

## EXECUTIVE SUMMARY

*“...tackling climate change is one of America's greatest economic opportunities in the 21st century.”*

*President Barack Obama*

In recent years, extreme weather has significantly impacted the U.S. economy by affecting both the supply and demand for products and services in every industry. Building a sustainable green economy provides tremendous opportunities for job growth. In fact, Rhode Island has seen some initial economic growth in this area. Between 2014 and 2015, Rhode Island’s clean energy sector grew by 6.6%, creating 613 new local jobs, far exceeding the state’s overall employment growth of less than 1% over the same period. As countries, states, and cities set goals to reduce their carbon emissions, demand for goods and services in the green sector will continue to grow. There is great potential in emerging green industries and Rhode Island should position itself to maximize all available opportunities. This document provides an overview of opportunities found within our state and offers the following recommendations for continued growth in Rhode Island’s green economy:

### 1. EXPAND WORKFORCE DEVELOPMENT OPPORTUNITIES

- A. Expand *Real Jobs RI*’s planning and implementation grants to include green industries.
- B. The Governor’s Workforce Board should create workforce training programs to support well-paying clean energy jobs, including establishing career pathways and internships to ensure accessibility at all income levels.

### 2. CREATE EDUCATIONAL AND TRAINING PATHWAYS FOR JOBS IN THE GREEN ECONOMY

- A. Incentivize the creation and expansion of STEM/STEAM into all Rhode Island elementary and secondary schools, including certificate and pathways to higher education degree programs to prepare students in green technologies.
- B. Encourage our public higher education institutions to partner with green sector businesses to identify areas of job demand and to develop certificate and degree programs in a public report.
- C. Encourage our public higher education institutions to further develop degree programs leading to employment in the areas of climate change risk evaluation, sustainability, resiliency and adaptation.

### 3. SUPPORT THE GROWTH OF RENEWABLE ENERGY INDUSTRIES

- A. Extend the Renewable Energy Standard (RES) that provides for annual increases in the percentage of electricity from renewable sources that National Grid supplies to its customers.
- B. Incentivize in-state generation of renewable energy by expanding the Renewable Energy Growth (REG) Program, ensuring that more jobs and the economic benefits of renewable energy stay in Rhode Island.

### 4. EXPAND ENERGY EFFICIENCY PROGRAMS TO INCLUDE “DELIVERED FUELS”

Implement an efficiency program for delivered fuels customers, adding construction jobs and assisting households with oil and propane fuel costs.

### 5. ENHANCE THE GROWTH OF RENEWABLE THERMAL INDUSTRIES

Expand the RES to include renewable thermal technologies, such as geothermal heating and biofuels, which produce energy for heating, cooling or humidity control.

## 6. REDUCE COSTS TO CONTINUE THE GROWTH OF RHODE ISLAND'S SOLAR INDUSTRY

- A. Institute policies that will reduce the price of solar installation and support the anticipated five-fold increase in solar power over the next decade.
- B. Implement a streamlined statewide permitting program that removes unnecessary regulatory barriers, resulting in a predictable and less costly process for solar developers.
- C. Establish statewide property tax standards for small residential and commercial solar projects.
- D. Reinstate a state incentive for the installation of residential renewable energy systems.

## 7. EXPAND RHODE ISLAND'S AGRICULTURE AND SEAFOOD INDUSTRIES

- A. Continue to support the Local Agriculture and Seafood Act (LASA) grants program to increase the economic competitiveness of Rhode Island-grown agricultural products and local seafood.
- B. Continue to support the Rhode Island Seafood Marketing Collaborative for local fishermen and small businesses to increase consumption of locally-fished species.
- C. Rhode Island Commerce Corporation should provide specific job development incentives to companies that process and add value to Rhode Island's agricultural and seafood products. The increased demand for local farm grown products will create additional production and logistics jobs.
- D. The Office of Regulatory Reform should work with state agencies and business representatives to review existing regulations that apply to Rhode Island plant-based industries and agriculture, identifying opportunities to coordinate across agencies and simplifying rules apply to these businesses.

## 8. APPLY STRATEGIES THAT INCREASE RECYCLING AND REUSE, CREATING RESOURCES AND LOCAL JOBS

- A. Task Rhode Island Resource Recovery Corporation (RIRRC) with submitting an economic impact study of Rhode Island's solid waste industries (recycling, reuse, trash hauling, recycling food waste, composting) to identify the most effective ways to develop jobs related to increased recycling in Rhode Island.
- B. Establish a goal to increase recycling to at least 50% of the state's solid waste stream by 2025 and direct RIRRC to develop strategies to achieve that goal.
  - 1. Provide Rhode Island businesses with financial assistance to help off-set reasonable recycling-related costs.
  - 2. Appoint the CEO of the Commerce Corporation to the RIRRC Board to help identify new recycling-related business opportunities, and to assist with the development of a loan/grant program to bring these businesses to Rhode Island.
  - 3. Amend statutory definitions concerning solid waste and recycling to align with contemporary industry standards.
  - 4. Expand the scope of the state's existing food waste recycling law.
  - 5. For efficiency and effectiveness, clarify the roles between Rhode Island Department of Environmental Management (DEM) and RIRRC with the goal of identifying opportunities to consolidate recycling services and programs with the RIRRC, while preserving current DEM regulatory authority.
  - 6. Lead by example. With thousands of state employees, state government can have a measurable, direct impact on recycling. Charge RIRRC with managing recycling at state agencies and encourage state agencies to give preference to purchases that include recycled material.

## INTRODUCTION

The effects of climate change are undeniable and devastating to our planet. Recently, CNN reported that rising sea levels from unchecked carbon emissions could drive more than 100 million people into extreme poverty and submerge the homes of over half a billion people.<sup>1</sup> Officially, 2015 was the hottest year in 136 years of record keeping, surpassing the previous record set in 2014.<sup>2</sup> In addition, 13 of the 15 hottest years on record have all occurred since 2000.<sup>3</sup> Nations around the globe have recognized the need to address this growing threat. During the International Climate Conference 2015 in Paris, President Obama said, "Nobody expected that the price of clean energy would fall as fast as it has, or that back in the United States, the solar industry would be creating jobs ten times faster than the rest of the economy...tackling climate change is not just a moral imperative, it's an opportunity..."<sup>4</sup> Energy efficiency and sustainability have become less of a social good and more of a business necessity. Small businesses in the U.S. are increasingly analyzing the risks and opportunities of climate change and integrating them into their long-term business plans.<sup>5</sup>

