**Energy Conservation Initiative (ECI) Project Summary**

**Biotechnology Lab Airflow Reduction, Facility 1018**

**What We Did:** A computational fluid dynamics (CFD) model was used to evaluate ventilation effectiveness in existing fume hood laboratory spaces. The CFD modeling determined that we could improve ventilation effectiveness by changing supply and general exhaust locations and configurations. The project changed air flow patterns and reduced room minimum air change rates per hour from 8/4 to 6/3 occupied/unoccupied. A previous project had converted all laboratories to occupancy sensor based fully automated digital air flow control (2004).

**What It Cost:** $169,250

**How Long It Took:** 4 months. Completed January 2011.

**What We Saved:** $76,000 and 195 tons/year carbon equivalent annually.

**Benefits:** The project reduced average outdoor air flow by about 10,000 CFM. This reduction was in addition to the previous project which reduced average airflow by over 50,000 CFM. Reducing outdoor air usage decreases associated heating, cooling, and electricity usage.

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**Biotechnology Building**

**Map**

**Utilities Costs and Use**

**Biotechnology Lab:** Airflow Reduction Total Energy Use Pre & Post ECI

<table>
<thead>
<tr>
<th>Utility</th>
<th>Historical Energy Use (MMBtu)</th>
<th>Est. FY 2011 Energy Use (MMBtu)</th>
<th>Energy Savings (MMBtu)</th>
<th>% REDUCTION</th>
<th>Historical Cost (billed rates)</th>
<th>*Est. FY 2011 Cost (billed)</th>
<th>Annual Savings $</th>
<th>Equivalent # Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam</td>
<td>7,799</td>
<td>6,961</td>
<td>838</td>
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<td>$160,000</td>
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Our energy conservation project has increased our lab occupants ventilation safety while reducing our energy cost.

Dick Clark,
Manager of Facilities,
Biotechnology Center

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**Energy use based on project scope**

* Equivalent # Homes Savings based on average home use: 40 MMBtu Electric • 90 MMBtu Heat • 50 MMBtu Cooling

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能量节省的计算表

| Utility          | 历史能耗 (MMBtu) | 预计 FY2011 能耗 (MMBtu) | 节能 (MMBtu) | 节能率 | 历史成本 (按报价计) | 预计 FY2011 成本 (按报价计) | 年度节省成本 | 相当于 # 家
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我们的能源节约项目提高了我们的实验室 occupants 的通风安全，同时减少了我们的能源成本。

Dick Clark, 
设施经理，
生物技术中心