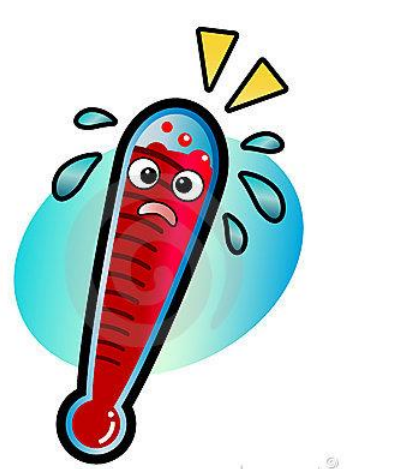
## THE PROBLEM

- Overcooling in summer leads to frigid temperature in office areas and raises utility cost.**
- Ethicon Cornelia site uses up to approximately 3,000,000 kWh a month.
- Currently, Ethicon has a goal to reduce CO<sub>2</sub> emission by at least 2% every year by 2020. The CRC will help contribute to the plant's sustainable goal.



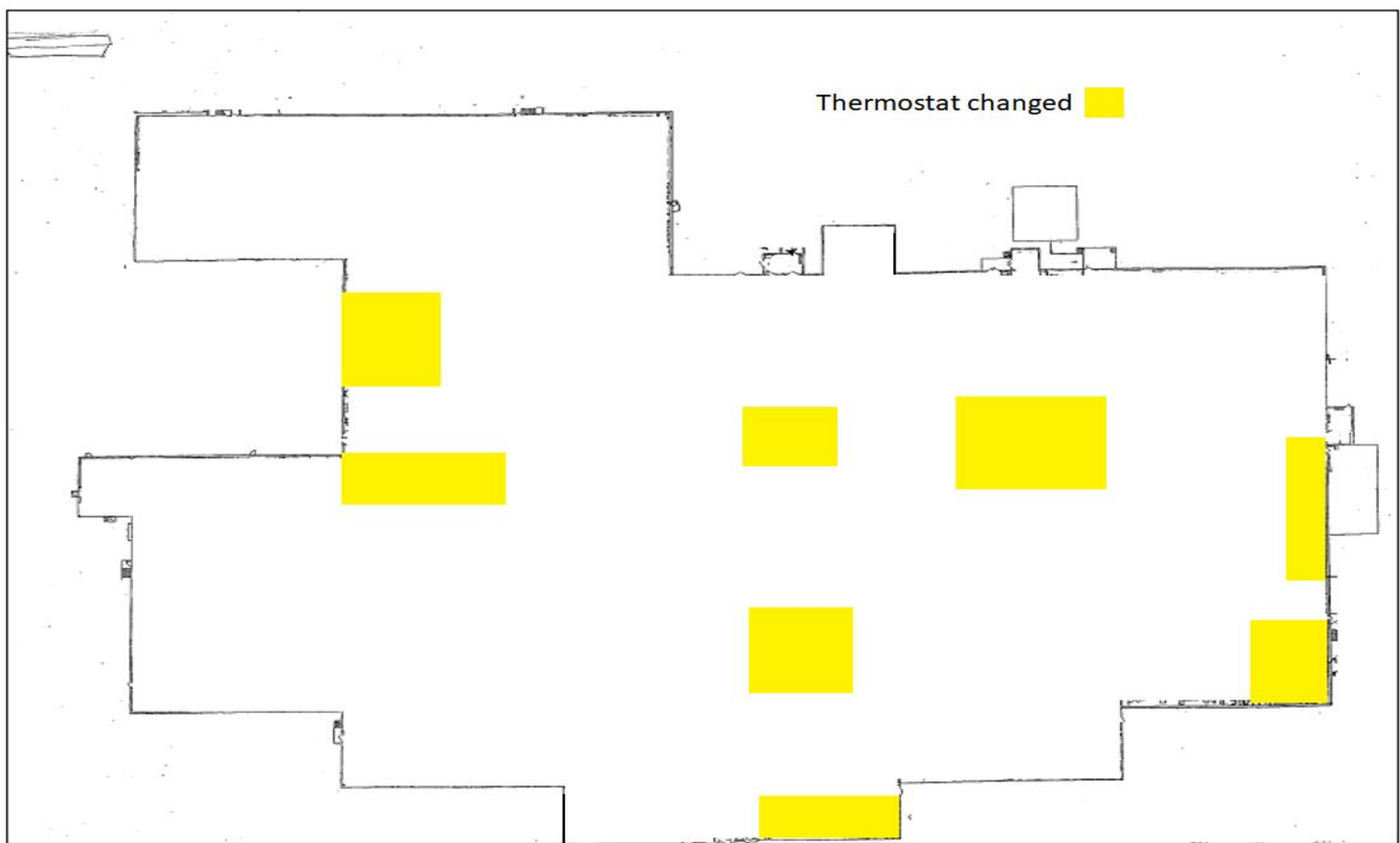
## THE SOLUTION

- HVAC Thermostat**
  - Thermostat set temperature changed from 65°F to 67°F.
  - Implement during hottest months from May to August
  - 2°F change can save about 6% energy consumption<sup>2</sup>
  - Cost: \$ 0



## PLANS

- Preliminary stage:**
  - Identify the overcooling problem in office area.
  - Coming up with solution: changing thermostat set temperature.
  - Propose idea to facilities.
  - Received approval from facilities.
- Implementation:**
  - From May 10<sup>th</sup> to July 31<sup>st</sup>.
  - Only change office and non-production areas.
  - Manual change of thermostat set temperature.
  - Continuous monitoring of thermostat and feedback.
  - Utilities data collection.



## SAVINGS ESTIMATION

### 2018 Estimated Savings

Month	\$ Saved	kWh Saved	CO <sub>2</sub> Saved (lb.)
May	\$386	8791	10743
June	\$593	8893	10868
July	\$576	9010	11011

### Observations:

- CO<sub>2</sub> mass saved 32,600 lbs.
- Comparable to:
  - 9 Toyota Camry (Model XSE V6)<sup>3</sup>.
  - 5 Toyota Tundra (Model SR5)<sup>4</sup>.
  - F-35A fighter plane <sup>5</sup>.
- Additional CO<sub>2</sub> can be saved with more rooms and longer implementation.
- Co-benefits:
  - Comfort.
  - Reduce equipment maintenance.
  - Achieve Ethicon's overall goal of 2% CO<sub>2</sub> reduction per year by 2020.



Return of Investment	Net Present Value <sup>6</sup>
<ul style="list-style-type: none"><li>Cost: \$ 0</li><li>Payback period: Immediate</li></ul>	$NPV(i, N) = \sum_{t=0}^N \frac{R_t}{(1+i)^t}$ <p><i>i</i> = discount rate 2.5% <sup>7</sup> <i>t</i> = time of cash flow <i>R<sub>t</sub></i> = net cash flow</p> <p><b>NPV = \$1558.15</b></p>
Assumptions	Calculations <sup>7,1</sup>
<ul style="list-style-type: none"><li>Calculation is not perfect.</li><li>Thermostat set temperature changed during implementation.</li><li>Energy price and usage fluctuation.</li><li>Aggregate utility data of entire production site.</li></ul>	$\text{Saving} = \frac{m}{10 * 2} * 6\%$ <ul style="list-style-type: none"><li><i>m</i> = monthly utility cost or billed kWh usage</li><li>Conversion: 1 kWh = 1.222 lbs CO<sub>2</sub> <sup>8</sup></li></ul>

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