Energy Efficiency and Energy Policy

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50 Years of Automobile Improvements

- **1960s Ford Falcon**
  - 90 hp
  - ~ 20 mpg
  - 0-60 mph ~ 20 sec

- **2014 Ford Fusion Hybrid**
  - 188 hp
  - 0-60 mph in 8.5 sec
  - 40+ mpg
  - 3677 lb

- **Fusion Hybrid vs Falcon**
  - Heavier car
  - Twice the power
  - Twice the acceleration
  - Half the gas
Impact of Auto/Truck Efficiency Increases

- Autos/light trucks used energy = Energy Imports in 2012

- AUTO/TRUCK EFFICIENCY IMPROVEMENTS have CUT U.S. ENERGY IMPORTS IN HALF
How much of this would have happened without

- Corporate Average Fuel Efficiency (CAFÉ) Standards?
- Hybrid tax credits?
These refrigerators

- Used **THREE** times as much electricity as today’s refrigerators
- Were smaller
- Were more expensive
How Much Energy Do Refrigerators Use?

- Refrigerators used 2.9 Quadrillion (Quads) Btu in 2013
- More than HALF Texas oil production

- REFRIGERATOR IMPROVEMENTS save MORE ENERGY THAN ALL THE OIL TEXAS PRODUCES!
How much of this would have happened without

- Federal Appliance Standards?
How Important is Improved Energy Efficiency in the U.S. Economy?

Figure 3. Energy Consumption per Real Dollar\(^1\) of Gross Domestic Product

- 25-
- 20-
- 15-
- 10-
- 5-
- 0-

<table>
<thead>
<tr>
<th>Year</th>
<th>Thousand Btu per Chained (2005) Dollar(^1)</th>
</tr>
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<tbody>
<tr>
<td>1950</td>
<td>20</td>
</tr>
<tr>
<td>1960</td>
<td>18</td>
</tr>
<tr>
<td>1970</td>
<td>15.89 in 1970</td>
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<tr>
<td>1980</td>
<td>13</td>
</tr>
<tr>
<td>1990</td>
<td>11</td>
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<td>2000</td>
<td>7.28 in 2009</td>
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CATEE 2014: Clean Air Through Efficiency Conference, Dallas, Texas Nov. 18-20
$1.4 Trillion/Year Saved by Energy Efficiency

What does this mean?

- $50,000/yr for EVERY TEXAN
- $5,000/year for EVERY AMERICAN
ESL is developing a revolutionary new Air Conditioner that could ultimately save

- $2 Billion/year in Texas
- $15 Billion/year in the U.S.
- $1 Trillion/year worldwide
How Important is Good Energy Policy AND Good Technology?

- How Important is CATEE?
How Important is Good Energy Policy AND Good Technology?

- How Important is CATEE?
- To THEIR Future?
WELCOME TO CATEE!!

ENERGY SYSTEMS LABORATORY
TEXAS A&M ENGINEERING EXPERIMENT STATION

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