*"There's a reason more than 700 businesses like Apple and Microsoft and GM and Nike, Intel, Starbucks have declared that tackling climate change is one of America's greatest economic opportunities in the 21st century..... A low-carbon, clean energy economy can be an engine for growth and jobs for decades to come...."*

*President Obama, 6.14.14*

Currently, energy costs are becoming more unpredictable as a result of increased demand. As countries and states begin to develop goals and work towards reducing carbon emissions, demand for clean power technologies could grow drastically. For example, Rhode Island employers are expecting 1,600 new clean energy workers by the end of the first quarter of 2016.<sup>6</sup> Every \$1.0 million investment in building efficiency improvement will initially support approximately 20 jobs throughout the economy.<sup>7</sup> This growth can be seen at a local level where Rhode Island's clean energy economy expanded by 6.6% between 2014 and 2015, creating an additional 613 new jobs.<sup>8</sup> Currently, Rhode Island's clean energy economy already supports 9,832 jobs across 1,295 business establishments and has seen significant growth relative to overall employment growth in the state.<sup>9</sup> This growth mirrors the national trend and economic opportunity found in the clean economy and energy efficiency. The American Council for an Energy-Efficient Economy (ACEEE) reported that energy efficiency investment creates more jobs than an equivalent investment in either the general economy or in the fossil fuel utility sector. In addition to creating jobs from energy efficiency program investments, there is another job creator that results from consumer savings on energy bills. When businesses and households see reduced energy costs, they are able to spend elsewhere in the economy, resulting in additional jobs. On average, this shift in spending supports about 17 jobs per \$1 million.<sup>10</sup>

In order to effectively take advantage of the opportunities found in the green economy, it is important to understand its composition. The definition of a green economy is quite broad and continues to evolve as advances in technology help reduce costs and new sectors develop. Green industries can be very specific, such as agriculture, solar, wind power and manufacturing; however, green

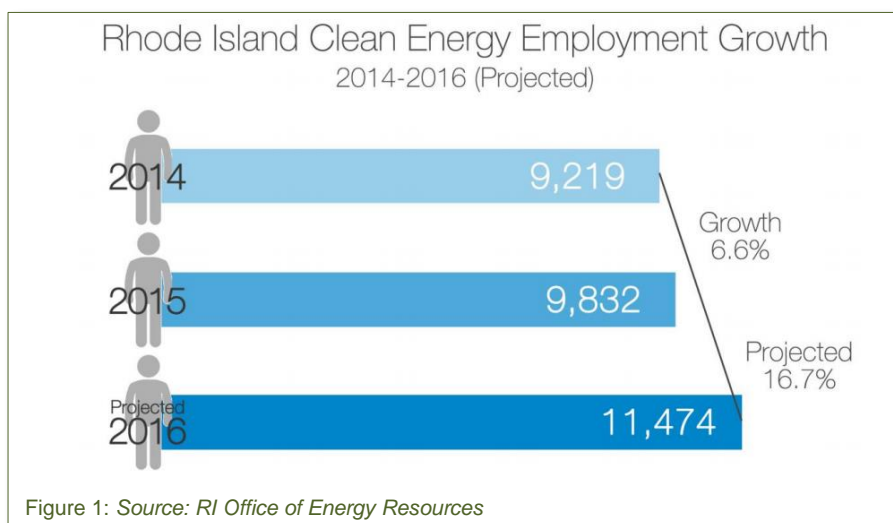


Figure 1: Source: RI Office of Energy Resources

jobs are found across all industries. The U.S. Bureau of Labor Statistics (BLS) defines green jobs in two ways: (1) jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, or (2) jobs in which workers' duties make their establishment's production processes more environmentally friendly or use fewer natural resources.<sup>11</sup> Developing technology in this sector offers opportunity for entrepreneurship and innovation.

Rhode Island is on the right track. In June 2015, the Governor, General Treasurer and General Assembly worked to pass a budget article creating the Rhode Island Infrastructure Bank (RIIB), which will finance both local job creation and the state's continuing shift to clean and efficient energy. This past year, ACEEE ranked Rhode Island the fourth most energy efficient state in the country.<sup>12</sup> The green economy provides great opportunities for economic development and job growth for our state. One analysis estimates that thousands of new green infrastructure projects will be constructed across the United States, generating jobs to support a new industry that installs, supplies, maintains and monitors green infrastructure.<sup>13</sup> Nearly 200 countries have pledged to address climate change, and several states and cities have begun to set their own goals. Undoubtedly, green industries will continue to expand and our state should position itself to facilitate and create new opportunities to *Grow Green Jobs in Rhode Island*.

## 1. EXPAND WORKFORCE DEVELOPMENT OPPORTUNITIES

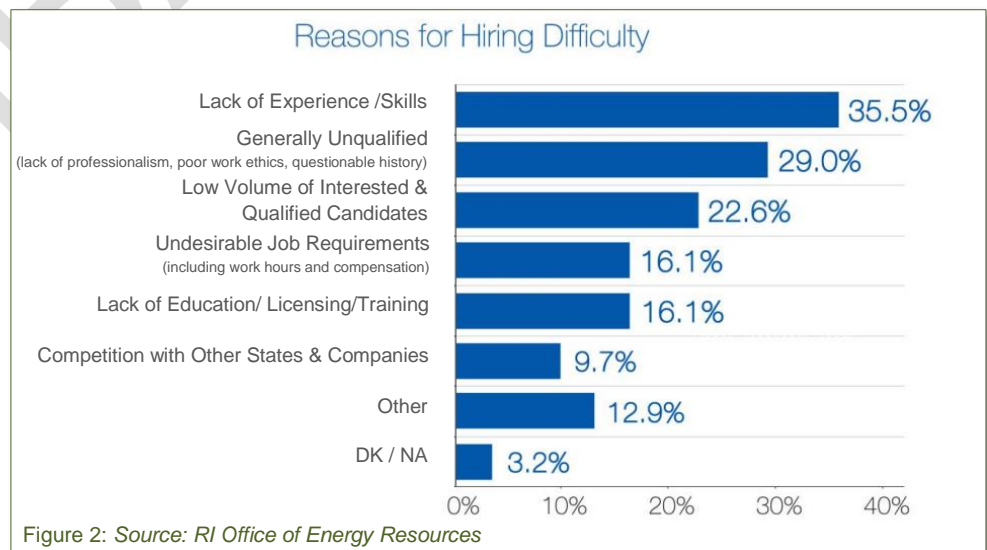
### 1A. *Real Jobs RI* Should Include a Focus on Green Industries

It is essential to prepare our workforce to meet the demands of the green economy. Recently, the Department of Labor and Training introduced *Real Jobs RI*, a demand-driven workforce and economic development initiative that is collaborative, flexible and business-led.<sup>14</sup> The program aims to address the skills gap across various industries in Rhode Island, from manufacturing to healthcare.

