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Testimony of UTC Power
In Support Of
Raised Bill No. 6650
An Act Concerning Zero Emission Buses

Before the Transportation Committee
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Good morning Senator DeFronzo, Representative Guerrara and members of the Committee. I am Ken Stewart, Vice President, Transportation at UTC Power. UTC Power appreciates the opportunity to convey its support for Raised Bill No. 6650, *An Act Concerning Zero Emission Buses*. The bill directs the Department of Transportation to establish a fleet of zero emission transit buses in Connecticut and directs that at least 10% of all new buses purchased through June 2014 be zero emission buses.

Connecticut is in a unique position, both on a national and global level. Connecticut is home to both of the world leaders in fuel cell technology for large stationary applications, is home to the world leader in fuel cells for heavy duty vehicle applications and has companies with technology that lead hydrogen applications in transportation, standby power and hydrogen generation. Connecticut has a wealth of talent in the technologies that are necessary to move the world toward a hydrogen-based energy economy and away from an energy economy that is dominated by imported petroleum. In addition, Connecticut, because of its geographic size and location, has the opportunity to quickly assume the global leadership in demonstrating how hydrogen can drive the economy, improve the environmental condition of the state, address climate change concerns and reduce the exposure of its citizens to the harmful effects from combustion of diesel fuel for transportation.

Raised Bill 6650 will improve the environment of the urban population in Connecticut through the introduction of a fleet of zero emission transit buses and will stimulate growth in an industry that is indigenous to the state and fosters significant economic development. Not only does the fuel cell industry in Connecticut today ensure that the State has a significant place in the future hydrogen economy, but Connecticut is home to the only U. S. company that produces fuel cells for transit bus applications.

Background on UTC Power's PureMotion® Fuel Cell System for Transit Buses

I'd like to provide the Committee some brief background on UTC Power's experience in fuel cell bus power systems. UTC Power's current PureMotion® 120 fuel cell power system (FCPS) for transit buses represents more than six years of Connecticut-based UTC research and development in partnership with the U.S. Department of Defense through the. U.S. Army Tank, Automotive and Armaments Command (TACOM), and the U.S. Department of Transportation.

We have been supplying fuel cell bus power systems since 1998 for programs in Washington, D.C., California, Spain and Italy and more recently in Belgium and Connecticut. Today, we have six of our latest generation buses on the road: four in California, one in Belgium and one here in Hartford, Connecticut. Two years ago, New England's first zero-emission fuel cell-powered hybrid bus made its debut at the Connecticut Convention Center and entered CT Transit service, Connecticut's state-owned bus system. Connecticut is home to New England's only hydrogen fueling facility at UTC Power's location in South Windsor. Operation of the bus is funded by the Connecticut Department of Transportation. Recently through the Federal Transportation Administration (FTA), a contract was signed that will have four more fuel cell powered buses delivered to CT Transit in late 2009 and early 2010. In addition, a contract was signed with AC Transit, also through the FTA, for 12 more buses, eight to increase the size of their fleet and four designated for a new fuel cell bus operator. As of January 2009, the UTC Power bus fleet of six buses had accumulated 26,344 hours and 269,267 miles of successful operational service. The success with fuel cell buses to date belongs not just to UTC Power but rather to committed public-private partnerships, including stable funding sources, and state and federal partnerships help insure such stable funding. It is these public-private partnerships that create the market, jump start the essential elements of the supply base and enable the commercialization of early stage products.

Benefits of Fuel Cell Buses

The benefits of fuel cell buses are evident to everyone who takes a ride on one or simply stands on the street when one goes by.

Zero Emissions. Fuel Cell buses have zero emissions - no soot and no smog forming pollutants. Transportation with no NOx, SOx or particulate matter is especially important in densely populated urban centers where concerns about street level emissions, and its health effects, are heightened. Zero emissions also mean no CO2 emissions, which will contribute to Connecticut's climate change goals. The only thing that exits in a fuel cell bus tail pipe is water vapor. This means immediate positive impact on street level emissions and the beginning of improvement of the health of those in the vicinity of transit traffic. Studies in both California and in Europe have tied significant health impacts and related costs to the particulate emissions of transit bus fleets. Eliminating the particulate emissions will improve the health of our citizens and contribute to an overall reduction in health care costs.

A point of comparison to illustrate the environmental benefits of one fuel cell-powered bus versus a diesel bus: just one PureMotion® 120 fuel cell power system reduces NOx emissions equivalent to removing 77 cars from the road per year and creates the same CO2 benefits as would planting 31 acres of forest.

Quiet Operation. Fuel cell buses are incredibly quiet. The inside cabin noise is similar to a luxury sedan. This provides comfort for passengers and increases their inclination to take a bus instead of their own car. Exterior noise is comparable to a golf cart, which significantly reduces noise pollution in our Connecticut communities. When UTC Power brought a fuel cell bus here to the State Capitol a number of years ago, the universal reaction of legislators and others who came by to take a short ride around the block was exactly what we hear from people who ride our fuel cell buses in California or Belgium. They ask whether the bus is actually operating since they can't see, hear or smell anything.

Energy Security and Productivity. A fuel cell bus operating on hydrogen reduces dependence on foreign oil and provides a more diverse, secure energy infrastructure. Hydrogen can be produced from a variety of sources and Connecticut has a number of companies, including UTC Power, that have advanced technologies for generating hydrogen through a reformation process or through the process of electrolysis. A fuel cell hybrid bus delivers approximately twice the fuel economy of conventional diesel powered buses. The fuel cell bus can go 300 - 350 miles without refueling. The carbon footprint of the bus operating in Connecticut today is simply the diesel truck used to move the hydrogen from its point of generation near Niagara Falls using hydroelectricity, to Connecticut. The cost of a "gallon" of hydrogen is also comparable to the cost of a gallon of diesel fuel.

Traffic Congestion Mitigation. Connecticut's traffic congestion problems are significant, and in some areas, acute and growing. This problem imposes costs. Moving people out of cars and onto fuel cell buses will help alleviate traffic congestion, and do so in a way that contributes to the state's climate change solutions and air quality goals. Reducing the number of personal auto commuters cuts environmental impact once, putting them on fuel cell powered buses more than doubles the benefit. Part of the transit activity that must be addressed is how to make commuting on fuel cell buses the preferred transit method for many of the state's residents. With their clean operation and quiet interiors, fuel cell buses provide an inviting platform for other enhancements that may entice ridership, including amenities that might make a bus trip a productive journey instead of unproductive commute time.

These tangible and diverse benefits leave no question why the Federal Transit Administration's expressed desire is to have fuel cell buses represent a significant percentage of new U.S. transit bus purchases by the year 2015. We urge your favorable consideration of Bill 6650's 's call for transit buses powered by fuel cells to make Connecticut a global leader in achieving these benefits for its citizens and its economy.