Wind Power in New England Islands and Coastal Communities:

Wind Energy on the Community Scale

UMASS Boston December 5, 2002

State Incentive Programs for Wind Power Projects

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Block Island, RI

Effectiveness of Various State Incentives

- System Benefit Charge Funded Programs
  - Capital Cost Buy Down (up to 50%)
  - Production Credit (by solicitation, up to 3 cents kWh)
- State Tax Incentives
  - State tax Credits (up to 25%)
  - State Sales Tax exemption (up to 7+%)
- Other State Incentives
  - Net Metering (depends on size and use, offers protection against adverse standby charges)
  - Renewable Portfolio Standard
  - Local Property Tax exemption not considered significant

State Incentives for Small – Mid Sized Wind Turbines in the North East

State	Funds	Buy Down	Income Tax Credit	Sales Tax Ex	Net Metering	Production Credit	RPS
NJ	**120MA**	50%	No	Yes	100 kW	Yes*	Yes
MA	150M	No	Yes	Yes	60 kW	No	Yes
RI	Yes	**50% - 10 kW**	Yes	Yes	10/25	Yes*	No
ME	Yes	No	No	No	100 kW	No	Yes
CT	Yes	LILF	No	No	**Res. Only**	No	**(Yes)**
VT	No	No	No	Yes	15 kW*	No	No
NH	Yes	No	**No Tax**	**No Tax**	25 kW	No	No
NY	Yes	No	No	No	**Not for Wind!**	No	No

New Jersey (an example to all)

- Fund Supported by the SBC is administered by the Utilities and the NJ DEP.
  - 40% - 50% Capital Cost Buy Down Program for all projects (applicants receive a letter of commitment from utility after filling out a simple form)
  - Production Credit by solicitation
- State or PUC Incentives
  - Sales Tax exemption (6%)
  - Net Metering up to 100 kW, no adverse standby charges
  - Renewable Portfolio Standard

Massachusetts

- Fund Administered by The Massachusetts Technology Collaborative ($150 M)
  - No Buy down program
  - Grants for Schools and Non Profits for Projects
- State or PUC Incentives
  - State Income tax credit
  - State Sales Tax exemption
  - Net Metering up to 60 kW
  - Renewable Portfolio Standard
- UMASS REEL Wind Energy Support Program

Rhode Island

- Administration of Fund by Utility will Transfer to the State Energy Office Jan 1, 2003
  - 50% Buy Down for 10kW and below
  - Production Credit by Solicitation
  - Grants for site evaluation and specific projects
- State or PUC Incentives
  - Personal/Business State Tax Credit (decreasing)
  - Sales Tax Exemption
  - Net Metering up to 25 kW Commercial
  - No PTC
  - Adverse Utility Standby Charges: Narragansett Elect.

Connecticut

- Fund Managed by the Connecticut Clean Energy Fund
  - No Buy Down Funds
  - Grants for Funding Clean Energy Companies
- State or PUC Incentives
  - Low Interest Loans
  - No State Tax Credits
  - Net Metering up to 100 kW (residential only)
  - Renewable Portfolio Standard (weak)

New Hampshire

- Recently Deregulated
  - 2002 Bill Passed to Support Renewables, not implemented yet
- State or PUC Incentives
  - Net Metering up to 25 kW (Residential, State wide cap ser at 500 kW total!)

Maine

- Restructured but no SBC Fund. Outreach provided by Voluntary Customer Check Off Payment on Bill
  - Grants for Renewable RD programs
- State or PUC Incentives
  - Net Metering up to 100 kW
  - Renewable Portfolio Standard (30%! Not that high.)

Vermont

- Not Deregulated, No SBC Fund
- State or PUC Incentives
  - Sales Tax Exemption (5%) Up to 15 kW Systems, Farm Systems Exempt Up to 150 kW
  - Net Metering: Again 15 kW with 150 kW for Farms

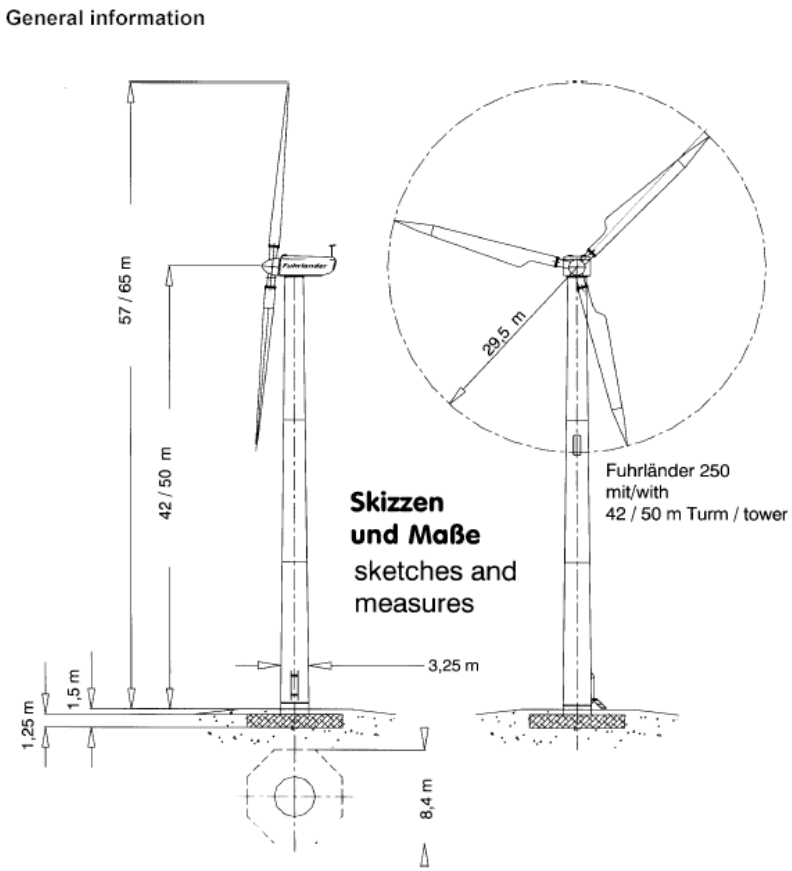
New York
(Words and Deeds Don't Match)

