

## Driving Electrical Energy Generation into the Future

Between 1970 and 1998, global energy use rose close to 70% and demand for energy continues to rise at a rate of about 2% each year. Energy use and resource extraction drive the global economy and development worldwide. Increases in fossil fuel energy use, increases emissions, including greenhouse gasses, resulting in global warming effects, putting human and environmental health at risk.

The use of traditional feed-stock (Coal, Diesel Natural Gas, etc.) to produce electricity exposes the market to commodity price fluctuations. Commodity markets are influenced by limited supplies, growing demands, distribution capacity, and environmental restrictions, which drives prices up.

On the contrary, Renewable Energy can no feedstock component or very low-cost feedstock and depending on the technology have low operating costs. Due to the benign operations and lack of emissions from Renewable Energy, it can be deployed close to the users of electricity. This is referred to as Distributed Generation (DG) and is gaining adoption as smart-grid infrastructure investments are being made. This is creating a dramatic shift in how our energy is delivered to markets versus the traditional central power plant with radial distribution. When deployed properly, and when incorporated grid enhancements it can provide a better quality of electricity, stabilization, and reliability to the grid. Most of all it acts as a financial hedge against cost variability as seen in traditional electricity production methods.

The energy market, in general, whether it's renewable, oil, natural gas, coal, nuclear, etc. are capital intensive and serves the greater good to society. Incentives are used as tools to de-risk capital investment and to ensure long-term investments in projects. Incentives come in many forms, such as Grants, Tax Credits, Accelerated Cost Recover, Master Limited Partnerships, and guaranteed market share and returns. The United States has been able to create markets and products and services that are driven by capitalism. But when faced with endeavors that capitalism cannot solve government intercedes with mechanisms that ensure long-term investment in our country and society. These investment mechanisms built the Hoover Dam, created the largest, most reliable energy grid, phone system, and postal service, and put a man on the moon. As these markets develop and evolve they transition to a capitalistic model thus creating companies such as Sprint, FedEx, and SpaceX.

Contrary to industries that have made these transformations the electrical energy grid has not. The lack of incentives and mechanisms to prompt invest in infrastructure, lack of competition, and innovative leadership from stakeholders on a local and federal level) has stunted thus industry stunted. Deregulation has helped move this industry towards transition but the implementation of independently owned Distributed Generation and technology developed outside of walls of the utility companies is pushing this industry to finally innovate. A new dawn has arrived and this is the first step.....



NOTE - This report was as of 2014 , since then programs and initiatives by our leadership and stakeholders have significantly changed Rhode Island standing.

## **Rhode Island and Renewable Energy as compared to other States**

Rhode Island has lagged most of the other states in the development of renewable energy not only on absolute value but on a per capita and a GDP basis. It is consistently ranked at the bottom especially among its peers in the Northeast. Other states have developed programs that complement the federal renewal energy initiative of the 30% investment tax credit to drive renewable energy forward in their states. The mechanisms for their programs have seen wild success (Mass) in some cases boom and bust (New Jersey).

But as the saying goes sometimes the second mouse gets the cheese. Rhode Island three years ago piloted a 40 MW renewable energy distributed generation program. This pilot was deemed successful in the eyes of many and through legislation introduced a bill to be expanded 160 MW. This program draws from the successes of other state programs to ensure its success. Based on an independent study shows a net benefit to the state.

### **Where does Rhode Island stand, as of today?**

#### **Summary of Analysis:**

Over the past five years over \$19.8 billion in grants were provided to generate over \$76 billion in project value (1) throughout the United States including Puerto Rico, the Virgin Islands and the District of Columbia (53). Rhode Island received approximately \$40.3 million in grants generating \$155 million in projects. If one project is removed Rhode Island Drops to 48<sup>th</sup> in overall projects and 47<sup>th</sup> in ***It is important to note in Rhode Island that one (1) project accounted for 86% of the renewable energy projects in this analysis. This project was the Johnson landfill gas to energy project.***

