Stabilizing at 450 ppm CO2

Global; International Energy Agency 2008

Emissions (GtCO2)

- Baseline
- 50% Reduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
<td>385</td>
</tr>
<tr>
<td>2015</td>
<td>425</td>
</tr>
<tr>
<td>2030</td>
<td>485</td>
</tr>
<tr>
<td>2050</td>
<td>550</td>
</tr>
<tr>
<td>2060</td>
<td>445</td>
</tr>
<tr>
<td>2070</td>
<td>450</td>
</tr>
<tr>
<td>2080</td>
<td></td>
</tr>
<tr>
<td>2090</td>
<td></td>
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<tr>
<td>2100</td>
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</tr>
</tbody>
</table>
Low Carbon Power Options

- Fossil fuels with carbon capture and sequestration
- New, inherently safer and modular, nuclear technology
- Solar and wind with energy storage
- Deep geothermal energy
2010 Federal Energy Subsidies = $37B

Millions of Dollars

- Coal
- Oil and Gas
- Nuclear
- Biopower
- Geothermal
- Hydro
- Solar
- Wind
- Biofuels
- Electric Grid
- Efficiency
- Low Income Assistance

Direct Expenditures
R&D
Tax Incentives
Loan Guarantees
<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Acres per Terawatt Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soy Biodiesel</td>
<td>220,917</td>
</tr>
<tr>
<td>Electricity Biomass</td>
<td>134,270</td>
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<tr>
<td>Ethanol Cellulose</td>
<td>112,651</td>
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<tr>
<td>Ethanol Corn</td>
<td>85,782</td>
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<tr>
<td>Ethanol Sugarcane</td>
<td>70,586</td>
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<tr>
<td>Wind</td>
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<td>Hydropower</td>
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<tr>
<td>Petroleum</td>
<td>11,048</td>
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<tr>
<td>Solar PV</td>
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<td>Natural Gas</td>
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<tr>
<td>Solar Thermal</td>
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<td>Coal</td>
<td>2,565</td>
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<tr>
<td>Geothermal</td>
<td>1,847</td>
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<tr>
<td>Nuclear Power</td>
<td>585</td>
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</tbody>
</table>
Summary: High-Level Strategies

- Put a price on greenhouse gas emissions
- Improve residential and commercial building and appliance efficiency
- Increase solar, wind and geothermal power production
- Develop new low-carbon baseload power generation technologies
- Improve vehicle fuel efficiency
- Convert urban personal vehicle fleet to electricity
- Develop low-carbon biofuel for long-distance transportation