“Never doubt that a small group of concerned citizens can change the world.”

“Indeed, it is the only thing that ever has.”

Margaret Mead

The Precautionary Principle:

“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”
National Energy Policy-Goals

- Provide dependable, affordable energy for the future
- Accelerate protection and improvement of the environment (implies protecting human health)
- Increase energy security (decrease reliance on foreign oil, e.g. OPEC)
- Price energy to reflect *true cost*

To Accomplish These Energy Goals, The Bush Administration Has Recommended ...

- Drilling for more oil, including the Arctic National Wildlife Refuge
- Budgets that have consistently reduced funding for renewable energy research
- Increasing our reliance on coal-burning power plants
More Drilling for Energy Security?

- U.S. cannot drill its way to energy independence
- America consumes 25% world’s oil (1/4 from OPEC), but possesses < 4% world reserves
- U.S. oil imports ~ 60% (47% 10 yrs ago)
- Import costs? Even prior to War in Iraq: $56 B oil + $25 B military defense of Middle East exporters + Federal subsidy for health / environmental impact ($250 B)

Another Alternative: Energy Efficiency

- Past 25 yrs “efficiency revolution” now “produces” > 4X energy of entire U.S. domestic energy industry (=10X Persian Gulf imports)

- How? Using less energy to do more work in smarter ways!
Energy Efficiency-
Better Buys are Hard to Find

- **ELECTRICITY COSTS** (cents / kW-hr 1996)
  - Coal 5-6
  - Natural gas 4-5
  - Hydro 5-11
  - Biomass 6-12
  - Nuclear 11-15
  - Wind 4-6

- Compare to cost of saving a kW-hr through efficiency: max 2¢

A Step Backward

- In 2001, the average U.S. car efficiency rating was 24 mpg => 20 yr record low

- Energy plan proposes to drill the Arctic Refuge, etc. to fuel our inefficient fleet

- Just boosting efficiency by 0.4 mpg = expected Arctic Refuge output
We Can Do Better (AND DID!)

- From 1979-85 new light vehicles gained 0.4 mpg every 5 months
- Trend ended with rollback of efficiency standards (wasting 1 Refuge’s output and doubling imports from Persian Gulf)
- If the efficiency trend had continued, we could have **STOPPED** all Persian Gulf oil imports

---

Mobility with Less Oil

- Fleet of Priuses (48 mpg) or Honda Insights (67 mpg) saves gas equal to 26 or 33x Arctic Refuge’s worth of crude oil.
- GM, Ford, Daimler-Chrysler-tested family sedans getting 72-80 mpg.
- VW “city” car in Europe gets 78 mpg (2003 model = 235 mpg)
- Chairs of 4 major oil companies: “start of oil end-game, dawning of H₂ Age”
Hypercar: Mid-Size SUV

- U.S. fleet would save enough gas = 42X Arctic Refuge’s worth of crude
- If used globally we’d save *ALL* the oil OPEC now sells

H₂ Fuel Cell Vehicles: The Future?

- Full fleet, when parked (96% of the time) = generating capacity to displace world’s coal and nuclear power plants 5-10x over
- Pay for themselves through electricity sales
- Could halt 2/3 of expected climate change, improve air quality
Achieving Energy Policy Goals

- Reaffirm U.S. support for international treaties to control GHG
- Emphasize Efficiency!  Eliminate Waste!
- Increase CAFÉ standards
- Increase funding for renewable energy sources
- Export our energy-efficient technologies to the developing world