In July 2015, the Department of Labor and Training awarded planning grants of up to \$25,000 to 21 recipient organizations.<sup>15</sup> The overall goal of the program is to identify a workforce shortage and develop a plan with a coordinated solution. Planning grant applicants were asked to submit proposals that addressed the following: to assemble a strategic industry partnership; identify the training, education, human resource and other critical business needs; and to develop a detailed workforce training and implementation plan. Each recipient organization had to partner with at least two industry employers and a representative from two partner entities, e.g., institutions of higher education, trade associations and nonprofit organizations.<sup>16</sup>

In November 2015, 26 Strategic Industry Partnerships received Implementation Grants totaling \$5 Million in federal and state funds. These grants provided funding that allows applicants to execute the developed workforce training plans that address immediate, short-term, or long-term shortages identified by the employer partners. Successful plans lead to the hiring of participants by employer partners at the conclusion of their training.<sup>17</sup> This is a first step towards minimizing the skills gap across several industries that will help move Rhode Island's economy forward.

The *Real Jobs RI* program provides an excellent model for business innovation that will greatly benefit Rhode Island's green industries. Last year, the one green industry funded by the *Real Jobs RI* initiative is the Aquaculture Training Partnership. This partnership provides a framework for a concerted focus that may be applied to other industries throughout the green economy. The largest hurdle to new hires in the solar and other clean power industries has been their lack of experience and skills.<sup>18</sup> Many local businesses in the green sector could greatly benefit from a targeted demand-driven approach. In order to encourage further growth in this sector, it is essential to identify the training, education, human resource and other business needs that are necessary to address the hiring challenges faced by these industries. We could see significant employment growth by identifying businesses in this sector and developing an industry-led, collaborative approach to solving the skills gap.





### 1A. RECOMMENDATION

Expand *Real Jobs RI*'s planning and implementation grants to include green industries.

### 1B. Expand Workforce Development Opportunities Beyond *Real Jobs RI*:

Jobs in operations and maintenance of green infrastructure provide opportunities for entry level positions for workers. These jobs can serve as the first step towards a career pathway that leads to increased skill development and to higher earning jobs in the green sector. The challenge is developing an effective workforce training plan that provides necessary skills and valuable certification to thousands of young adults who are low-income, unemployed, and underemployed.<sup>19</sup> In addition, investing in a green infrastructure workforce strengthens Rhode Island's ability to respond to the impacts of climate change with long-term resiliency strategies. The Rhode Island's State Guide Plan recommendations include supporting industries and investments that play to our state's strengths, with targeted workforce education and training to match current and future workforce needs, while creating a stronger and more resilient Rhode Island.<sup>20</sup>

### WORKFORCE TRAINING PROGRAMS

- The Rhode Island Nursery and Landscaping Association (RINLA) has identified the need to establish an outcome-based workforce training and placement program for green-related industries.<sup>21</sup> In partnership with RINLA, the City of Newport and the Town of South Kingstown have proposed a pilot job training and placement initiative to develop skills in the design, installation, and operation and maintenance of green infrastructure for lower income youth in the communities.<sup>22</sup>
- Groundwork Providence is a non-profit dedicated to creating healthier and more resilient urban communities.<sup>23</sup> Their adult job training program provides career pathways in the environmental sector – brownfield remediation, lead and asbestos abatement, stormwater management, and urban land restoration. Groundwork Providence has been conducting brownfield remediation job training since 2002, with an overall 73% job placement rate.<sup>24</sup>
- The Community College of Rhode Island (CCRI) offers a course titled, "Introduction to Renewable Energy" that is a part of its Energy Utility Technology certificate program and its Associates of Science degree in Engineering Systems Technology.<sup>25</sup> In the past, CCRI also had a certificate program in solar installation.



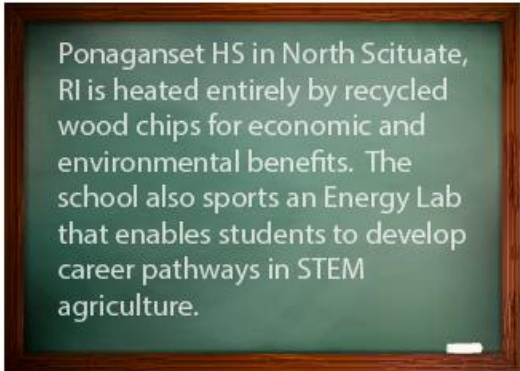
### 1B. RECOMMENDATION

The Governor's Workforce Board should create workforce training programs to support well-paying clean energy jobs, including establishing career pathways and internships to ensure accessibility at all income levels.

## 2. CREATE EDUCATIONAL AND TRAINING PATHWAYS FOR JOBS IN THE GREEN ECONOMY

### 2A. Elementary and Secondary Education

Some career and technical education (CTE) schools in Rhode Island offer programs in agricultural, environmental or technical studies to prepare students for agricultural and other green sector careers. These schools include William M. Davies, Jr. Career and Technical High School in Central Falls, East Providence Area CTE Center, Ponaganset High School, and Narragansett High School.



#### **STEM + Art = STEAM**

STEM to STEAM is an initiative created by the Rhode Island School of Design (RISD) to incorporate Art and Design into the fields of Science, Technology, Engineering, and Math (STEM), thereby becoming STEAM. The goal is to foster innovation by combining the mind of a scientist or technologist with that of an artist or designer.<sup>26</sup> The federal Every Student Succeeds Act, which replaces No Child Left Behind, was signed by President Obama on December 10, 2015. The Act provides funding specifically for integrating arts into STEM, and also includes a \$20 million grant program for the Assistance for Arts Education grant program.<sup>27</sup>

#### Education through Exploration



Founded by Dr. Robert Ballard, Professor of Oceanography at URI, the JASON Project is an award-winning educational program that reaches over 1 million students and 25,000 teachers annually.<sup>28</sup> The program provides multimedia curricular experiences in STEM for K-12 students, and corresponding professional development for educators in a wide variety of formal and informal education environments.<sup>29</sup>

#### ELEMENTARY AND SECONDARY STEM/STEAM MODELS FROM OTHER STATES

**New York:** The Billion Oyster Project (BOP) is an Ecosystem Restoration and Education Project aimed at restoring one billion live oysters to New York Harbor while engaging hundreds of thousands of school children through restoration-based STEM education programs.<sup>30</sup> Thirty-six public schools have partnered with the project by providing place-based science and math lessons.

