ALASKA STATE LEGISLATURE
HOUSE SPECIAL COMMITTEE ON ENERGY
March 28, 2017
10:23 a.m.

MEMBERS PRESENT

Representative Adam Wool, Chair
Representative Ivy Spohnholz, Vice Chair
Representative Dean Westlake
Representative DeLena Johnson
Representative Jennifer Johnston

MEMBERS ABSENT

Representative Matt Claman
Representative George Rauscher

COMMITTEE CALENDAR

PRESENTATION: CONNECTICUT GREEN BANK

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

CHRIS ROSE, Executive Director
Renewable Energy Alaska Project (REAP)
Anchorage, Alaska
POSITION STATEMENT: Presented a brief overview of the Connecticut Green Bank.

BERT HUNTER, Chief Investment Officer
Connecticut Green Bank
Rocky Hill, Connecticut
POSITION STATEMENT: Presented a PowerPoint titled "Connecticut Green Bank.

ACTION NARRATIVE

CHAIR ADAM WOOL called the House Special Committee on Energy meeting to order at 10:23 a.m. Representatives Wool, Spohnholz, Westlake, Johnston, and Johnson were present at the call to order.

[Due to technical difficulties, the call to order and the announcement to the order of business were not recorded.]

CHAIR WOOL announced that the only order of business would be a presentation by the Connecticut Green Bank.

10:23:00 AM

Presentation: Connecticut Green Bank

CHRIS ROSE, Executive Director, Renewable Energy Alaska Project (REAP), reported that the Renewable Energy Alaska Project (REAP) was a coalition of 80 statewide organizations focused on the promotion of clean energy, energy efficiency, and renewable energy. Since 2008, REAP had supported a number of successful programs, including the Alaska Housing Finance Corporation programs for weatherization or rebate. He noted that more than 40,000 homes had been weatherized through the program, with an average savings of 30 percent. He shared that the AHFC estimate was for a heating oil savings of more than 25 million gallons every year. He pointed out that this money saved was staying in the Alaska economy. He reported on an additional 60 projects which were saving 30 million gallons of diesel annually. He noted that these projects successfully kept dollars in the Alaska economy. In order to keep this momentum, even in times of a tight state budget, he suggested it was necessary to leverage private money. He estimated that Alaskans paid $5 billion annually for energy, which included transportation, heating, and electricity. He pointed out that, as the residential industry had saved 30 percent in costs, a 20 percent savings for the commercial industry would keep another $1 billion in the Alaska economy. He pointed out that this investment would also create many jobs. He described the Connecticut Green Bank program as a catalyst for these programs, noting that this was the first green bank established in the United States, in 2011. He declared that this program had tremendous success, and he reported that the Connecticut Green Bank was not competing with the private sector, but was, instead, allowing the private sector easier access into the markets.

10:26:54 AM

BERT HUNTER, Chief Investment Officer, Connecticut Green Bank, offered some background about the program, and reported that the Connecticut Green Bank was formed in 2011 by the Governor of the State of Connecticut and the state legislature. He stated that the energy policy spoke to reducing the energy burden on businesses and residents, as well as benefitting the economy and the environment. He said that the Connecticut clean energy fund was established in 1999. He reported that the Connecticut Green Bank had done more than $1 billion of investment, more than three times the amount of investment from the clean energy fund, in less than half the time. He explained that the focus of the Green Bank was to attract more private investment for clean energy deployment by partnering with financial institutions. He declared that the Green Bank offered the financing to encourage more private investment for clean energy, which included energy efficiency, solar, oil to gas conversions, electric charging, fuel cells, small hydro, and wind. He said that public dollars were used to attract local banks, credit unions, national lenders, and global financial institutions to provide businesses, consumers, municipalities and schools with access to affordable capital to solve the clean energy needs. He stated that the financial institutions were now contacting the Green Bank for partnerships, as the Green Bank offered programs and financial products to help the citizens of the state achieve their own energy conservation and energy choice goals while helping the state meet its ambitious environmental goals. He pointed out that these improvements helped the industrial manufacturers become more competitive as it lowered energy costs, and that homeowners could upgrade to cleaner and more efficient energy. He added that the Green Bank also helped businesses and communities invest in micro grids. He shared that there was support for economically challenged communities, as energy costs often consumed up to 25 percent of income. He said that the Green Bank worked with the social service agencies to lower the energy costs of families with fixed income. He declared that all of these programs had "an enormous impact on economic development for the state." He reported that the $1 billion of investment by the Green Bank represented 12,500 direct and indirect job years. He reminded that a reduction in energy costs allowed for more local investment.

