Shift to Semi-conductors

- All Inductive
- 1950's
- Semiconductors
- 1980's
- Solar PV
- Now Process 80% of all Electricity Used
DC Microgrid Idea

Ref: Nextek USP ‘561
Bi-Directional DC Microgrid

Ref: Nextek
USP ‘278; ‘375
“The total amount of energy flowing into external power supplies in the U.S. today is about 100 TWh/year. DC power is also used in electronic products with internal power supplies. These collectively consume in excess of 250 TWh/year. Taking the Energy Star Tier 1 levels as the average for the near-future stock, the average efficiency of this conversion is about 68%...”*

<table>
<thead>
<tr>
<th>Sector</th>
<th>Potential MWh Saved</th>
<th>Potential Efficiency Gain in Sector(s)</th>
<th>Potential Reduction in National Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>185,264,820</td>
<td>25.32%</td>
<td>2.98%</td>
</tr>
<tr>
<td>Commercial</td>
<td>123,290,000</td>
<td>19.03%</td>
<td>3.03%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>77,128,960</td>
<td>20%</td>
<td>1.90%</td>
</tr>
<tr>
<td>Data Centers</td>
<td>9,657,827</td>
<td>18%</td>
<td>0.24%</td>
</tr>
<tr>
<td>Total</td>
<td>396,341,607</td>
<td>21.15%</td>
<td>8.15%</td>
</tr>
</tbody>
</table>

380 VDC

24 VDC

- Lighting, Computers, Sensors, Fans
- Battery Storage, Server Gear, Variable Speed Motor Drives, Vehicle Chargers

Protected under US Patent# 7872375
Michigan Assembly Plant
Birth Announcement

Welcome!

- 24 VDC
- 380 VDC

XOXO ~ 75 Stakeholders
## Installations Around the Country

<table>
<thead>
<tr>
<th>PNC Financial Headquarters Office</th>
<th>lauckgroup Architectural Office</th>
<th>US Green Bldg Council Conference Rooms</th>
<th>Nextek Power Center</th>
<th>NextEnergy</th>
<th>UC San Diego Sustainability Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pittsburgh, PA</td>
<td>Dallas, TX</td>
<td>Washington, DC</td>
<td>Detroit, MI</td>
<td>San Diego, CA</td>
<td>San Diego, CA</td>
</tr>
</tbody>
</table>

- **Southern Cal Edison**
  - Utility Services Office
  - Irwindale, CA

- **Johnson Controls**
  - Headquarters Office
  - Milwaukee, WI

- **Optima Engineering**
  - MEP Firm
  - Charlotte, NC

- **LA Community College**
  - Trade Tech Campus
  - Los Angeles, CA

- **CLTC**
  - UC Davis Campus
  - Davis, CA

![PNC Financial Headquarters Office](image1.png)
![lauckgroup Architectural Office](image2.png)
![US Green Bldg Council Conference Rooms](image3.png)
![Nextek Power Center](image4.png)
![NextEnergy](image5.png)
![UC San Diego Sustainability Center](image6.png)

![Southern Cal Edison Utility Services Office](image7.png)
![Johnson Controls Headquarters Office](image8.png)
![Optima Engineering MEP Firm](image9.png)
![LA Community College Trade Tech Campus](image10.png)
![CLTC UC Davis Campus](image11.png)