**Idaho:** Seven Oaks Elementary School's STEAM program created an outside courtyard as a place where students studied ecosystems and plant physiology, and incorporated the principles of artistic design.<sup>31</sup> The 5th graders designed a pond while learning about pond ecosystems, and designed a bridge that was both functional and aesthetic.



## 2A. RECOMMENDATION

Incentivize the creation and expansion of STEM/STEAM into all Rhode Island elementary and secondary schools, including certificate and pathways to higher education degree programs to prepare students in green technologies.

## 2B. Post-Secondary Education in Agriculture

At the undergraduate level, there are several green sector programs at our public postsecondary institutions. For example:

- The University of Rhode Island (URI) offers fully-accredited Bachelor of Science (B.S.) degrees in College of Environmental and Life Sciences ranging from Environmental Horticulture to Animal Science.<sup>33</sup> There are several graduate programs that may be applied to agriculture, including a degree in Sustainable Agriculture and Food Systems.
- Rhode Island College (RIC) maintains an environmental studies program that allows students to develop competency in the areas of Parks and Outdoor Recreation (ecotourism, environmental enforcement), Agriculture and Urban Agriculture, and Natural Resource Management.<sup>34</sup>



Swiss Village Farm (SVF) Foundation in Newport, RI preserves germplasm (semen and embryos) from rare and endangered breeds of food and fiber livestock.<sup>32</sup> SVF collaborates with Tufts University's Cummings School of Veterinary Medicine, to elevate rare-breed conservation to a new level, through the cryopreservation of germplasm. This library of frozen material is vital to the protection of the world's food supply. SVF has developed a competitive internship program offered to undergraduate students enrolled in a biological science major at an accredited academic institution.



## 2B. RECOMMENDATION

Encourage our public higher education institutions to partner with green sector businesses to identify areas of job demand and to develop certificate and degree programs in a public report.





## PREPARING FOR JOBS IN SUSTAINABLE AGRICULTURE POST-SECONDARY MODELS FROM OTHER STATES

### Wisconsin:

- Northeast Wisconsin Technical College offers programs in Vineyard Management and the science of viticulture, including organic gardening.<sup>35</sup> The college has partnered with Viticulture and Enology Science and Technology Alliance (VESTA) to deliver online education in these areas.
- Kalamazoo Valley Community College offers a Sustainable Brewing Certificate designed to provide students with specific competencies for various roles in the brewing field.<sup>36</sup> The program was developed by industry partners and focus/advisory groups.

### Michigan:

- In 2015, Western Michigan University added a major in Sustainable Craft Brewing that is offered alongside Kalamazoo Valley Community College's brewing certificate program, with community college credits transferable to the four-year degree at WMU.<sup>37</sup> The program is designed to educate students on the technical features of brewing beer, and the biochemistry and microbiology involved in fermentation and aging of ales. West Michigan has one of the highest concentrations of craft breweries in the country including Bells, Latitude 42, Arcadia, Saugatuck, and Founders.

*Rhode Island has several wineries, located primarily on the coast where the growing season is longer and intermittent fog and ocean effects aid in producing outstanding wines. The cooler climate conditions in the Northeast make grape varieties like Vidal Blanc, Chardonnay, Pinot Noir, Riesling, Merlot, and Cabernet Sauvignon popular choices with growers.<sup>38</sup>*

### **2C. Post- Secondary Degrees Needed to Combat Climate Change Impacts**

Preparing for climate change through investments in adaptation can incentivize new and expanded economic activity and help create jobs. For example, it is anticipated that activity around coastal zone protection will generate jobs for those skilled in planning and mapping, constructing coastal defenses, and reinforcing of infrastructure.<sup>39</sup> Rhode Island's 400 miles of coastline presents significant economic opportunity for our state. We need an educated workforce to develop and implement climate change strategies. Colleges throughout the country offer interdisciplinary programs that infuse sustainability, resiliency and adaptation across fields of study that include science, biology, economics, business, applied sciences, architecture, design, land use and resource management.



#### **2C. RECOMMENDATION**

Encourage our public higher education institutions to further develop degree programs leading to employment in the areas of climate change risk evaluation, sustainability, resiliency and adaptation.

## PREPARING FOR JOBS NEEDED TO COMBAT THE IMPACT OF CLIMATE CHANGE POST-SECONDARY MODELS FROM OTHER STATES

- Green Mountain College in Vermont offers a Resilient and Sustainable Communities Master of Science degree.<sup>40</sup> At the heart of this program is the understanding that sustainability depends on creating resilient communities, which can adapt to changing conditions in ways that allow them to evolve without losing their fundamental identities.
- University of Montana offered the first undergraduate Climate Change Studies program.<sup>41</sup> The interdisciplinary minor integrates science and policy associated with climate change and potential solutions.
- The University of Idaho developed a Professional Science Master's Degree designed to address the need for professionals who understand not only climate science, but also specific issues related to impacts, mitigation, and adaptation.<sup>42</sup>

### 3. SUPPORT THE GROWTH OF RENEWABLE ENERGY INDUSTRIES

**3A. Rhode Island's Renewable Energy Standard (RES)** is the state's goal for renewable energy use. Over the past decade, RES has supported a clean energy industry that creates jobs and strengthens our economy by increasing demand for renewable energy at the state and regional level. Eligible renewable sources include wind, solar, biomass and other clean energy alternatives. In 2004, Rhode Island was one of the first states to enact a RES policy that provides for annual increases in the percentage of electricity from renewable sources that National Grid supplies to its customers. Rhode Island is on target to reach 14.5% renewable generated electricity by 2019.<sup>43</sup>

State RES programs have been one of the most important drivers of renewable energy expansion in the United States.<sup>44</sup> Throughout the country, renewable energy is generating electricity for the equivalent of approximately 16 million homes.<sup>45</sup> RES policies are a proven economic driver by creating a demand for renewable generation. For example, according to the U.S. Department of Energy, today's wind industry supports 75,000 U.S. jobs, including workers at more than 400 manufacturing plants in 44 states.<sup>46</sup> From 2010 to 2014, solar jobs grew 123% nationally.<sup>47</sup>

State RES policies have played a significant role in the rapid growth of renewables nationally.<sup>48</sup> These policies vary considerably in terms of eligible energy sources. While most include solar and wind, some state programs across the country provide for biomass, hydropower, geothermal, ocean energy, renewable thermal, energy efficiency and nuclear.<sup>49</sup> Collectively, these state policies are responsible for adding more than 6,000 megawatts (MW) of renewable energy generation each year from 2008 to 2014.<sup>50</sup> Today, 29 states – including all of the New England states – and Washington D.C., have a mandatory RES or renewable portfolio standard (RPS). Of these, 17 states have renewable energy targets greater than 20%, and another 8 states have goals that encourage utilities to support clean energy technologies.<sup>51</sup>

Rhode Island's RES for new renewable generation is average compared to neighboring New England states.<sup>52</sup> Extending the RES is critical to strong renewable energy policy. Updating the RES also would let developers know that there will be continued demand in Rhode Island for renewable energy beyond the current RES end-date of 2019.

