Rhode Island Forest Conservators Organization

Renewable Energy Siting

The Balance

KEARSARGE ENERGY

Paul Raducha, Over 13 years of experience in Renewable Energy, starting with Lux Research, one of the top "Clean Technology" research firms in the world. I have, hands-on experience in all aspects of Renewable Energy projects from project identification, vetting, development, financing, analysis, due diligence, project management, and asset management.

Engaged in over 95MW of installed renewable energy projects, including landfills, brownfields and Landfill gas-to-energy and landfill gas-to-vehicle fuel. Involved in the drafting and support of renewable energy legislation in several states.

Graduated from Clarion University of Pennsylvania with honors and began a career as a Certified Public Accountant (CPA) at the international accounting firm of KPMG Peat Marwick.

Thru hiked the 2,200 miles of the Appalachian Trail in 2002

Paul Raducha, Senior Developer
Kearsarge Energy, LP
Phone: 401-965-8443
Email: praducha@kearsargeenrgy.com
www.kearsargeenergy.com

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1 MW DC Solar Carbon Off-set Calculations

US Dept. of Energy Information Calculation - Solar/Tree CO2 off-set			
30 year old Eastern White Pine	193.0	Lbs. of CO2 per yr	*Fast growth Hard wood off-set (241.9 Lbs.) source US DOE*
Solar off-set of 1 kWh	1.1	Lbs. of CO2	*Non Base load - Gas fired*
1 MW DC / 840 kW AC	1,134,000	kWhs per year	*Groundmount/375W Panels/120,632 Sqft/2.8 Acres=4.0 Acres*
Total Solar off-set of 1 MW	1,254,204	Lbs. of CO2	
Trees off-Set	6,498	4 MW DC Solar	
Trees per Acre	1,625	Per Acre	

Source: https://www3.epa.gov/climate change/Downloads/method-calculating-carbon-sequestration-trees-urban-and-suburban-settings.pdf

EPA Greenhouse Gas Equivalencies Calculator			
1 MW DC / 840 kW AC	1,134,000	kWhs per year	*Groundmount/375W Panels/120,632 Sqft/2.8 Acres=4.0 Acres*
= Lbs. of CO2	1,860,574	Per Year	
= Barrels of Oil	1954	Per Year	
= CO2 sequestered by forest acres	994	Per Year	

Source: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Energy Issues

- New England Energy issues
  - Natural Gas
  - Hydro Canada
- Exporting our Environmental Responsibility
- Renewable Energy Economics
  - Locally Sourced
  - Local Control

Solar System

- Panels
- Racking
- Inverters
- Interconnection
  - Physical
  - Process
- DC / AC – Not a Band
- KWhs
- Net Meter – Behind the Meter / Front of the Meter
- Feeders / 3 Phase - Limits
- Substation - Limits

Project Process

- **Development / 6 – 18 Months**
  - Site ID
  - Due Diligence – IC / Zoning /Site Characteristics
  - Lease (Term / $ / AC/DC / T & Cs)
  - Interconnection Process
  - Zoning
  - Notice to Proceed (NTP)
- **Construction / 2 – 4 months**
  - Substantial Completion
  - Commercial Operation (COD)
- **Operation**

Renewable Energy Programs

- Renewable Energy Growth
  - 40MW / YR
- Virtual Net Metering
  - Muni / Federal / Non-Profit / Education
- Community Distributed Generation
  - Residential
- Renewable Energy Fund - Grants
- USDA - Grants / Loans

Program Flaws

- Economics
  - Lowest Cost
- Zoning
  - Substations / Feeders
- Roof Tops
  - Lease
- Parking Lots
  - Cost
- Compromised Properties
  - S & G
  - Contaminated Sites
    - Cost Output

……a better way to solarize

- Placement of Solar on property
  - On site
  - Sheds
- Utilize area around solar array
- Break up solar arrays
- Removal of solar
  - Bond / Sinking fund
- Compromised Sites

Solar on Landfill

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Solar on Landfill

Solar on Farms

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