

La Capra Associates

Hull Offshore Financial Analysis Update



Presented by: **Alvaro E. Pereira, Ph.D.**
La Capra Associates, Inc.

Presented to: **Town of Hull**

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Project Overview

- **Hull currently owns two on-shore facilities:**
 - Hull I – 660 KW online in 2001
 - Hull II – 1.8 MW online in 2006
- **Hull I and II currently produce ~ 12% of current town consumption**
- **Town has investigated possibility of offshore facilities since 2004**
- **Provide an objective, market-based, review of the financial assessment of building offshore facilities of 15 or 25 MW.**
- **Update and compare results to 2009 analysis**

Off-Shore is much different than on-shore

- ❖ **End of 2011: Of 237 GW (121 GW in 2008) installed wind capacity in world, only 3.6 GW (1.5 GW in 2008) is offshore (No U.S. installations).**
- ❖ **Higher Capacity Factors, generally; Don't Need Land**
- ❖ **Higher Capital, Operating, and Interconnection Costs**
- ❖ **Insurance and Ability to Finance Concerns**
- ❖ **Specialty Construction Firms**
- ❖ **Fewer transport and access issues**

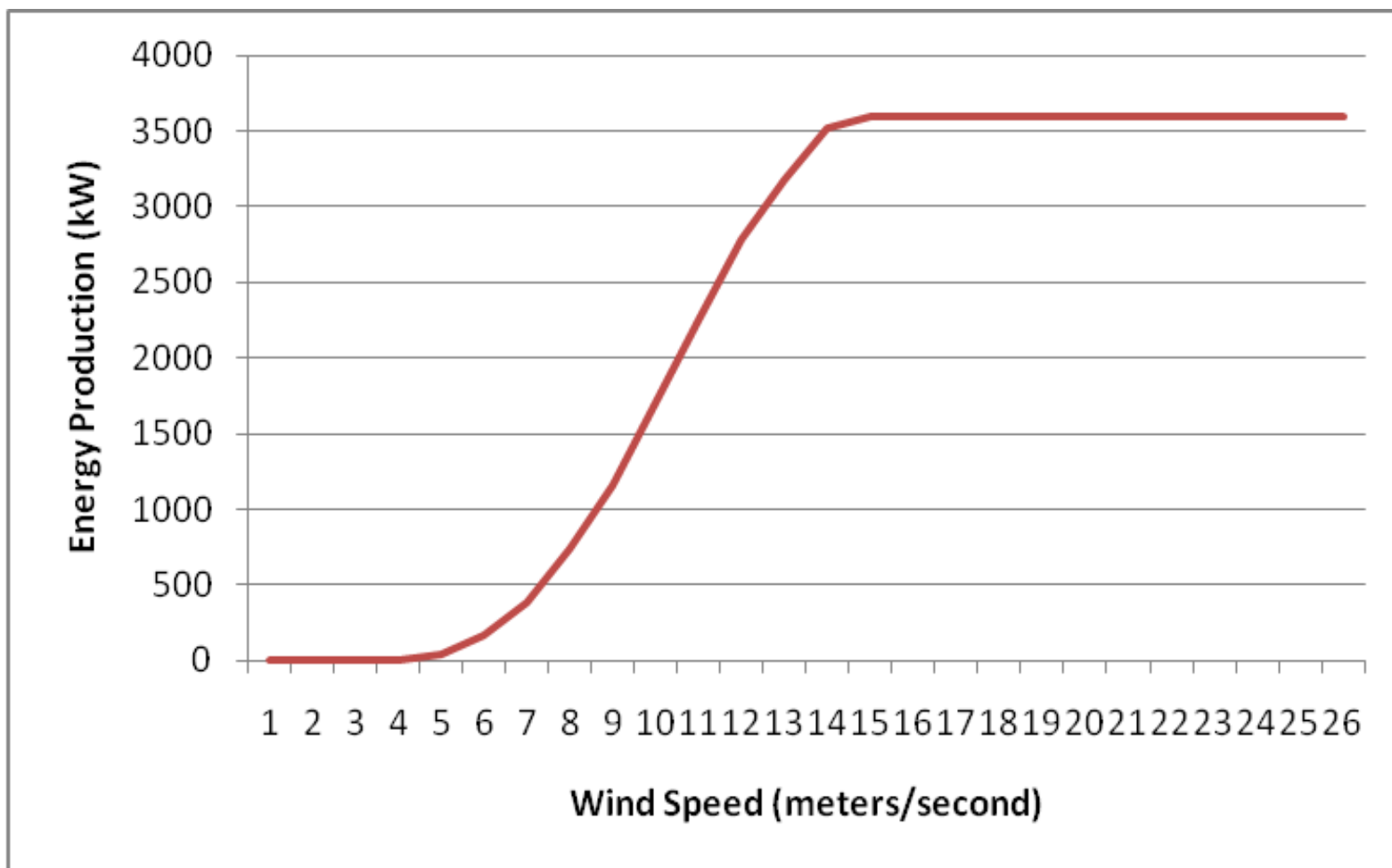
Financial Assessment but not full Pro Forma