Renewable Portfolio Standards <sup>53</sup>	
Connecticut	27% by 2020
Maine	40% by 2017
Massachusetts	Class I: 15% by 2020 and an additional 1% each year after Class II: 5.5% by 2015
New Hampshire	24.8% by 2025
Rhode Island	14.5% by 2019
Vermont	55% by 2017; 75% by 2032



### 3A. RECOMMENDATION

Extend the Renewable Energy Standard (RES) that provides for annual increases in the percentage of electricity from renewable sources that National Grid supplies to its customers.

### 3B. Increase In-State Generation

The Renewable Energy Growth (REG) Program<sup>54</sup>, also known as “distributed generation,” is designed to promote the growth of small, in-state systems that generate electricity using renewable resources. Solar installations comprise 95% of the projects proposed and approved under this program. To date, the program has supported 29 local renewable energy projects totaling almost 40 MW of capacity located in 20 municipalities across the state.<sup>55</sup> The program is expected to create approximately 250 in-state jobs and increase state tax revenue by over \$1 million a year.<sup>56</sup>



### 3B. RECOMMENDATION

Incentivize in-state generation of renewable energy by expanding the Renewable Energy Growth (REG) Program, ensuring that more jobs and the economic benefits of renewable energy stay in Rhode Island.

## 4. EXPAND ENERGY EFFICIENCY PROGRAMS TO “DELIVERED FUELS”

Rhode Island’s energy efficiency programs for electricity and gas have proven to be successful in creating jobs and spurring economic growth. Every \$1 million dollars put towards energy efficiency programs creates 45 job-years of employment.<sup>57</sup> Over the past 7 years, Rhode Island has invested \$558 million in energy efficiency, while consumers have seen almost \$2 billion in economic benefits.<sup>58</sup> According to Rhode Island’s Office of Energy Resources (OER), over the next three years energy efficiency programs will help boost Rhode Island’s Gross State Product by \$2.34 billion and deliver more than \$2.70 in benefits to consumers for every dollar spent.<sup>59</sup>

Currently, there are no specific programs or funding to perform efficiency measures for “delivered fuel” (i.e. oil, propane, kerosene) customers. This is significant because petroleum-based delivery fuels heat approximately 186,400 Rhode Island homes and businesses – accounting for almost 40% of the state’s total heating.<sup>60</sup> Unfortunately, oil, propane and kerosene customers do not have the same opportunities to pursue energy efficiency services and upgrades.<sup>61</sup> There is enormous opportunity for a Rhode Island delivered fuel efficiency programs. Other states have successfully implemented efficiency programs for delivered fuels. For example, Massachusetts offers rebates for updated equipment such as boilers and programmable thermostats that can help to cut costs and ensure oil is being used efficiently in homes and businesses.<sup>62</sup> Rhode Island should establish a funding mechanism for delivered fuel customers for energy rebates and other cost savings incentives that are comparable to the programs offered to natural gas and electric customers.



#### 4. RECOMMENDATION

Implement an efficiency program for delivered fuels customers, adding construction jobs and assisting households with oil and propane fuel costs.

#### 5. ENHANCE THE GROWTH OF RENEWABLE THERMAL INDUSTRIES

Renewable thermal technologies produce energy in the form of heat, steam or hot water that is generally used for heating, cooling or humidity control. Examples of renewable thermal include wood pellet boilers, solar water heating panels, geothermal heating and cooling systems, and biodiesel fuels. Incorporating renewable heating and cooling technologies in Rhode Island’s RES would encourage the use of locally sourced renewable fuels and support in-state jobs. Currently, 12 states include thermal provisions in their RES/RPS programs.<sup>65</sup> The benefits of renewable thermal are similar to renewable technologies that generate electricity: reducing carbon emissions which improve air quality and public health, enhancing energy security, and spurring economic growth and job creation.<sup>66</sup> A report commissioned by the Massachusetts Department of Energy Resources and the Massachusetts Clean Energy Center concluded that promoting thermal renewables presented a significant opportunity for economic growth, with the potential to create approximately 5,900 Massachusetts jobs.<sup>67</sup> Rhode Island could capitalize on similar opportunities by making renewable thermal technologies an eligible “renewable” under the RES program. Supporting local sources of renewable fuels would reduce our reliance on imported oil, increase local jobs and keep consumer energy spending local.<sup>68</sup>

**BIODIESEL**

Newport Biodiesel is a local renewable energy company established in 2008 that produces clean burning biodiesel fuel from waste cooking oil collected from over 2,000 restaurants and facilities in Rhode Island and neighboring states.<sup>63</sup> The U.S. Department of Energy (DOE) determined that adding 20% biofuel to petroleum diesel reduces carbon dioxide emissions by 15%.<sup>64</sup>



#### 5. RECOMMENDATION

Expand the RES to include renewable thermal technologies, such as geothermal heating and biofuels, which produce energy for heating, cooling or humidity control.

## 6. REDUCE COSTS TO CONTINUE THE GROWTH OF RHODE ISLAND'S SOLAR INDUSTRY

### 6A. Reduce Costs of Solar Installation

The solar industry is a proven jobs creator. Solar jobs provide living-wage opportunities that are competitive with similar industries.<sup>69</sup> In 2013, national solar installations were valued at \$13.7 billion, up from \$8.6 billion in 2011.<sup>70</sup> In 2014, the solar industry employed almost 174,000 solar workers, an increase of 21.8% from the previous year.<sup>71</sup> Nationally, the solar industry increased employment at a rate almost 20 times greater than the overall U.S. economy and accounted for 1.3% of all jobs created in the U.S. in 2014.<sup>72</sup> Solar workers are employed at 6,100 businesses in every state ranging from manufacturing to construction and engineering.<sup>73</sup> As noted in OER's report, this sector is dominated by small businesses with less than 25 employees with a wide range of experience and education.<sup>74</sup>