10:33:11 AM

REPRESENTATIVE JOHNSTON asked how the Connecticut Green Bank incorporated federal tax credits and federal programs.

MR. HUNTER replied that federal tax credits for solar were used through a solar fund, established with U.S. Bank and Key Bank. This enabled the Connecticut Green Bank to provide power purchase agreements and solar leases to homeowners and small businesses.

REPRESENTATIVE JOHNSTON asked what percentage of the $1 billion investment was dependent on the federal programs.

MR. HUNTER opined that it was currently about 50 percent, although it was decreasing. He said that the Green Bank also managed an incentive program which provided funding to homeowners and third-party owners.

CHAIR WOOL asked about the proportion of investment for in-state energy consumption.

MR. HUNTER offered his belief that about 30 percent was for commercial and industrial, with about 70 percent for residential, including multi-family.

REPRESENTATIVE JOHNSON questioned the amount of federal investments. She asked if the U.S. Department of Energy (DOE) focused primarily on nuclear power, and if there was any contribution toward green programs.

MR. HUNTER said that the DOE incentivized through co-investment to have innovation and energy efficiencies. He offered an example of a high efficiency fuel cell in the pilot phase and stated that DOE would lend funds to the developer to make this a commercialized process. He stated that DOE had a number of energy investment programs, related to the American Recovery and Reinvestment Act (ARRA) of 2009. He opined that most of those programs were "being wound up right now."

MR. HUNTER addressed slide 2, "Agenda," and shared that he would speak about the Green Bank, its basics, its benefits and impacts, and its projects and program examples, as well as the Green Bank movement. He moved on to slide 3, "About Us," and stated that the Green Bank had been formed with a $60 million capital base, currently had $175 million in assets, and focused on clean energy and energy efficiency. He explained that it was supported by a slight surcharge, $0.001 per kilowatt hour, on everyone's electric bill, which was about $27 million annually. He added that they participated in a regional greenhouse gas initiative which generated about $5 million annually. He pointed out that there was also portfolio income of about $2 - 3

million annually. He said that the Green Bank applied to the federal government for funding through various initiatives, including ARRA, and also received funding from private foundations.

MR. HUNTER offered demographics for the State of Connecticut, slide 4, and compared the high costs of electricity in both states, slide 5, "Connecticut & Alaska." He listed the challenges which drove the formation of the Connecticut Green Bank, slide 6, "Five Macro Energy Challenges," which included high energy costs, old, energy inefficient buildings, a need for cleaner, cheaper energy sources, grid reliability, and constrained government spending.

REPRESENTATIVE JOHNSTON asked about Connecticut's dependence on natural gas.

MR. HUNTER replied that the natural gas came from across the Hudson River, and, as the pipelines were established and fixed, there was no new capacity. He relayed that, in winter, there can be constraint which causes the price for natural gas to spike, which had a ripple effect on electricity prices.

10:43:41 AM

MR. HUNTER shared slide 7, "Green Bank Basics" and said that it could be sponsored by any government, which established capital for the Green Bank, in order to mitigate the risk for private investors. He said that this allowed for the low carbon projects to be developed for substantial energy efficiency in renewables.

MR. HUNTER explained that the Green Bank operated in three ways; co-investment with other private capital banks or institutions, credit support with a limited guarantee in the residential lending program, and warehousing for a pool of financing for commercial programs, slide 8, "How Green Banks's Leverage Public Capital with More Private Capital."

CHAIR WOOL asked about the PACE (Property Assessed Clean Energy Programs) activity.

MR. HUNTER said that Connecticut had the most active commercial PACE program in the US, with more than $100 million in transactions in two years. He said that the average size was $600,000, although the range was very wide.

MR. HUNTER moved on to slides 10 and 11, "Accelerate Green Energy Deployment," which reflected the increase in the last five years to more than 208 megawatts of clean energy with $1 billion in investment.