- **Determine future cost**
 - Should not be used for a prospectus or offtake contract
 - Additional Input from EPC firms needed
- **Calculate revenues to Project**
 - Energy
 - REC
 - Capacity
 - Did not included avoided cost (Hull is municipal light district)
- **Examine revenues/costs under different capacity factors**
- **Study Period is 2016-2035**

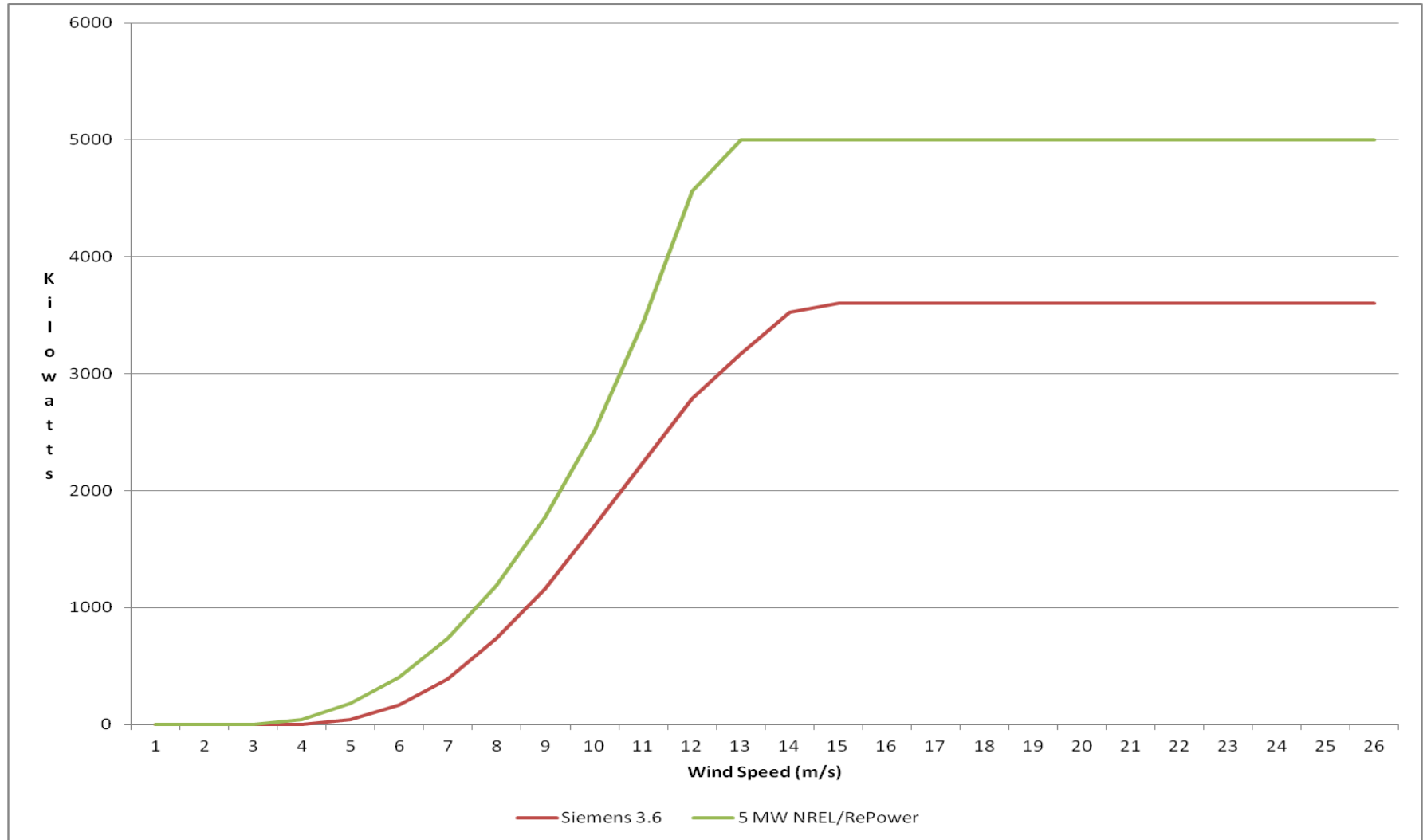
Project Configuration

- **Assume 3 or 5 x 5 MW (RePower) = 15 or 25 MW; 2009 Analysis used smaller turbines (3.6 MW); Larger turbine provides higher production**
- **Relatively close to shore (1-3 nautical miles from shore)**
- **Still strong winds (able to support 30%+ capacity factors)**
 - Umass Wind Data Leads to 34.7% CF with 5 MW Turbine
 - Compare to 31.1% CF with 3.6 MW Turbine
 - Analysis assumes 100% Availability
 - Examine Additional CFs for Sensitivity
- **Environmental impacts not examined!**

Siemens 3.6 MW Power Curve Data



RePower 5MW Power Curve Data Compared to 3.6



Cost Categories

■ **Capital**

- Turbine, Foundation and Substructures, Interconnection
- \$90 Million for 3 – 5 MW Turbine Project; \$105 Million with Contingency (Size of Bond offering).

