



Doosan Fuel Cell America, Inc.
195 Governor's Highway
South Windsor, CT 06074
T - 860 727 2200

Testimony of David Giordano, Federal & State Government Relations

Doosan Fuel Cell America, Inc.

Energy & Technology Committee

Support for Governor's Bill – HB 7036

February 21, 2017

Chairwoman Reed; Chairmen Winfield and Formica and other members of the Committee:

Doosan Fuel Cell America appreciates the opportunity to provide comments regarding **Governor's Bill HB 7036 – An Act Promoting the use of Fuel Cells for Electric Distribution System Benefits and Reliability**. Doosan strongly supports the concepts raised in this Bill that would allow electric distribution companies to acquire fuel cell generating capacity for the purpose of providing system benefits such as the avoidance of system upgrades, enhancing reliability, as well as making efficient use of existing sites and supply infrastructure.

Doosan Fuel Cell America is a global leader in providing clean, continuous-duty, cost-competitive stationary fuel cell energy systems. Our PureCell[®] systems operate 24/7 with high efficiency and ultra-low emissions, allowing our customers to generate their own electricity and heat on-site while reducing their utility expenses and environmental emissions. With over 12 million fleet operating hours, PureCell[®] phosphoric acid fuel cell (PAFC) systems have demonstrated unparalleled durability and reliability.

Doosan Fuel Cell America was founded in 2014 on the strength of the people and technology developed at United Technologies over the past fifty years. We are building on the value of the organization and aspire to be the technology and market leader in the fuel cell industry. Our headquarters are in South Windsor, CT at the site of our world-class fuel cell R&D and manufacturing facilities where we currently employ 300 people with plans for expansion.

Doosan Corporation is global company with 42,000 employees and worldwide revenue of more than \$20 billion. Our global businesses span a range of products and services in infrastructure support and power generation, including nuclear power, steam turbines, power plant boilers, water desalination, construction equipment, machine tools and engines for a variety of applications. Doosan's U.S. operations include Bobcat Company construction equipment and total over 3,000 employees and \$3 billion annually.

The State of Connecticut is one of the most important markets for the emerging fuel cell sector, and fuel cells are contributing greatly to State's goals of reducing greenhouse gas emissions, reducing peak load, and improving the reliability of the electric utility system. Doosan fuel cells



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are currently supplying clean and secure power to a diverse set of customers in a variety of industries across Connecticut such as hospitals, universities, industrial manufacturers, municipalities and high schools, supermarkets, residential buildings and waste water treatment facilities.

Stationary fuel cell applications offer these customers throughout the State a clean and efficient method of producing energy that provide resiliency, reliability and price stability, while reducing stress on the electric grid. A wider deployment for distributed generation (DG) will lead to clean, efficient electric generation and will alleviate the need for additional transmission facilities, when developed where the demand is needed.

Doosan has significant experience in multi-MW fuel cell projects. Our PureCell[®] Model 400 system is highly scalable and can be used effectively to generate electricity from 460 kW up to 50 MW and more. Our largest operating site is 30 MW installed in Busan, South Korea in 2016. This project, along with several others currently operating as well as in the pipeline in Korea, will total more than 85 MW when complete in the next few years.

As a recognized Class I renewable energy source fuel cells are an ideal solution for this type of procurement. By operating with no combustion, fuel cells have negligible emissions of criteria air-pollutants such as NO_x, SO_x, CO, VOCs, and particulate matter. Also, by operating with high electrical and overall CHP efficiencies, and with high reliability and capacity factor, 20 MW of Doosan fuel cell systems, operating as an electric-only generator in Connecticut, would provide the following benefits annually on less than 2 acres of land:

- 19,200 metric tons avoided GHG emissions (compared to New England's fossil-fueled energy resources)
 - Equivalent to planting over 4,400 acres of trees
- 73 metric tons avoided NO_x emissions
 - Equivalent to removing approximately 4,200 cars from the road
- 336 metric tons avoided SO_x emissions
- 150 billion gallons of water savings for the region (compared to water consumption of utility power generation in New England)
 - Equivalent to 228 Olympic-sized swimming pools

Doosan appreciates the opportunity to weigh in on this critical piece of legislation. However, we would suggest expanding the aggregate fuel cell generating capacity beyond the 10 MW allowed. Our company remains committed to the Connecticut market for cleaner, cheaper and more reliable energy and we look forward to continuing this discussion.