CHAIR WOOL determined that this money had been from grants, which were now exhausted.

MR. HUNTER said that they now encouraged private money, and combined with the Green Bank financing, this had a multiplier effect.

REPRESENTATIVE JOHNSTON asked if there was any venture capital investment.

MR. HUNTER replied that it was mainly traditional financing. He referenced the comprehensive annual financial report. He focused on the lifetime CO2 emissions table in the report, which reflected a lifetime savings of more than 2 million tons of CO2 in the first five years.

MR. HUNTER shared slide 12, "Comprehensive Annual Financial Report" which encapsulated the financial and programmatic performances. He pointed to slide 13, "Investment Transactions," which listed many of the transactions with private capital.

CHAIR WOOL asked if the ratio was the private capital investment relative to the Green Bank.

MR. HUNTER expressed his agreement and moved on to slide 14, "Delivering Results for Connecticut," which listed the benefits and substantial impact from investment, jobs, and energy burden.

10:51:54 AM

MR. HUNTER directed attention to slide 17, "Smart-E Loan," and spoke about these loans, which were intended for local community banks and credit unions to provide unsecured loans for homeowners. He relayed that banks were already offering secured loans, and that homeowners always had the option of applying for a home equity line of credit or refinancing a first mortgage. He explained that these loans allowed work with contractors for a "smooth and easy process." He suggested this would move toward the elimination of teaser rates, and would allow the contractor to work with banks, credit unions, the Green Bank, and customers to offer lower rate loans for a longer term. He

said that some of the ARRA funds provided a loan loss reserve, which allowed for a limited undertaking for losses that might be experienced by the banks, in return for a lowering of interest rates for unsecured loans.

REPRESENTATIVE JOHNSTON asked how this was coordinated. She asked if the companies were vetted. She questioned whether the cost of energy would go down, and how this could be meshed into the energy grid to allow for an overall benefit.

MR. HUNTER replied that the contractors were vetted and needed to apply and provide proof they had adequate insurance and were registered and licensed as home improvement contractors. He pointed out that the contractors were required to be trained by Connecticut Green Bank for an understanding of how the programs worked. He added that there was a quality assurance and quality control program to ensure the projects were installed properly and were functioning properly. He reported that the Green Bank provided a list for the range of activities which qualified for the loan program. He pointed out that the bank did not get involved with the qualifications for the range of measures, they only performed the underwriting of the customer. He noted that the approval was done through an internet portal.

REPRESENTATIVE JOHNSTON asked about the effect on the grid.

MR. HUNTER replied that Connecticut did not have the integration of solar where this would remotely become an issue. He acknowledged that this was an issue in parts of California and Hawaii, and that it was a challenge to integrate the intermittent resources into the grid, which was built for one-way delivery of power from the central power source out. He offered a few comments, stating that some upgrades were necessary, and that those improvements were paid for by the contractors and the home owners where they happened. He offered his belief that this was "not a particularly fair way." He declared that the solar use had brought many benefits in terms of distributed generation. He reported that the Connecticut policy had net metering, which meant that a home which generated more energy than it was using was offered a credit by its utility, which could be drawn on when necessary.

REPRESENTATIVE JOHNSTON asked how they dealt with the policy level.

MR. HUNTER replied that the Green Bank worked closely with the regulatory authority and the utilities, and that it was an

ongoing evolution and dialogue throughout the country. He stated that the utilities were working positively, as they viewed the distribution of the resources as beneficial for taking stress off the grid. He pointed out that the utilities wanted to do it in a more planned fashion, with the possibility of enhanced incentives in areas that needed more generation. He stated that this would result in a stronger grid.

MR. HUNTER stated that their interest rates ranged from 4.49 percent to 6.99 percent, from five years to twelve years, adding that it was a moderate, clearly affordable amount of interest. He added that the Green Bank used its ARRA funds to buy down the interest rates, to make it even more affordable, if the homeowner decided to do even more of a project, slide 19, "Bundle Special Offer."

CHAIR WOOL asked if this was a guarantee service for default to the banks, provided by Green Bank.

