

Building a Hydrogen Economy in Virginia – Virginia H₂ Roundtable

Joint Commission on Technology and Science
October 11, 2006

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Building a Hydrogen Economy in Virginia

This Virginia Hydrogen Plan was developed by the Virginia Hydrogen Economy Roundtable, a forum created in 2002 of representatives from more than thirty energy- and transportation-related industries, federal and Virginia government agencies, Virginia academic institutions, and non-governmental organizations.

Building a Hydrogen Economy in Virginia

- Hydrogen vision and the recommendations are from in-depth Roundtable discussions from late 2005 through the first half of 2006.
- The Plan provides three levels of actions that may be taken to support hydrogen development
 1. Commit significant resources
 2. Leverage existing efforts
 3. Stay informed and maintain current level of effort

Hydrogen Roundtable Vision

Hydrogen is one of America's and Virginia's clean energy choices. It is flexible, affordable, safe, domestically produced, used in many sectors of the economy throughout the Commonwealth. A hydrogen economy will support economic growth, environmental protection, and energy security.

Suggested Strategies

Major areas with recommended strategies include:

- Educating Virginia's K-12 Students
- University Research & Development
- Demonstration Projects
- Partnership Opportunities
- Policy Setting

Educating Virginia's K-12 Students

1. Commit resources for K-12 students
2. Implement pilot hydrogen curriculum & teacher training program for middle schools
3. Implement Green Box Program in K-12 schools

University Research & Development

1. Create a statewide Hydrogen Research and Development Consortium
2. Virginia universities to form a voluntary partnership
3. Virginia universities continue independent hydrogen R&D efforts

Demonstration Projects

1. Develop a Hydrogen Transportation Corridor along I-95 / I-64 in Virginia
2. Fund hydrogen demonstration projects
3. Pursue external funding opportunities with existing resources

Partnership Opportunities

1. Create a formalized Virginia Hydrogen Network
2. Join forces with existing hydrogen partnerships
3. Support existing hydrogen partnerships on request

Policy Setting

1. Designate a commission to serve as the Virginia hydrogen policy-setting entity

2006 Virginia Energy Policy Legislation and the Virginia Energy Plan

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Virginia Energy Policy Legislation

- **Genesis of the Energy Policy Legislation**

- Study of Future of Manufacturing in Virginia

- Gas supply limitations and costs

- High costs harms manufacturing

- Reported largest industrial gas user east of Mississippi in Hopewell

- Eastern Virginia is near the end of supply pipelines & relies heavily on the Gulf of Mexico

- Mid-Atlantic cost differential

Virginia Energy Policy Legislation

- **Major components of SB 262**
 - State energy policy statements
 - State energy objectives
 - Virginia Energy Plan
 - Energy conservation
 - Income tax deductions – Efficient equipment & fuel cells
 - Renewable electricity production & PV/solar/wind grants
 - Landfill/synthetic/waste gas state & local tax exemption
 - Offshore energy

Virginia Energy Policy Legislation

- **Major Components of SB 262**

- Dominion Virginia Power electric fuel factor annual recovery
- R&D framework – federal grants
 - VCCER Clean Coal
 - ODU Coastal Energy Research Consortium
- Coordinated SCC/natural resources permit process study
- State building energy efficiency
- Wind/solar site rating

