



Connecticut Center for
Advanced Technology, Inc.

Testimony of

Joel Rinebold

Director of Energy Initiatives

Connecticut Center for Advanced Technology, Inc.

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before

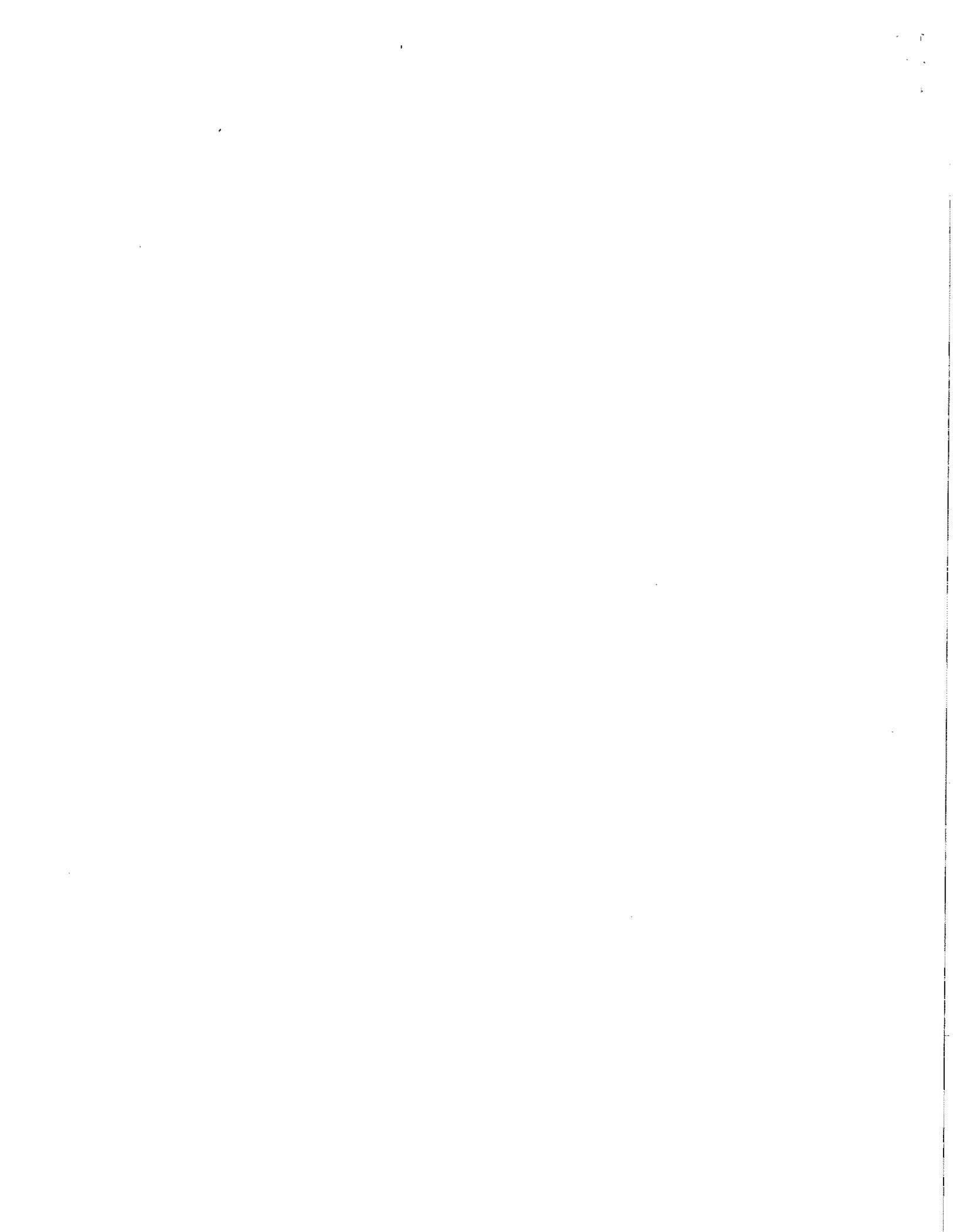
Transportation Committee

February 4, 2013

regarding

Proposed House Bill No. 6055

An Act Promoting the Use of Fuel Cells In Vehicles



The Connecticut Center for Advanced Technology, Inc. ("CCAT") offers this testimony in support of Proposed H.B. No. 6055 - An Act Promoting the Use of Fuel Cells In Vehicles