MR. HUNTER said that it was credit enhancing the loan. He explained that a percentage of the loan, a loss reserve benefit of 7.5 percent of the loan, goes into an account at the Green Bank for the benefit of the lender to withstand credit losses. He relayed that this demonstrated to the banks that they would not have excess losses on their portfolio. He added that the first 1.5 percent of the loan was retained loss by the lender, and if the loss was larger, they were then able to look at the reserve to recoup. In response to Chair Wool, he said it was the Green Bank money from ARRA in the reserve. He reported that, in three years, Green Bank had $16 million worth of loans, of which only two loans had defaulted. He noted that none of the reserve had been used. He offered his belief that this was a good way to leverage funds.

11:04:14 AM

MR. HUNTER stated that they serviced the low-income residents, slide 21, "Low Income Portfolio." He pointed out that it was a misconception that low-income people had a poor credit history, as it was possible to have poor credit while making "way above median income." He stated that by reaching out and partnering through community development financial institutions, many of these overlooked residents and families were able to attain energy efficiency. He said that many companies would bypass these communities, and instead focus on middle- and higher-income populations.

MR. HUNTER said that this reinforced the idea that homes being heated with oil could convert to solar for energy efficiency and to bring down the energy burden, slide 23, "Solar PV Lease and EE ESA." He noted that the Green Bank was a repository of information for energy efficiency resources, slide 24, "Resources for CT Homeowners." He pointed out that they were working in partnership with the utility.

CHAIR WOOL asked how AEA would compare to this program for acquiring funds and knowledge of projects as a "one stop shop."

MR. ROSE said that Alaska had two state corporations concerned with energy efficiency, Alaska Housing Finance Corporation (AHFC) and Alaska Energy Authority (AEA), although Alaska Industrial Development and Export Authority (AIDEA) was the most like Green Bank, except it did not have the focus. He said that both had the knowledge and could take advantage of federal programs and federal money to integrate into new programs. He pointed out that AEA was not a finance institution.

MR. HUNTER shared that Green Bank supported multi-family property owners, even though the actual resident paying the bill was not the owner, slide 26, "Multifamily Programs- What we do."

CHAIR WOOL asked whether the loans for improvements would be assumed upon sale of the property and would still be considered an incentive for investment.

MR. HUNTER expressed agreement and said that this would be addressed. He moved on to slide 27, "Resources to Get You Started on the Right Path," and said that Green Bank worked with pre-development resources and loans that offered the ability to determine what improvements were needed for more energy efficiency. He added that Green Bank would provide loans for this determination, and could be wrapped into the next phase, slide 28, "Energy Upgrade Financing." He spoke about the LIME (low income multifamily energy) loan, the commercial property assessed clean energy (C-PACE) loan, and Gap Financing for projects with asbestos, old wiring, lead pipes, or old building stock issues that needed to be addressed for health and safety.

11:13:44 AM

MR. HUNTER directed attention to slide 29, "Affordable Multifamily Impact to Date" and reported that there had been 1,300 residential units outfitted with solar, with an additional 1,300 units becoming more energy efficient, in the past 18

months. He spoke about slide 30, "Don't Go It Alone," and listed many of the partners, including the Departments of Housing and Public Health, who helped direct the Green Bank with technical assistance and direction. He spoke about partnerships for low-cost financing, including C-PACE and the MacArthur Foundation, and he labeled the Green Bank as a hub for bringing all the resources, the capital side, and the projects together.

MR. HUNTER spoke about slide 33, "C-PACE Addresses Key Barriers," which allowed 100 percent financing for up to 25 years and that the savings over time had to exceed the assessment on the property. He addressed slide 35, "DEEP Retrofits" and spoke about work with commercial office buildings, public schools, and not for profits which needed financing for energy efficiency projects. He addressed slide 36, "CT Solar Lease 2" and spoke about the relationship with ONYX for commercial solar installation.

CHAIR WOOL asked how much of the activity could be ascribed to the decrease in the price of solar.

MR. HUNTER said that about half of the overall Green Bank portfolio was for solar.

REPRESENTATIVE JOHNSTON asked how much of the portfolio was thermal, or heat pumps.

MR. HUNTER said that although heat pumps was currently a small portion of the portfolio, it was an increasing portion. He added that there was currently a big thermal push and that heat pumps were now a part of the strategy.

