# Wind in Hingham



Hingham Municipal Lighting Plant



# Why Wind?

 Of municipal-scaled renewable energy, wind is the most immediately practical in MA. Others less optimal for our locale:

- Landfill gas
- Solar
- Ocean
- Hydro

## Why Now?

State RPS goals (though munis are exempt) at 4% for 2009, 1% increase/yr, where will it come from?
Other area projects are still in very early phases of consideration.
Cohasset
Offshore in Hull
others

## Hingham Light Current Position

#### 2008 HMLP Power Supply





### Why Hingham?

We are a maritime location
We have a municipal utility
Interim met tower data corroborate estimates

#### Exploring Wind in Hingham...

Potential sites: town-owned parcels reviewed and prioritized
Transfer station picked for met tower
Met tower results...

## Wind Speed, Turbine Output, Capacity Factor

		Hingham Municipal Light Plant								
Estimated turbine output based on collected wind data at site										
Month	Wind speed			Turbine output		Hours	Capacity I	actor (%)		
	measured	V82	N100	V82	N100		V82	N100		
	50 m	70 m	100 m	1.65 MW	2.5 MW		1.65 MW	2.5 MW		
February	5.53	6.00	6.53	320,192	580,056	672	28.9	34.5		
March	5.96	6.48	7.09	379,737	680,222	744	30.9	36.6		
April	4.68	5.14	5.68	216,974	421,422	720	18.3	23.4		
May	4.26	4.71	5.24	168,230	340,849	744	13.7	18.3		
June	4.21	4.61	5.08	157,223	310,811	720	13.2	17.3		
July	4.37	4.80	5.31	178,052	351,961	744	14.5	18.9		
August	3.85	4.19	4.58	114,670	226,884	744	9.3	12.2		
September	4.40	4.87	5.42	185,380	372,244	720	15.6	20.7		
October	5.18	5.71	6.47	278,994	556,341	744	22.7	29.9		
November	5.14	5.67	6.28	265,776	519,337	720	22.4	28.9		
Average	4.76	5.22	5.77	226,523	436,013		19.0	24.1		
Total				2,265,228	4,360,127					
Annual output				2,718,274	5,232,152					

#### Average Wind Speed (m/s x 2.2 = mph)

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#### turbine output per month



### Capacity Factor (%)



# Turbine Costs (APPROXIMATE)

100

	V-02		N-100	
		landfill		landfill
turbine	\$3,100,000	\$3,100,000	\$3,800,000	\$3,800,000
foundation	\$250,000	\$800,000	\$300,000	\$850,000
erection	\$300,000	\$300,000	\$350,000	\$350,000
shipping	incl.	incl.	incl.	incl.
engineering	\$100,000	\$100,000	\$125,000	\$125,000
electrical	\$350,000	\$350,000	\$425,000	\$425,000
balance of system costs	\$270,000	\$270,000	\$325,000	\$325,000
contingencies	\$410,000	\$410,000	\$500,000	\$500,000
TOTAL	\$4,780,000	\$5,330,000	\$5,825,000	\$6,375,000