The Connecticut Center for Advanced Technology, Inc. (CCAT) is a nonprofit corporation that provides services and resources to entrepreneurs and businesses and, through collaboration with industry, academia, and government, helps companies innovate and compete in the global market. CCAT implements programs that improve the economic competitiveness of the region through solutions that lower energy costs and increase long-term energy reliability. CCAT undertakes energy planning, and promotes renewable energy, including advanced technologies and sustainable fuels such as hydrogen.

CCAT and the Department of Transportation, in partnership with the Department of Economic and Community Development (DECD) and other members of the Connecticut Hydrogen-Fuel Cell Coalition, developed the Connecticut Hydrogen and Fuel Cell Deployment Transportation Strategy: 2011-2050. This strategic plan was provided to the Legislature by the Connecticut Department of Transportation in January 2011.

CCAT supports this bill that seeks to implement recommendations from the strategic plan (see attached), including a recommendation for the purchase and operation of a minimum of 1% (40 vehicles) of the state fleet of light duty passenger vehicles with hydrogen fueled vehicles and 1% (10 buses) of the transit bus fleet with hydrogen fueled bus vehicles by 2015, increasing to 10% for both light duty passenger vehicles (400 vehicles) and transit buses (100 buses) by 2025.

The use of alternative fuels, such as hydrogen, and fuel cell technology in the state's fleet is consistent with the goals for Connecticut identified in the state's Hydrogen Roadmap and the state's Hydrogen and Fuel Cell Deployment Transportation Strategy.

The deployment of hydrogen-fueled vehicles and hydrogen infrastructure will provide the following benefits:

- Retain and expand Connecticut jobs associated with production of fuel cells, fueling stations and infrastructure products including component sub-assemblies, original equipment manufacturing and long term product support;
- Attract automobile and bus companies to demonstrate and deploy hydrogen-fueled vehicles in Connecticut;

- Accelerate commercial readiness and commercial deployment of hydrogen technology and fuel cell vehicles in Connecticut;
- Reduce controlled pollutant and greenhouse gas (GHG) emissions, reduce noise, and increase energy security and efficiency; and
- Position Connecticut to capture federal and other grant funding for research, development, demonstration and deployment of hydrogen infrastructure and fuel cell vehicles.

Fuel cell vehicles provide significant benefits over conventional vehicles.

Fuel cell vehicles, like electric vehicles, are propelled by electric motors utilizing the fuel cell to create its own electricity using hydrogen fuel and oxygen from the ambient air. Today, fuel cells successfully power cars, trucks, buses and other service vehicles such as forklifts. Compared to conventional vehicles, hydrogen-fueled vehicles with fuel cell power plants have many advantages, including:

- high efficiency;
- no emissions of controlled pollutants such as nitrous oxide, carbon monoxide, hydrocarbon gases or particulates from the vehicles themselves;
- no emissions of greenhouse gases (GHG) from the vehicles themselves;
- substantial reduction in GHG emissions on a “well-to-wheel” basis;
- fewer parts resulting in lower maintenance;
- ability to fuel vehicles with indigenous energy sources;
- greater range than all-electric or battery powered vehicles; and
- quiet operation.

Connecticut companies are currently involved with the development and manufacture of fuel cells and hydrogen fuel infrastructure.