Based on the above Rhode Island 43rd in overall projects and grant value and 31st and 32nd based on a percentage of GDP and per capita when compared to the other 53. If the one project is removed Rhode Island drops to 48th and overall projects and 48th and 47th based on percentage of GDP and per capita respectively. This in essence puts Rhode Island virtually dead last among all states including all but one(2) of the five largest coal producing states. I further compared Rhode Island to the greater Northeast 12 states (DE, PA, MD, NJ, NY, CT, NH, ME, VT, RI, MA & DC) including the District of Columbia. Based on this Rhode Island ranks 11th in overall project and brand value in 7th and 8th based on percentage of GDP and per capita respectively. Once again removing that one large project Rhode Island drops to virtually dead last inching out the District of Columbia.

Okay here's where it really gets ugly: Using the total project and grant value

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Rhode Island received I compared that to Rhode Island's GDP and population in proportion to the whole country. To receive our prorated share of grants based on an average of GDP and Population Rhode Island, should have received \$67 million in grants and generated \$257.4 million in projects. Unfortunately we only received \$40.3 million in grants and generated \$155 million in projects. Therefore \$26.7 million of our tax dollars(4) went to DC and never came back to Rhode Island to generate \$102.5 million in projects. Of the \$102.5 million in projects that never happened I estimate approximately \$35.9 million is labor, professional fees permitting and local engineering related and would've stayed in the state.

Despite our lack of renewable energy projects, Rhode Island ranks 12th in the highest electricity prices in the country. Currently our renewable portfolio standard (which currently has been suspended) is mainly fulfilled through Hydroelectric of which virtually none is located in Rhode Island. So whatever is being funded by the ratepayers (which in Rhode Island is the same as taxpayers, less Pascoag and Block Island) to meet the RPS is being sourced out of state, therefore creating projects and jobs outside the state as we all stand here in the unemployment line, staring at each other talking about the recent 23% increase in electricity prices. (AKA "salt in the wound")

*(1) The project value is not provided I extrapolated it using 26%, 30% is the grant award based on project values less interconnection and certain site work.*

*(2) Kentucky*

*(3) Johnston landfill provides electricity for 23,000 houses and is the second largest LFGTE project in the US*