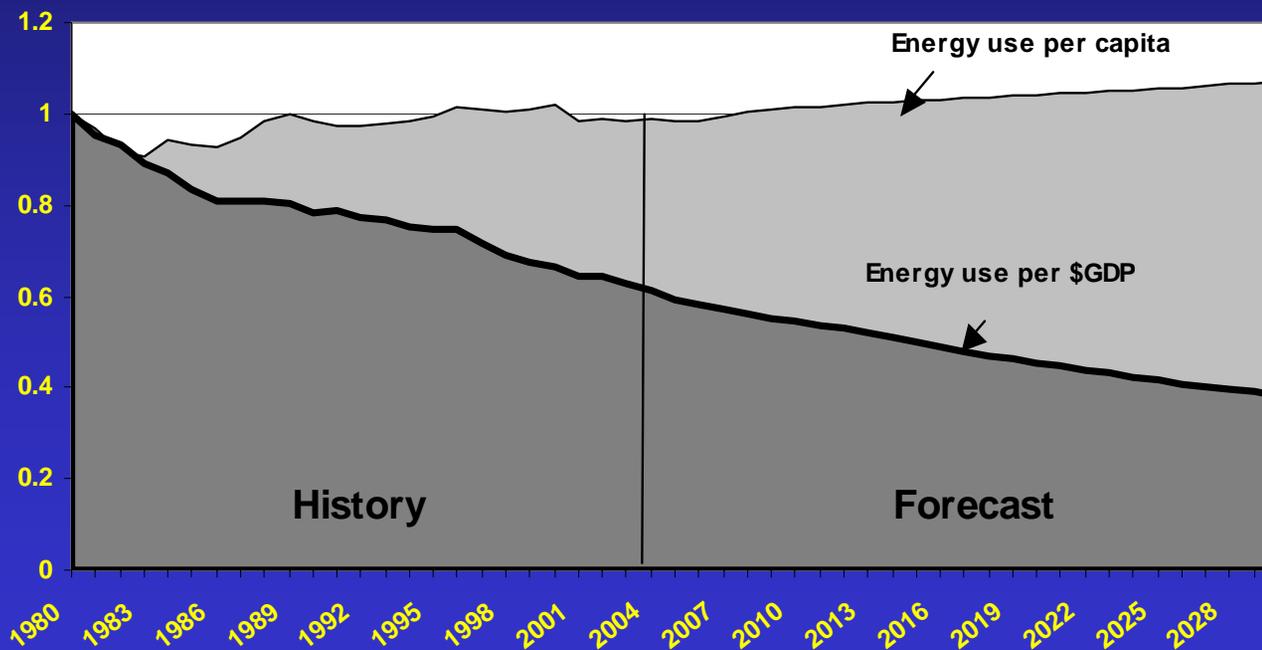
Virginia Energy Plan

- DMME to develop
- 10 year plan, updated every 5 years
- Legislative Coordination
 - Commission on Electric Utility Restructuring & Coal & Energy Commission
 - Joint Commission on Technology and Science & Manufacturing Development Commission
- Due by June 30, 2007

Virginia Energy Plan

Running in Place?

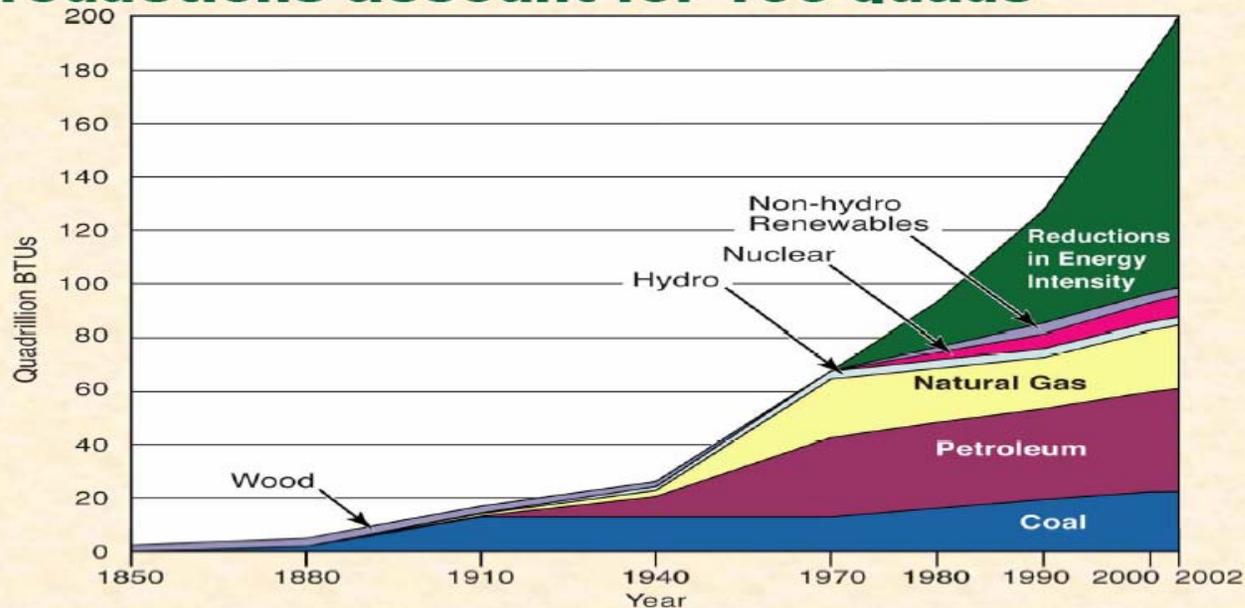
National Energy Use Per Capita and Per Dollar of GDP
(Index: 1980=1)



Virginia Energy Plan

Large Improvements From Conservation?

New physical supply has grown by 25 quads since 1973, energy intensity reductions account for 100 quads



Source: Marilyn Brown (2006)

OAK RIDGE NATIONAL LABORATORY
U. S. DEPARTMENT OF ENERGY

LIT-BATTELLE

Virginia Energy Plan

- **Input into plan**
 - Advisory group
 - 4 meetings
 - General public
 - Listening sessions & web-based comments
 - Agency input
 - State Corporation Commission
 - Department of Environmental Quality
 - Virginia Center for Coal & Energy Research
 - Other agencies and institutions
 - CIT / VRTAC
 - Review other plans

Virginia Energy Plan

- **Outline**

- I. Introduction
- II. Virginia Energy Sources & Consumption
- III. Energy Conservation & Efficiency
- IV. Virginia/Regional Energy Infrastructure
- V. Energy and Environment
- VI. Energy Research & Development
- VII. Conclusions & Recommendations

Virginia Energy Plan

- **Contact**

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