Rhode Island has enacted effective policies that spurred the growth of an in-state solar industry, creating local jobs and benefiting our economy. In 2014, \$8 million was invested in solar projects in the state.<sup>75</sup> The following programs help drive the state's solar industry:

- **The Renewable Energy Growth (REG) Program**<sup>76</sup> (see description on page 11).
- **The Renewable Energy Development Fund (REF)** provides grants and loans for eligible renewable energy sources for preliminary feasibility studies as well as direct residential, commercial, and municipal installations. Funding is also offered for new renewable energy business ventures and innovative development. The REF is funded by a charge of \$0.0003 per kilowatt (kW) that is assessed to utility customers. This assessment will be discontinued on December 31, 2017, unless the program is continued legislatively.<sup>77</sup> In 2014, the REF's Small Scale Solar program funded 129 projects and the Commercial Scale program funded 25 projects.<sup>78</sup>
- **Net Metering:** Rhode Island's net-metering program<sup>79</sup> allows homeowners, businesses, public entities and municipalities to offset their electricity usage with eligible renewable energy technologies. Net-metered renewable energy installations are generally sized to meet a property's electric demand. Net-metered systems are allowed to generate excess electricity, but not more than 125% of the electricity consumed on-site. Forty-four states across the country have net-metering policies.<sup>80</sup>
- **Interconnection:** In 2011, the General Assembly removed a barrier to solar and wind power development by streamlining the process that allows renewable energy projects to connect to the electric grid.<sup>81</sup> The law established timelines for interconnection studies that provide developers with more rapid guidance necessary to facilitate their projects.
- **Renewable Energy Professional Licensing:** In 2014, the General Assembly modernized the electrical and plumbing licensing laws by establishing a new category of contractor to perform certain renewable energy system installation work without holding a full electrical or plumbing license.<sup>82</sup> This new license category has decreased the cost of installation, making the price of these projects more affordable.

Policies that support Rhode Island's solar power industry are successful at creating in-state jobs. Independent System Operator (ISO) New England, the non-profit entity that operates the regional electric grid, estimates that Rhode Island had 10 MW of solar capacity at the beginning of 2014, and anticipates a five-fold increase in capacity (to 50 MW) over the next decade.<sup>83</sup> To accelerate growth of this green industry, we must continue efforts to decrease the price of installation.



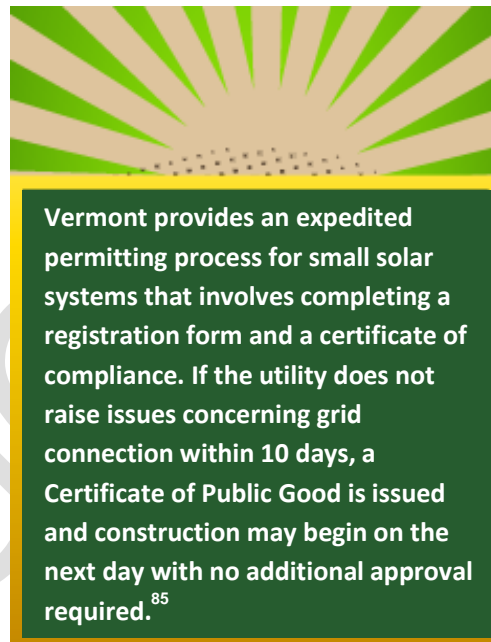
## 6A. RECOMMENDATION

Institute policies that will reduce the price of solar installation and support the anticipated five-fold increase in solar power over the next decade.

## 6B. Streamline Permitting of Solar Projects

Non-hardware expenses, also known as “soft” costs, account for more than half of the cost of solar projects. According to the U.S. Department of Energy (DOE), up to 64% of the total expenses of a solar project installation are soft costs, such as customer outreach, permitting, inspection, fees, labor, and financing.<sup>84</sup> The focus areas of the federal DOE initiative are to reduce non-hardware costs, lower barriers and foster growth.

In Rhode Island, home and business owners must meet all necessary permitting requirements before a solar power system can be installed on their property. Navigating the various state and local permitting requirements is time consuming and burdensome, particularly for small solar developers with limited resources.



Vermont provides an expedited permitting process for small solar systems that involves completing a registration form and a certificate of compliance. If the utility does not raise issues concerning grid connection within 10 days, a Certificate of Public Good is issued and construction may begin on the next day with no additional approval required.<sup>85</sup>



## 6B. RECOMMENDATION

Implement a streamlined statewide permitting program that removes unnecessary regulatory barriers, resulting in a predictable and less costly process for solar developers.

## 6C. Property Tax Standards for Solar Projects

In order to further drive down the cost of solar systems, Rhode Island must continue to eliminate barriers associated with installation. One financial barrier to solar development is the local property tax that is applied to the value of the project. The increase in property taxes associated with a solar conversion can be significant over time. Property tax exemptions allow businesses and homeowners to exclude all or part of the value of a solar system from their property assessment for taxation purposes. A tax exemption reduces the total cost to the property owner and makes the systems more affordable.<sup>86</sup> The Rhode Island OER estimates that local property taxes represent about 9.7 – 20.5% of the cost for solar generation.<sup>87</sup> In addition to the cost, the uncertainty regarding local discretion on property tax assessments can be an impediment to the development of renewable energy projects.<sup>88</sup>

Currently, Rhode Island law provides that a municipality may exempt from taxation any renewable energy system located in the city or town.<sup>89</sup> The law was enacted in 1980 and has not been reviewed to reflect the growth in renewable energy installations. Rhode Island OER is working with stakeholders on legislation that would establish a statewide tax rate for solar systems.

Twenty-nine states provide some type of a property tax relief for solar photovoltaic (PV) systems, including neighboring New England states.<sup>90</sup>

- Massachusetts law exempts solar and wind powered systems from property taxes for 20 years.<sup>92</sup>
- Connecticut provides a property tax exemption for solar systems that serve farms, single-family homes or multi-family properties (up to four units).<sup>93</sup>
- Vermont provides a 100% property tax exemption for small solar projects up to 10 kilowatts (kW).<sup>94</sup>
- New Jersey exempts solar systems from local property taxes if the system is used for on-site electricity, heating, cooling or general energy needs.<sup>95</sup>
- New Hampshire, like Rhode Island, permits cities and towns to offer exemptions from local property taxes for certain renewable energy installations, including solar generation. Under this provision, 103 out of 234 New Hampshire cities and towns have adopted a solar energy property tax exemption.<sup>96</sup>

While some Rhode Island municipalities on a case-by-case basis offer property tax relief for solar systems, Ohio provides a straightforward, predictable incentive: a 100% tax exemption for solar and other renewable energy systems sized under 250 kilowatts; systems over 250 kilowatts are charged a set fee.<sup>91</sup>



#### 6C. RECOMMENDATION

Establish statewide property tax standards for small residential and commercial solar projects.