11:22:08 AM

MR. HUNTER presented slide 37, "SBEA Program Funding Structure," and explained that the small business energy advantage program (SBEA) worked with the local utilities for three to four-year loans to commercial customers. He explained that, although the local utilities no longer wanted to be lenders, they had agreed to be the on-bill provider for repayment. He pointed out that the funding would now come from the private capital market. He reported that, since inception of the program ten years prior, the loss rate was 1 percent. He added that the utility would put up a loss reserve to backstop the loans, and this protection was sufficient. He said the Green Bank would provide the vehicle to secure the revenue stream for the lenders, and a small amount of transactional liquidity. He explained that the

Green Bank could be instrumental in a program with a capital cost of 4 - 5 percent.

MR. HUNTER moved on to slide 38, "Lead by Example," and spoke about the need for energy savings for state facilities. He said there were some transactions with general obligation bonds, as well as green bonds from the Green Bank. He reported that the Green Bank was exploring an energy service agreement which would take these transactions away from the state and convert a capital investment into a service contract with the Green Bank.

REPRESENTATIVE JOHNSTON asked how the general obligation bonds would be integrated.

MR. HUNTER explained that the Green Bank would issue bonds to the capital provider. In return for issuing the bonds, those funds would come into the Green Bank under a bonding mechanism.

REPRESENTATIVE JOHNSTON said that the Green Bank could not integrate municipal or state bonds.

MR. HUNTER replied that the general obligation bonds would be on the state balance sheet, and the state could do its own financing; however, as an alternative, using hundreds of millions of dollars to open up the potential for activity, the energy savings agreements could be an alternative for reducing the burden of the bonds on the state's balance sheet. He added that the Green Bank was constrained by an annual bond limit, so that energy savings agreements could solve this.

MR. HUNTER reported that Green Bank would finance grid sized projects, slide 39, "Bridgeport Fuel Cell Park," a $5 million financing to incentivize the buyer to complete the $65 million transaction. This was the largest fuel cell project in North America, 15 megawatts. He said that Green Bank financed a number of micro grids. In response to Chair Wool, he said this was a power plant, with a power purchase agreement with the local utility. He explained that the fuel cell manufacturer built the project, which was then sold to an investment company.

MR. HUNTER turned to slide 40, "Micro Grids," which he cited for resiliency and as back-up power to ensure that critical facilities still had power if there was a power failure. He moved to slide 41, "Anaerobic Digester Projects," and announced that there was a big organic problem in Connecticut. He reported that there was a state policy which said that large organic producers had to supply their organics to an anaerobic

digester, if they were within a 20-mile radius. He said that this facilitated the Green Bank to finance a digester.

11:32:25 AM

MR. HUNTER discussed slide 42, "Wind Projects," mentioning that Green Bank had some 5-Megawatt projects and had provided some subordinated debt that encouraged seven times leverage from a tax equity investor. He mentioned that, as Connecticut also had some small hydro projects, they had taken some European commercial technology and brought it to the U.S., slide 43, "New England Hydropower." He reported that this transaction had been worked on by the clean energy fund, which provided financing to the developer to explore and bring it to the commercial phase. He shared that these could be put anywhere.

CHAIR WOOL opined that wind and hydro projects were expensive relative to the number of consumers in many small Alaska communities. He relayed that these projects were only feasible if paid by a grant.

MR. HUNTER said that the aforementioned hydro project was financed by federal clean renewable energy bonds, and that there was still funding available. He shared that these bonds brought the cost of financing down to about 1.5 percent over 20 years.

REPRESENTATIVE SPOHNHOLZ asked about the cost of the project.

MR. HUNTER replied that it was a $4 million project, because it was the first. He acknowledged that although it was expensive, it was a discount for the city, which had signed up for a 20-year power purchase agreement, which was also extendable. It was this long contract life which allowed them to recover the investment.

REPRESENTATIVE SPOHNHOLZ said that a $4 million project which would produce energy for 115 homes would be cheap for many rural Alaska communities, even with an inflated cost due to increased construction expense.

MR. HUNTER added that this price tag also included a lot of expense, about $1 million, in developmental cost, which would not be present in future projects. He said that there were also economies of scale if a second project was built alongside.