*(4) Based on tax data form the Federal tax database.*

Renewable Projects Funded by Federal Grants by State													
State	Project Value	Grant Value	Rank by Project Value	State GNP	% of GNP	Rank by % of GNP	State Population	Project \$/Capita	Rank by \$/Capita	Top 5 Coal & Nat Gas Producers	Elec Prices \$/MWh	Rank by Elec. Rate	
California	14,068,239,719	3,657,742,327	1	1,936,400,000,000	0.73%	20	37,253,956	\$378	19		13.05	11	
Texas	7,660,265,762	1,991,669,098	2	1,153,000,000,000	0.4%	29	25,145,561	\$305	23	Coal / Natural gas	9.00	27	
Illinois	4,853,458,577	1,261,899,230	3	644,200,000,000	0.75%	19	12,830,632	\$378	18		8.97	28	
Oregon	4,046,112,319	1,051,989,203	4	168,900,000,000	2.40%	4	3,831,074	\$1,056	4		8.04	40	
New Jersey	3,524,570,750	916,388,395	5	497,000,000,000	0.71%	21	8,791,894	\$401	16		14.30	8	
Washington	3,249,176,304	844,785,839	6	351,100,000,000	0.93%	16	6,724,540	\$483	10		6.78	51	
Arizona	2,930,118,923	761,830,920	7	261,300,000,000	1.12%	10	6,392,017	\$458	11		9.71	21	
New York	2,607,751,904	678,015,495	8	1,114,000,000,000	0.23%	36	19,378,102	\$135	33		15.89	6	
Pennsylvania	2,455,688,565	638,479,027	9	575,600,000,000	0.43%	28	12,702,379	\$193	28	Coal	10.45	18	
Iowa	2,192,589,542	570,073,281	10	147,200,000,000	1.49%	7	3,046,355	\$720	8		7.56	46	
Colorado	1,986,277,812	516,432,231	11	259,700,000,000	0.76%	18	5,028,196	\$395	17	Natural Gas	9.39	23	
Nevada	1,979,171,735	514,584,651	12	127,500,000,000	1.55%	6	2,700,551	\$733	7		8.97	29	
Idaho	1,917,405,950	498,525,547	13	54,800,000,000	3.50%	1	1,567,582	\$1,223	2		6.44	53	
Minnesota	1,647,387,138	428,320,656	14	267,100,000,000	0.62%	22	5,303,925	\$311	22		8.65	35	
Oklahoma	1,565,560,542	407,045,741	15	160,500,000,000	0.98%	14	3,751,351	\$417	13	Natural Gas	7.80	44	
Indiana	1,365,998,038	355,159,490	16	267,600,600,000	0.51%	25	6,483,802	\$211	27		8.01	41	
Ohio	1,208,277,012	314,152,023	17	483,400,000,000	0.25%	35	11,536,504	\$105	35		9.03	26	
Maine	1,176,148,104	305,798,507	18	53,200,000,000	2.21%	5	1,328,361	\$885	5		12.58	14	
Michigan	1,158,292,454	301,156,038	19	372,400,000,000	0.31%	33	9,883,640	\$117	34		10.40	19	
Massachusetts	1,082,182,731	281,367,510	20	377,700,000,000	0.29%	34	6,547,629	\$165	29		14.11	9	
North Dakota	1,012,376,885	263,217,990	21	33,400,000,000	3.03%	2	672,591	\$1,505	1		7.50	47	
South Dakota	989,200,781	257,192,203	22	39,900,000,000	2.48%	3	814,180	\$1,215	3		8.05	39	
Florida	981,143,946	255,097,426	23	754,000,000,000	0.13%	42	18,801,310	\$52	43		10.61	17	
Utah	952,983,727	247,775,769	24	116,900,000,000	0.82%	17	2,763,885	\$345	21		7.13	50	
North Carolina	942,785,915	245,124,338	25	407,400,000,000	0.23%	37	9,535,483	\$99	37		8.64	36	
Hawaii	905,561,688	235,446,039	26	68,900,000,000	1.31%	8	1,360,301	\$666	9		31.59	2	
Missouri	886,154,881	230,400,269	27	246,700,000,000	0.36%	30	5,988,927	\$148	30		8.32	37	
New Mexico	834,235,873	216,901,327	28	75,500,000,000	1.10%	12	2,059,179	\$405	15		8.74	34	
West Virginia	756,553,588	196,703,933	29	66,600,000,000	1.14%	9	1,852,994	\$408	14	Coal	7.88	42	
Georgia	630,028,604	163,807,437	30	404,600,000,000	0.16%	40	9,867,653	\$64	41		9.61	22	
Maryland	555,211,569	144,355,008	31	300,000,000,000	0.19%	38	5,773,552	\$96	38		11.93	15	
Nebraska	516,006,823	134,161,774	32	89,600,000,000	0.58%	23	1,826,341	\$283	25		7.88	43	
Wyoming	426,216,812	110,816,371	33	38,200,000,000	1.12%	11	563,626	\$756	6	Coal / Natural Gas	6.58	52	
Kansas	419,640,081	109,106,421	34	128,500,000,000	0.33%	31	2,853,118	\$147	32		8.89	30	
Puerto Rico	381,932,885	99,302,550	35	88,000,000,000	0.43%	26	3,725,789	\$103	36		29.00	3	
Montana	344,471,704	89,562,643	36	37,200,000,000	0.93%	15	989,415	\$348	20		8.23	38	
New Hampshire	339,456,673	88,258,735	37	61,600,000,000	0.55%	24	1,316,470	\$258	26		14.74	7	
Delaware	271,783,119	70,663,611	38	62,700,000,000	0.43%	27	900,877	\$302	24		11.48	16	
Vermont	265,934,531	69,142,978	39	26,400,000,000	1.01%	13	625,741	\$425	12		13.80	10	
Wisconsin	243,703,873	63,363,007	40	251,400,000,000	0.10%	43	5,686,986	\$43	44		10.21	20	
Tennessee	208,502,596	54,210,675	41	250,300,000,000	0.08%	44	6,346,105	\$33	45		9.28	24	
Connecticut	191,310,704	49,740,783	42	233,400,000,000	0.08%	45	3,574,097	\$54	42		16.35	4	
<b>Rhode Island</b>	<b>154,888,815</b>	<b>40,271,092</b>	<b>43</b>	<b>49,500,000,000</b>	<b>0.31%</b>	<b>32</b>	<b>1,052,567</b>	<b>\$147</b>	<b>31</b>		<b>13.04</b>	<b>12</b>	
Louisiana	103,691,731	26,959,850	44	213,600,000,000	0.05%	47	4,533,372	\$23	46	Natural Gas	7.68	45	
South Carolina	89,600,496	23,296,129	45	164,300,000,000	0.05%	46	4,625,364	\$19	48		8.80	32	
Alaska	66,603,712	17,316,965	46	45,600,000,000	0.15%	41	710,231	\$94	39		16.08	5	
Virginia	37,687,688	9,798,799	47	427,700,000,000	0.01%	49	8,001,024	\$5	49		8.84	31	
District of Columbia	13,559,869	3,525,566	48	104,700,000,000	0.01%	48	601,723	\$23	47		12.81	13	
Kentucky	10,770,142	2,800,237	49	161,400,000,000	0.01%	50	4,339,367	\$2	50	Coal	7.17	49	
Virgin Islands	7,281,935	1,893,303	50	4,480,000,000	0.16%	39	109,666	\$66	40		32.00	1	
Alabama	2,581,727	671,249	51	174,400,000,000	0.00%	52	4,822,023	\$1	52		9.10	25	
Mississippi	2,323,854	604,202	52	98,900,000,000	0.00%	51	2,967,297	\$1	51		8.78	33	
Arkansas	1,036,488	269,487	53	105,800,000,000	0.00%	53	2,900,000	\$0	53		7.43	48	
	<b>\$76,219,897,596</b>	<b>\$19,817,173,375</b>		<b>\$14,604,180,600,000</b>	<b>0.52% AVG</b>		<b>312,789,305</b>	<b>\$244</b>	<b>AVG</b>		<b>\$9.90</b>		