#### 6D. Personal tax credit for Residential Solar

Rhode Island law allows for an income tax credit in the amount of 25% of the total installation cost for a residential renewable energy system, including PV (rooftop solar), solar hot-water and heating, wind-energy, and geothermal-energy.<sup>97</sup> However, since 2010, the credit can only be claimed by businesses to offset their corporate taxes and is not allowable to offset personal income taxes. Reinstating the personal tax credit or implementing an alternative incentive will promote the installation of more renewable energy projects.



#### 6D. RECOMMENDATION

Reinstate a state incentive for the installation of residential renewable energy systems.

## 7. EXPAND RHODE ISLAND'S AGRICULTURE AND SEAFOOD INDUSTRIES

**7(A-C).** Rhode Island agriculture and seafood industries are important and growing sectors of our state's economy. Rhode Island currently has over 1,240 farms that employ 2,560 workers and cover approximately 11% of the state.<sup>98</sup> Overall, plant-based and agriculture businesses in Rhode Island have a total impact of \$2.5 billion of annual sales and provide 15,826 jobs.<sup>99</sup> An important and thriving sector of our agriculture community is aquaculture. In 2014, the state's aquaculture products totaled \$5 million dollars, an increase of 24% from the previous year.<sup>100</sup> Statewide, there are 55 aquafarms covering over 206 acres of coastal waters and employing 142 workers—an increase of 11.8% from 2013.<sup>101</sup>

The seafood industry is vitally important to our state's economy. In 2013, Rhode Island's commercial fishermen landed approximately 90 million pounds of seafood valued at \$86.4 million.<sup>103</sup> Commercial fishing's annual retail, import and export sales exceed \$389 million, supporting over 9,550 jobs in the harvesting, processing, distributing and retail industries.<sup>104</sup>

Rhode Island has ready access to one of the nation's largest, culturally diverse and upscale consumer seafood markets. However, stiff competition from other states and around the world is resulting in lower prices and lost markets for Rhode Island seafood. In fact, approximately 90% of all seafood consumed by Americans is imported from overseas.<sup>105</sup> In 2011, the General Assembly established the Rhode Island Seafood Marketing Collaborative<sup>106</sup> to combat this trend. The Collaborative supports local fishermen and small businesses by increasing demand for Rhode Island seafood products.<sup>107</sup> It is important that the state focus on expanding seafood demand to create additional employment opportunities in the areas of harvesting, processing, distribution and retail of Rhode Island's seafood products.

The Local Agriculture & Seafood Act of 2012 (LASA)<sup>108</sup> established an economic development grants program designed to increase the economic competitiveness of Rhode Island-grown agricultural products and local seafood. The program is administered by the Rhode Island Department of Environmental Management's Division of Agriculture in partnership with the Rhode Island Food Policy Council. LASA is a public-private partnership where state dollars and private foundation matching funds create a grant pool.

LASA grants have been used by Rhode Island businesses for a variety of innovative initiatives, with a goal of building and strengthening the local supply chain that extends to farmers, fishermen, restaurants, grocery stores and schools.<sup>109</sup> Rhode Island is a national leader in the quantity of fresh fruits and vegetables sold directly from the farm to consumers, at approximately 50 seasonal farmers markets, 8 indoor winter markets, and numerous pick-your-own and farm stand operations.<sup>110</sup> Farmers markets are an important and growing part of Rhode Island's local food system because they strengthen the long-term profitability of most small farms and support jobs in agriculture. According to the U.S Department of Agriculture (USDA), farms selling local produce directly to customers were more likely to remain in business over 2007-2012 than farms not selling directly to customers.<sup>111</sup> A strong local food system also drives growth in related businesses: agricultural supply businesses, food processors, cold storage facilities, food hubs, transportation networks, restaurants, retailers and tourism.



An important initiative of the Collaborative is the development of the Rhode Island Seafood Logo.<sup>102</sup> The logo is designed to promote fresh, local seafood for consumers; to increase demand for Rhode Island seafood products in the marketplace; and to spur the economic interests of Rhode Island's commercial fishing and seafood industries.





## 7 (A-C). RECOMMENDATIONS

- A. Continue to support the Local Agriculture and Seafood Act (LASA) grants program to increase the economic competitiveness of Rhode Island-grown agricultural products and local seafood.
- B. Continue to support the Rhode Island Seafood Marketing Collaborative for local fishermen and small businesses to increase consumption of locally-fished species.
- C. Rhode Island Commerce Corporation should provide specific job development incentives to companies that process and add value to Rhode Island's agricultural and seafood products. The increased demand for local farm grown products will create additional production and logistics jobs.

### 7D. Support Rhode Island Plant-Based Industries

Plant-based businesses and agriculture are an important part of our economy. These sectors, known collectively as “green-related industries”, include farming and nursery products, agriculture support industries, cemeteries, golf, and landscaping services and suppliers. A recent impact study estimated that green-related sectors contributed significantly to Rhode Island's economy, and concluded that 5% growth in the green-related industries would add \$94.5 million to the state's economy and create 387 jobs.<sup>112</sup> In 2015, these industries:

- Supported a total of 23,562 jobs (15,826 direct; 7,736 indirect), representing 3.9% of total private sector employment in Rhode Island;
- Added \$4.39 billion (\$2.5 billion in direct output; \$1.89 billion in indirect output) to the state's economic output, totaling 4.9% of the state's Gross Domestic Product (GDP);
- Ranked 9<sup>th</sup> out of 18 major private industry sectors of the Rhode Island economy, ahead of construction (10<sup>th</sup>), hospitality and food (13<sup>th</sup>), or education (12<sup>th</sup>) sectors.

Rhode Island's agriculture and plant-based businesses are a significant economic driver in this state. Green industries also bring additional benefits to Rhode Island's natural environment, such as land preservation and resource protection, which are not captured by economic data.<sup>113</sup> There is significant opportunity for continued growth in this sector as Rhode Island addresses the impacts of climate change, develops strategies for resilience and adaptation, and promotes a sustainable and locally sourced food economy.