11:40:02 AM

MR. HUNTER said that there was foundation money available, especially for providing services to disadvantaged communities, slide 45, "MacArthur Foundation." He said that these foundations were often amenable to assisting for energy efficiency and clean energy services. He pointed out the various green bonds, slide 46, "Green Bonds." He moved on to slide 47, "Grid of the Future," and spoke about electric vehicle charging, for which the Green Bank could provide financing over a longer period of time than a commercial bank.

REPRESENTATIVE WESTLAKE expressed his interest in the Tesla battery and asked if the Green Bank was pursuing this technology.

MR. HUNTER acknowledged that the technology was rapidly changing and that the battery capacities were increasing, allowing for longer range which would necessitate faster chargers, which were more expensive.

REPRESENTATIVE WESTLAKE spoke about the difficulties of cold on these batteries.

MR. HUNTER, in response to Chair Wool, replied that there could be that the chargers were placed where there was activity, including workplaces and shopping areas.

CHAIR WOOL asked about the financing and the power production.

MR. HUNTER explained that these were networks which would necessitate payment with a card swipe, or similar, to use the charger.

CHAIR WOOL asked how the Green Bank became involved.

MR. HUNTER replied that they provided the capital to build the network. He stated that the charger unit was cheap, but that the cost was in the installation. He suggested that some of this infrastructure could even be rate based and co-financed with the utility.

REPRESENTATIVE JOHNSTON asked about storage on the grid.

MR. HUNTER said they were at the neighborhood level of storage, and that there was a pilot program with a utility for the use of intermittent resources and storage.

REPRESENTATIVE JOHNSTON asked about the hydrogen fuel cars.

MR. HUNTER replied that the Green Bank was watching the progress, although the cars and the build out of the infrastructure were very expensive. He opined that the program was still challenged by the sheer economics and was not yet sustainable.

11:51:31 AM

MR. HUNTER returned attention to slide 50, "Green Bank Movement," and said that Green Banks were part of an entire global movement, the Green Bank Network. He listed some of the states and countries, including Rhode Island, New Jersey, California, Japan and Malaysia, which also had green finance organizations.

CHAIR WOOL asked how many states currently had green banks.

MR. HUNTER listed California, Connecticut, New York, Maryland, Rhode Island, and Vermont.

REPRESENTATIVE JOHNSON asked if funding was being withdrawn from the Connecticut Green Bank.

MR. HUNTER acknowledged that state budgets were an issue of concern, and that Green Banks could be viewed as a piggy bank. He offered his belief that the legislatures would see the economic development benefits was money well spent in investment. He said that they met with the legislators and reported that this was an efficient use of resources. He pointed out that this worked positively, and that any money pulled from the Green Bank was "turning the whole process around, so it means you'll have lower investment, not greater investment."

REPRESENTATIVE JOHNSTON asked about providing dividends.

MR. HUNTER said that dividends back to the state would be possible as the portfolio grows.

CHAIR WOOL asked about the aforementioned system benefit charge, pointing out that the utilities had expressed concern that ratepayers pay for projects that benefited somewhere else. He asked how much Alaska would make with a similar charge.

MR. ROSE said that this would raise about $6 million annually, and that, as most of the people lived in the Railbelt, they

would receive the most benefit. He suggested that there could be multiple sources of stable revenue.

11:57:52 AM

REPRESENTATIVE SPOHNHOLZ referenced the aforementioned Alaska institutions, AEA, AIDEA, and AHFC, and asked which would be the best vehicle for a Green Bank in Alaska, or whether it should be a separate institution to deliver these same outcomes as Connecticut.

MR. ROSE offered his belief that it was still a little early to tell. He stated that there was expertise in banking at AIDEA and AHFC, and expertise in energy efficiency and renewables at AEA and AHFC. He said that, although there was a small amount of lending at AEA, the majority of lending took place at the other two institutions. He opined that the benefit was for a very specific and discreet focus. He stated that AIDEA had a broad focus and reiterated that it was still early to make the determination for one of these institutions. He reported that 6 or 7 people could provide a lot of the expertise to move this program along, with some accounting support.

11:59:45 AM

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 11:59 a.m.