Analysis					
	Project value	Grant Value			
United States	\$76,219,897,596	\$19,817,173,375	RI % GNP vs US		0.339%
Rhode Island	\$154,888,815	\$40,271,092	RI % Population vs US		0.337%
RI % of Value	0.203%	0.203%	RI Grants based on GNP	\$67,169,128	RI Grants based on Population
				Project value	Grant Value
					Labor / Prof / Local (est.)
<b>Note one (1) project Makes up 86% of Rhode Island Overall Projects</b>			Grant \$ RI based on Avg of above GNP & Population		
<b>Note Three (3) project Makes up 93% of Rhode Island Overall Projects</b>			Actual Grants received		
				(154,888,815)	(40,271,092)
			<b>Project Value and Grants not rec'd by RI</b>		
				<b>102,526,339</b>	<b>26,656,848</b>
					<b>\$35,884,219</b>

# Paul J. Raducha, CPA

**Paul Raducha:** A Certified Public Accountant with over 10 years of experience in Renewable Energy, starting with Lux Research, one of the top “Clean Technology” Research Firms in the world. Has a direct, hands-on experience in all aspects of Renewable Energy projects from development, financing, analysis, due diligence, project management, and asset management. With a strong and practical Renewable Energy technical background, he has been engaged in over 75MW of installed renewable energy projects, including landfills / brownfields. Graduated from Clarion University of Pennsylvania with honors and began a career at the international accounting firm, KPMG

Peat Marwick. As CFO of Alteris Renewables, one of the largest renewable integrators in the United States oversaw more than 30 megawatts installed for +3,000 customers. *During his tenure, Inc. Magazine listed Alteris Renewables as one of the nation's Fastest Growing Companies, 2 years in a row.*



*4.3MW solar on Slide Slope of title V landfill over land fill gas field for 10MW landfill gas to energy plant*