845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

Statement of the Connecticut Green Bank
on House Bill 5510
AN ACT CONCERNING ELECTRIC, ZERO EMISSION AND FUEL CELL ELECTRIC VEHICLES.
March 10, 2016

As the nation's first green bank, the Connecticut Green Bank ("Green Bank") leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Connecticut's residents, businesses and institutions now have easier access to affordable capital to finance clean energy projects. We play an essential role in reducing the costs of clean energy investment, increasing private capital investment, and lowering costs to consumers. The Green Bank looks forward to supporting the legislature's and Governor's vision of cleaner, cheaper and more reliable energy sources for Connecticut – while creating jobs and supporting local economic development.

Connecticut has multiple policy underpinnings supporting action on clean transportation policy. Connecticut is a signor of the eight-state[1] Multi-State ZEV Action Plan[2] released in May 2014. These states have collectively committed to having at least 3.3 million Zero-Emission Vehicles ("ZEVs") operating on their roads by 2025. Just last month Connecticut also entered into the Governors' Accord for the New Energy Future, which among other things supports market expansion for alternative fuel vehicles and infrastructure.[3] With a "Global Warming Solutions Act" policy goal of reducing GHG emissions by 80 percent from 2001 levels by 2050, and transportation related emissions being the most from any sector at 40 percent, support for ZEV policy is important.

The Green bank supports HB 5510 as a way to continue moving Connecticut down the early road to a longer-term electrification of the state's transportation sector.

The Need for Public-Sector Intervention

Society bears substantial cost for pollution generated from the transportation sector, warranting continued public support for alternative fuel vehicles (AFV)s and infrastructure. Automakers are accessing billions of dollars in federal loan guarantees through the Department of Energy to continue advancing AFV performance technology. However without a critical mass of vehicles yet using these

[1] Other states include California, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont.
[2] http://www.zevstates.us/
[3] http://www.governorsnewenergyfuture.org/the-accord/

charging stations there is a revenue risk associated with low utilization. This has historically represented a gap in the ability to secure low-cost capital.

Connecticut's goals in transitioning to the use of AFVs are ambitious. Existing public funding is insufficient to meet these goals, and government resources are perpetually strained. Further, the private sector has problems making ZEV infrastructure investable, given the revenue risks that accompany low up-front utilization of such infrastructure; there is also a likely need for multiple indirect revenue sources to be captured in the business models for infrastructure hosts, given that charging revenues might not be sufficient to pay back the capital cost of installation. The Green Bank considers itself well-positioned to be one solution to addressing these issues.

New models of ZEVs are under development, and in the next few years several electric vehicles with 200-mile ranges will become available at mass-market prices in the $30,000 range. Even compared with today's gasoline prices, the economics of refueling with alternative fuels like electricity are very good. Ongoing maintenance costs are a fraction of those of conventional vehicles, given there are far fewer moving parts in the engine and less fuel is wasted creating heat and friction that wear parts down faster. With attractive mass-market offerings on the way Connecticut should continue its preparations to modernize around the arrival of these vehicles.

The consumer uptake of alternative fuel vehicles (AFVs) in the decades to come is broadly seen to be a "jump ball" between electric vehicles and hydrogen fuel cell vehicles, with electric vehicle infrastructure having gotten a head start. For simplicity's sake, the remainder of this testimony will refer to ZEVs as being inclusive of electric vehicles and hydrogen fuel cell vehicles, although some terms may typically only apply to one or the other (e.g., "charging" versus "refueling").

Addressable Markets

The vast majority of charging events occur either at a driver's home or at their place of work. Employees of a company with a visible charging station are much more likely to purchase a ZEV. Congress seemed to recognize this with a recent funding reauthorization that extended until the end of 2016 the 30% tax credit for the costs of electric vehicle service equipment and installation, both for homes and businesses.[4] Given this, the Green Bank will endeavor to fill market gaps in the residential and business sectors in a way that increases consumer activity around ZEVs, in addition to engaging on public charging opportunities.