Connecticut’s fuel cell and hydrogen companies have expertise in fuel cell systems for stationary power and transportation, and hydrogen generation and distribution. These products include fuel cell systems for transit buses; fuel cells systems to provide electricity for transit operations; electrolysis systems to convert water to hydrogen fuel; fuel reformers for on-board conversion of conventional fuels to hydrogen fuel; combined heat, power, and hydrogen production; and the infrastructure to store and deliver hydrogen for transportation use. In 2011, Connecticut’s hydrogen and fuel cell industry had revenue and investment grow to \$610 million, employment increased to 2,693 full-time and part-time jobs, and labor income increased to \$211 million.

Conclusion

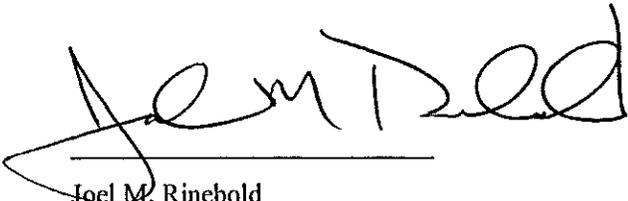
The Connecticut Center for Advanced Technology is supportive of this Bill that would establish goals for the use of fuel cell vehicles in the state's fleet, including light duty passenger vehicles and transit buses. These fuel cell vehicles could potentially utilize the four hydrogen refueling stations that will be located in the state near Hartford and New Haven. The use of fuel cell vehicles fueled by hydrogen would improve energy efficiency, reduce consumption of imported oil, improve environmental performance, and enhance near-term and long-term economic development. The use of fuel cell vehicles would accelerate the commercial deployment of hydrogen-based technology and provide jobs and economic benefits to the state of Connecticut.

Having developed the Hydrogen Roadmap and Connecticut Hydrogen and Fuel Cell Deployment Transportation Strategy, in partnership with the state, CCAT is uniquely qualified and well staffed with the technical expertise to facilitate the deployment of fuel cell vehicles and hydrogen fueling infrastructure. CCAT looks forward to working with the Connecticut Department of Transportation, the hydrogen and fuel cell industry, and other interested stakeholders to expeditiously deploy fuel cell vehicles and hydrogen refueling stations in the state.

CCAT will make itself available to the Committee and legislature upon request to provide or clarify information in the state's hydrogen and fuel cell transportation plan. CCAT would be pleased to be considered a resource to assist in the development of a fuel cell vehicle deployment program for Connecticut.

Respectfully submitted,

CONNECTICUT CENTER FOR ADVANCED TECHNOLOGY, INC.

A handwritten signature in black ink, appearing to read "Joel M. Rinebold", written over a horizontal line.

Joel M. Rinebold

Director of Energy Initiatives, CCAT

Summary of Recommended Strategies

The following recommendations are intended as a menu of options to consider in support of Connecticut's hydrogen and fuel cell industry:

- Encourage the Department of Transportation and the Department of Administrative services to begin to identify locations clustered around existing transit operations, vehicle fleets, and major transportation routes in and around the following towns and cities to support the recommended deployment schedule for hydrogen fueling, as follows:

<i>Site</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>
Hartford	✓		
New Haven/Hamden	✓		
Stamford	✓		
Wallingford	✓		
Danbury		✓	
Norwich		✓	
Meriden/Waterbury		✓	
Willimantic		✓	
Torrington			✓
New London			✓
Bridgeport			✓
Danielson			✓

- Establish a state goal for the purchase and operation of a minimum of 1% (40 vehicles) of the state fleet of light duty passenger vehicles with hydrogen fueled vehicles and 1% (10 buses) of the transit bus fleet with hydrogen fueled bus vehicles by 2015, increasing to 10% for both light duty passenger vehicles (400 vehicles) and transit buses (100 buses) by 2025, subject to vehicle availability and funding.
- Begin process for approval of official State signage posted on Interstate exits for hydrogen refueling stations.
- Provide incentives for the purchase and use of fuel cell vehicles, including but not limited to sales tax exemptions, local property tax exemptions, and high occupancy vehicle lanes use.