Climate Change Challenges For Electric Utilities

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DTE Energy

Discussion Agenda

- **Is It Real?**
- **Why is it Important to Us**
- **Federal and States Legislative Efforts**
- **DTE Energy Efforts**
  - **Legislation**
  - **Technologies**
  - **Terrestrial Sequestration**
- **Principals and Policies to Guide Rules and Legislative Development**

Is it Real

- **Global average surface temperature have increased approximately 1 degree F over the past century**
- **CO2 concentration have shown steady increase since monitoring began in 1958 at the Mauna Loa Observatory in Hawaii**
- **From 315 PPM to 375 PPM in 2003**
- **Ice core analyses suggest that the CO2 increasing trend began with the Industrial Revolution and have increased significantly as a result of an increase use of all fossil fuels worldwide – coal, oil, natural gas, gasoline, etc.**

Why Is It Important To Us

- **The major greenhouse gases – CO2, CH4, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and Sulfur hexafluoride**
- **We burn Coal and distribute natural gas**
- **Will drive energy efficiencies**
- **Will drive Renewable energy**
- **Will have implication on building new power generation**
- **Could have significant cost impact on residential heating**
- **Implication for US Energy security**
- **Key industrial sectors in Michigan will be impacted**
- **Increase in energy cost**
- **Will drive new technologies**
- **Will drive business opportunities**

Federal, Regional and State Legislative Update

- **Federal**
  - **House – John Dingell, Chair of Energy and Commerce Committee**
    - **Working on climate change legislation**
    - **Possible House Bill by June – July 2008**
  - **Senate**
    - **Lieberman-Warner Bill**
    - **Bingaman-Specter Bill**

- **Regions**
  - **Northeast States initiatives**
  - **Midwest States initiatives**
  - **California initiative**

- **State**

  - **Michigan Climate Action Council Advisory Group**
    - **April 30, 2008, interim report**
    - **December 31, 2008 issue a comprehensive Climate Change plan for Michigan**

DTE Energy Actions to Avoid, Reduce or Offset GHG Emissions

- **Identify and implement energy efficiency improvement projects (on-system and for customers)**
- **Pursue renewable energy options (Green Currents and land options on 35,000 acres for wind development in Michigan to meeting potential RPS)**
- **Expand methane recovery operations (landfill and coal bed)**
- **Pursue forestry & agricultural offset opportunities**
- **Involved in carbon capture and storage technologies**
- **Increase nuclear utilization (have begun licensing efforts for new unit)**


THIS IS THE SOLUTION WE'VE DEVISED FOR DEALING WITH THE FLOODING CAUSED BY CLIMATE CHANGE.
Chris Madden

Implication on Water Usage

- **Lower water level could necessitate reduction in generation if insufficient water is available for cooling purposes for thermal electric power plants**
- **Higher water temperature could necessitate reduction in generation to comply with permit discharge requirement**
- **For hydroelectric power plants, reduced impoundment levels could lead to reduced generation**
- **Water availability and water levels influence power plant siting**
- **Water elevation will have implication on shipping of raw materials**

Principals and Policies To Guide Rules and Legislative Development

- **U.S. climate policy needs to:**
  - **Be an economy wide approach**
  - **Start modestly, grow with time and have a reasonable price certainty**
  - **Encourage technology development**
  - **Maintain and further develop a diverse energy base**
  - **Provide the majority of companies a viable path forward to deal with existing assets**
  - **Allow for unlimited use of emission offsets**
  - **Consider participation by developing countries**
  - **Affordable to customer**
  - **Address potentially overlapping Regional and state requirement**
- **Issues of concern regarding mandates**
  - **Baseline**
  - **Timing in light of technology needs**
  - **Economic impact vs. benefit concerns depending on action of the rest of the world (developing countries)**