#### ***Streamline Regulatory Processes for Agriculture and Plant-Based Industries***

Bureaucratic regulatory processes make our businesses less competitive and stifle economic growth and job creation. The Rhode Island Nursery and Landscaping Association (RINLA) has identified a regulatory process that involves the Department of Environmental Management (Divisions of Agriculture and Forest Environment), the Department of Labor and Training, the Division of Taxation, the Department of Transportation and the Board of Design Professionals. These regulations include fees for permits, license, applications, training, reporting and testing from multiple agencies, none of which are coordinated for the benefit of business owners. These regulatory burdens result in lost time, productivity and additional costs for businesses.



## 7D. RECOMMENDATION

The Office of Regulatory Reform should work with state agencies and business representatives to review existing regulations that apply to Rhode Island plant-based industries and agriculture, identifying opportunities to coordinate across agencies and simplifying rules that apply to these businesses.

## 8. APPLY STRATEGIES THAT INCREASE RECYCLING AND REUSE, CREATING RESOURCES AND LOCAL JOBS

Recycling keeps our communities clean, our environment healthy and creates lasting in-state jobs that strengthen the local economy. However, most of our nation's waste is still sent to landfills and incinerators. While the vast majority of municipal solid waste nationwide can be recycled, reused, or composted, the U.S. Environmental Protection Agency (EPA) reports that only 34% is currently diverted from disposal.<sup>114</sup>

Recycling, reuse and remanufacturing create far more jobs than burying or burning our discarded items. In fact, 86% of the total U.S. jobs from managing our waste come from recycling activities, even though we only recycle about 30% of our discards.<sup>115</sup> Jobs created in the recycling industries span all skill levels, and include materials sorters, dispatchers, truck drivers, materials brokers, salespeople, process engineers and chemists. Recycling 75% of the nation's waste will create nearly 1.5 million jobs by 2030, building economically strong and healthy communities.<sup>116</sup>

Recycling is creating jobs across the country in states that have established ambitious recycling goals:

- South Carolina established a goal of 40% recycling by 2020. The state reports \$13 billion annually in direct and indirect economic impact from more than 520 companies across the state. Recycling supports approximately 22,400 direct jobs with an average wage of \$40,203, and generates \$329 million in state and local taxes.<sup>117</sup>
- Connecticut's current reported recycling rate of approximately 30% supports 4,800 jobs, accounts for \$275 million in wages, keeps more than 865,400 tons of valuable commodities in the state's stream of commerce, and adds \$700 million annually to the state's economy.<sup>118</sup> The Connecticut Department of Energy and Environment Protection estimates that 10,000 tons of waste can support one incineration job or 36 jobs in recycling. Connecticut recognized the economic potential in recycling, and recently set a goal of doubling its recycling rate to 60% by 2024.<sup>119</sup>
- Over 20 years ago, New Jersey established an aggressive recycling goal of 60% of the total solid waste stream.<sup>120</sup> Today, recycling employs 27,000 people in New Jersey.<sup>121</sup>

An effective strategy adopted by many states to increase recycling is Extended Producer Responsibility (EPR), which requires manufacturers to be responsible for end-of-life management of their products rather than placing that responsibility with consumers and local governments.<sup>122</sup> The following provide examples of the economic benefits of EPR programs:

- A report by the Product Stewardship Institute estimated that Connecticut could create up to 12,300 local jobs if it recycled all mattresses, paint, electronics and packaging.<sup>123</sup>
- CalRecycle estimates that recycling or reuse of all mattresses in California through EPR would create a total of 1,000 full-time jobs.<sup>124</sup>
- A 2013 report for the Coalition for American Electronics Recycling (CAER) estimated that the U.S. electronics recycling industry employs approximately 6,850 people.<sup>125</sup>

- In 2014, Washington estimated that its electronics EPR program had created 125 collection, transportation and processing services jobs.<sup>126</sup>
- A 2013 report for the Illinois Recycling Association estimated that recycling and reuse of electronics resulted in 8,000 direct and indirect jobs.<sup>127</sup>

Recycling and EPR programs are effective policies that spur local job creation. Rhode Island law mandates that cities and towns achieve a recycling rate of 35% and a diversion rate of 50% by 2012.<sup>128</sup> Few municipalities have reached both targets.<sup>129</sup> Implementing effective policies, including EPR programs, can promote job growth and help meet those goals. Recycling, reuse and remanufacturing create far more jobs than burying our resources, yet much of our commercial and municipal waste is still sent to landfills or incinerators.



### 8(A-B). RECOMMENDATIONS

- A. Task Rhode Island Resource Recovery Corporation (RIRRC) with submitting an economic impact study of Rhode Island's solid waste industries (recycling, reuse, trash hauling, recycling food waste, composting) to identify the most effective ways to develop jobs related to increased recycling in Rhode Island.
- B. Establish a goal to increase recycling to at least 50% of the state's solid waste stream by 2025 and direct RIRRC to develop strategies to achieve that goal.
  1. Provide Rhode Island businesses with financial assistance to help off-set reasonable recycling-related costs.
  2. Appoint the CEO of the Commerce Corporation to the RIRRC Board to help identify new recycling-related business opportunities, and to assist with the development of a loan/grant program to bring these businesses to Rhode Island.
  3. Amend statutory definitions concerning solid waste and recycling to align with contemporary industry terms.
  4. Expand the scope of the state's existing food waste recycling law.
  5. For efficiency and effectiveness, clarify the roles between Rhode Island Department of Environmental Management and RIRRC with the goal of identifying opportunities to consolidate recycling services and programs with the RIRRC, while preserving current DEM regulatory authority.
  6. Lead by example. With thousands of state employees, state government can have a measurable, direct impact on recycling. Charge RIRRC with managing recycling at state agencies and encourage state agencies to give preference to purchases that include recycled material.

## CONCLUSION

As the Rhode Island economy improves, the state is in the process of developing an economic vision to build upon our strengths and areas of growth potential. The Rhode Island Senate has identified the green sector of the economy as one that offers great opportunity for both job growth and environmental benefits. As the Ocean State, our economy and people have experienced the impacts of severe storms, rising sea levels and warming temperatures. We have the workforce and educational assets to build upon – to turn these challenging events into opportunities for a stronger economy and a more resilient state. This report offers some recommendations for legislative and policy action relating to workforce development, education and training, energy policy, agriculture, plant-based and fisheries industries, and recycling programs. These recommendations are neither all-inclusive nor exhaustive, but offer a starting point for action to *Grow Green Jobs in Rhode Island*.

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<sup>78</sup> Rhode Island Commerce Corporation, *Renewable Energy Development Fund, Annual Financial and Performance Report for the Year Ending December 31, 2014* at 9, <http://commerceri.com/wp-content/uploads/2015/12/REF-Financial-and-Performance-Report-3.1.2015.pdf>.

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