- SBC Fund Administered by NYSERDA
  - Small Turbine Buy Down Program Not Working
  - Large Wind Farm Subsidies
  - R and D Competitive Awards of up to 50% for Applications which Must Meet Complex Criteria (jobs)
- State or PUC Incentives
  - No tax Credits
  - Net Metering Program for Solar PV, None for Wind!
  - No Production Credits
  - No Renewable Portfolio Standard
  - Governor's State Facility Program 10% by 2005

Prospective Community Wind Power Project Used Evaluate State Incentives

- Facility: Municipal Water Treatment Plant
  - Uses 1.5 M kWh per year, Electricity Cost $1.6 M
  - Energy charge $ 0.075 per kWh
  - Peak Load 600 kW, Min Load 200 kW
  - Some Load Management possible
- Wind Turbine: Fuhrlander 250 kW Machine
  - Class 3+ power output 500,000 kWh annually
  - Total Installed Cost $360,000
  - Value of Electricity Displaced: $37,500 (first year)
  - 20 year Cumulative Savings: $695,000

Prospective Community Wind Power Project Used Evaluate State Incentives



Prospective Community Wind Power Project Used Evaluate State Incentives

Wind Tubine Simple Payback Analysis	
	Fuhrlaender
No Incentives	250 kW
[1] Capital Cost of Wind Turbine Generator	$360,000
[2] Annual System Power Generation (kWh)	503,700
[3] Annual Power Displaced from Electric Company	$46,284
[4] Annual Operating Costs for Wind Turbine	$7,200
[5] Annual System Savings [3]-[4]	$39,084
[6] Simple Payback (Years) [1]/[5]	9.2
[7] 20 Year Power Generated Cost ($/kWh)	$0.050

NOTES:

[1] Capital cost is estimated from best available preliminary information.

[2] Annual Power Generation is calculated using a 23% capacity factor.

[3] Annual Electric power costs calculated using a $.075 cost increasing at 5% a year

[4] Annual operating costs are estimated to be 2 percent of capital

Prospective Community Wind Power Project Used Evaluate State Incentives

Wind Tubine Simple Payback Analysis, by State					
	250 kW	NJ	RI	MA	NY
	No Incentives	40% Buy Down	$.03Prod. Credit	No Incentives	No Incentives
[1] Capital Cost of Wind Turbine Generator	$360,000	$216,000	$360,000	$360,000	$360,000
[2] Annual System Power Generation (kWh)	503,700	503,700	503,700	503,700	503,700
[3] Annual Power Displaced from Electric Company	$46,284	$43,941	$59,052	$46,284	$46,284
[4] Annual Operating Costs for Wind Turbine	$7,200	$7,200	$7,200	$7,200	$7,200
[5] Annual System Savings [3]-[4]	$39,084	$36,741	$51,852	$39,084	$39,084
[6] Simple Payback (Years) [1]/[5]	9.2	5.9	6.9	9.2	9.2
[7] 20 Year Power Generated Cost ($/kWh)	$0.050	$0.036	$0.050	$0.050	$0.050

NOTES:

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In Summary: Lessons Learned

- Conventional State Incentives Provide Little Support for Most Community Wind Power Projects
- Buy Downs and Production Credits Have the Most Impact on Potential Project Economics
- “Pre-funded” Programs with “Pre-approved” Application Criteria:
  - Increase Confidence in the Award Process
  - Decrease Project Lead Times
  - Decrease Application Difficulty for Non Technical Applicants
  - Get Wind Power Projects into the Communities
- Effect of Indirect Subsidies is Helpful For Market Growth but is Hard to Quantify for a Specific Project.

State Incentives Resources

- AWEA Inventory of State Incentives (2002)
  - http://www.awea.org/policy/documents/inventory.PDF
  - http://www-solar.mck.ncsu.edu
- Net Metering
  - http://www.awea.org/policy/netmeter.html
  - http://www.eren.doe.gov/greenpower/netmetering/#state
- State Energy Offices
  - http://www.solarbill.com/energy_offices_.html
- UMASS RERL Wind Energy Support Program
  - http://www.ceere.org/rerl/projects/support/weps.html