BERLIN SEMINAR ON ENERGY POLICY
Overview and Highlights of Delegation Visit
June 2016

Presentation to the Illinois Pollution Control Board
Brown Bag Lunch
About the Citizens Utility Board

- Nonprofit, nonpartisan utility watchdog group established by Illinois legislature in 1984 to represent the interests of utility customers, particularly residential and small business customers.
- 30 employees focused on saving customers money and improving utility services:
  - Utility Bill Clinics and Education Events
  - Consumer Calculators
  - CUB Energy Saver
  - Litigation and Policy at State and Federal Level
- Member and grant supported
- Disclaimer
Overview

- Transatlantic Partnership
  - Discussion of best practices and opportunities for innovation
  - University of Minnesota and BMWI
  - Comparing and Contrasting Experiences of IL, MN and DE

- Delegation Members

- Schedule Highlights
  - Energiewende Basics
  - Energy and Transportation
  - EUREF
  - Feldheim
  - Labor and Refugees
Energiewende

- Timeline: 1990s to 2050
- Political Support
- Comprehensive Framework
  - CO2 Emission Reductions
  - Renewable Energy
  - Nuclear Phase Out
  - Energy Efficiency
## Energiewende: Targets

<table>
<thead>
<tr>
<th>Category</th>
<th>SQ</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse Gas Emissions</td>
<td>-26.4%</td>
<td>-40%</td>
<td>-55%</td>
<td>-70%</td>
<td>-80-95%</td>
<td></td>
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<tr>
<td>Renewable Energy (Final)</td>
<td>12.4%</td>
<td>18%</td>
<td>30%</td>
<td>45%</td>
<td>60%</td>
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<tr>
<td>Renewable Energy (Gross)</td>
<td>27.3%</td>
<td>40-45%</td>
<td>55-60%</td>
<td>80%</td>
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<tr>
<td>Nuclear Phase Out</td>
<td>11 units</td>
<td>0 units by 2022</td>
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<tr>
<td>Energy Efficiency (P)</td>
<td>-9.14%</td>
<td>-20%</td>
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<tr>
<td>Energy Efficiency (G)</td>
<td>-4.8%</td>
<td>-10%</td>
<td>-50%</td>
<td>-25%</td>
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</table>
Energiewende: Highlights

Germany’s plan: switch from coal and nuclear to renewables
Electricity generation in Germany 2005–2050, scenario
Source: DLR and Fraunhofer IWES

Power production in terawatt-hours per year

- Conventional
  - Nuclear
  - Hard coal
  - Brown coal
  - Natural gas and oil
  - Cogeneration (gas and coal)

- Renewables
  - Biomass
  - Hydropower
  - Green hydrogen
  - Renewable imports
  - Geothermal
  - Wind power
  - Photovoltaics

German Energy Transition energytransition.de
Energiewende: Highlights

Installed net power generation capacity in Germany 2002–2016.
Data: Fraunhofer ISE 2016.
Changing Conditions

- Public Opinion on Surcharge
  - Transition from Feed In Tariffs to Auctions

- Need for Flexible Services
  - Balancing Markets Developing
  - Storage
  - Demand Side Management

- Energy Efficiency Investments Lagging
  - National Action Plan (NAPE)
  - Audits
What Stands Out

- Holistic Approach to Energy
- Political Leadership
- EUREF
- Citizen Action
  - Feldheim
- Balancing Labor Concerns
- New Political Pressures
  - Refugees
Feldheim

- Holistic Energy Solution
  - Wind
  - Biogass
  - Storage
- Citizen Driven
- Closed Loop
Comparing Transitions

- Political Climate
- Economic Climate
  - EUREF
  - Environment
- Energy and Transportation
- EUREF
- Labor and Refugees