- **Residential 1-4 unit single-family** – Consumers wishing to charge a ZEV at home within a reasonable amount of time will require installation of charging equipment that can accept a charge from a 240v outlet[5] rather than a simple wall plug. In most cases this installation will be

[4] Included in the Fixing America's Surface Transportation (FAST) Act in December, 2015. The Act also requires the U.S. Department of Transportation to designate national electric vehicle charging and hydrogen, propane, and natural gas fueling corridors. For more information: https://www.navigantresearch.com/blog/u-s-federal-government-expands-ev-charging-infrastructure-support

[5] 240v outlets are commonly used for large electric appliances such as clothes dryers and ovens.

permanently affixed to the property as either a hardwired charging station or as an external outlet. California residents interested in financing this improvement over time are encouraged to consider Property Assessed Clean Energy (PACE) financing as one option. It is worth noting that the Green Bank has proposed Residential PACE legislation to enable this product in Connecticut as well, for consideration during the 2016 Regular Legislative Session.[6]

- **Multi-Unit Developments** – The Green Bank is working to democratize access to the benefits of clean energy, which in the case of transportation means increasing ZEV accessibility to low-to-moderate income residents who pay proportionally more on transportation costs. There is substantial overlap between multi-unit developments and the rental market, and in census tracts below 80% of the area median income 67% of those households are renters. Thus there is huge untapped potential in developing the market by placing charging infrastructure in multi-unit developments.

  Our Commercial PACE financing tool is an option for building improvements[7]. However, a key test for the appropriateness of Commercial PACE financing is that the savings over time are greater than the required investment; while ZEVs create fuel, maintenance, and greenhouse gas savings, they would also increase the electrical use of the building rather than decrease it. The Green Bank will continue considering appropriate programmatic courses of action to address financing charging equipment as a property improvement, given that electrifying transportation is a net energy saver.

- **Fleets** – Fleet conversion for governments and organizations can help reduce operating expenses, especially when vehicles are in regular use traveling predictable routes. Larger US cities have begun engaging companies with an upstart business model resembling energy savings performance contracting, but applying it to vehicle fleet electrification and optimization. The Green Bank can use its current credit enhancement tools to help such companies make the decision to operate in Connecticut, perhaps working first with larger cities or with the State itself.

- **Public Charging** – As ZEVs become more affordable and range increases, consumers will become more dependent on public charging for longer trips. Thus newer model ZEVs will actually necessitate more and not fewer public chargers. Viable public charging projects require the brokering of partnerships and value capture from multiple sources. The Green Bank is equipped with the tools to engage these markets, and looks forward to playing a role.

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[6] House Bill 5563, An Act Concerning Residential Property Assessed Clean Energy, received a hearing in the Banking Committee on March 8, 2016. The Green Bank is working to ensure consensus with stakeholders in the banking industry before this proposal is considered by the Energy and Technology Committee.

[7] http://www.greentechmedia.com/articles/read/PACE-Has-Been-a-Driver-of-Solar-and-Efficiency.-Can-It-Work-for-Electric-Ve

Green Bank Capabilities

The Green Bank is currently conducting a scoping study on the uptake of ZEVs in Connecticut, which will inform our sense of the market's potential. The results may also suggest other focus areas for us.[8] This study will be released in mid-2016.

The Green Bank has been a catalyst for growth in other clean-tech sectors – namely distributed solar PV. We plan to imbue the ZEV infrastructure market in Connecticut with the same scalability, resulting in less public subsidy need over time.

Potential Roles for a Green Bank in ZEV and ZEV infrastructure deployment:

1. **Solarize EV** – The Solarize CT program uses community campaigns along with a group purchasing model to lower the cost of residential solar PV. The Green Bank could run a similar campaign through auto manufacturers or retailers to lower the purchasing cost of ZEVs in return for generating consumer demand.[9]

2. **Credit Enhancements** – The Green Bank's suite of financial tools available to it can help attract investment and business activity. These include loan guarantees, loss reserves, and subordinated debt investment.

3. **Convener/Broker** – Other roles of a green bank including bringing parties together to create dialogue that advances clean energy industries, and brokering the public-private partnerships that enable value capture from multiple revenue sources. An example deal might join 1) an investor providing upfront capital with 2) the Green Bank investing in a subordinate position in the capital stack, with 3) a tax equity investor that is able to monetize the federal or state tax credits for renewable energy projects. A more valuable role however would be to create a scalable model with replicable deals[10], creating vehicles for returns on investment and recycling of public dollars. In this the Green Bank may be an aggregator of numerous small projects as we currently are with solar deployment.

The Green Bank looks forward to continuing its service in innovating toward a clean energy future. We support the aims of the Connecticut Electric Vehicle Coalition, and hope to be helpful in advancing the objectives of state policymakers.

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[8] i.e., by vehicle usage class, fuel and infrastructure type, ownership sector, etc.

[9] http://blog.rmi.org/blog_2015_10_29_what_electric_vehicles_can_learn_from_the_solar_market

[10] As one example, California in recent years has developed an Electric Vehicle Charging Station Financing Program: http://www.treasurer.ca.gov/cpcfa/calcap/evcs/