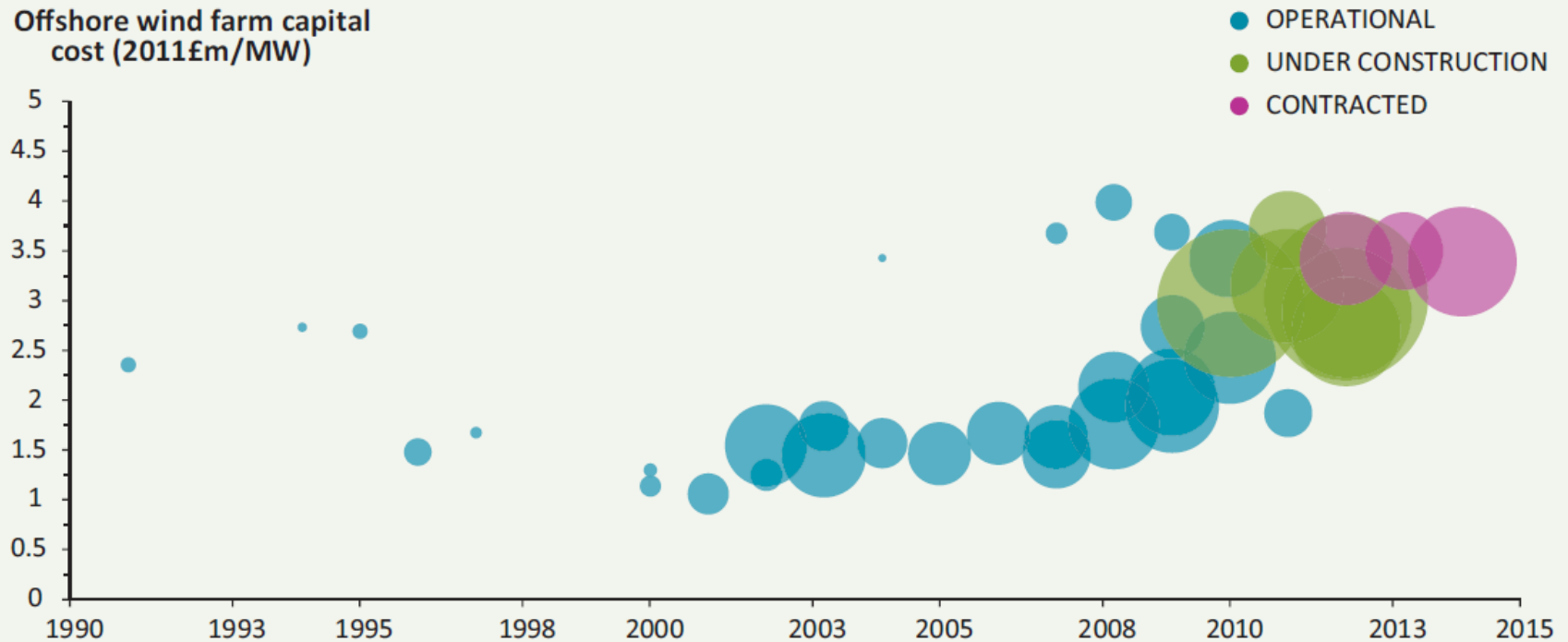
■ **Financing**

- Town-only
 - 100% Municipal Bonds at 4.75%
- Private Financing
 - Mix of Debt and Equity, Assume PTC!

■ **O&M, Insurance, G&A**

Cost Trends Show Increasing Costs

Exhibit 3.2 European offshore wind farm capital costs by year



Source: Offshore Wind Cost Reductions Pathway Study, The Crown Estate, May 2012

Comparison of Major Cost and Financing Assumptions

■ 2009

- Capital Cost: \$3160-\$3650/kW
- Debt Financing @ 6% for Muni
- Cash Grant available for Private Developer
- REPI and CREBS available to Muni

■ 2012

- Capital Cost: Close to \$6000/kW
- Debt Financing @ 4.75% for Muni
- No Cash Grant, but PTC assumed available for Private Developer
- REPI and CREBS not available to Muni

Energy Revenues (Comparison, 2009 and 2012)

	2009 Reference (\$/MWh)	2012 Reference (\$/MWh)
2012	62.65	n/a
2016	77.09	56.74
2020	107.23	66.22
2025	138.04	92.25
2035	176.09	140.81

REC Prices (Comparison, 2009 and 2012)

	2009 Reference (\$/MWh)	2012 Reference (\$/MWh)
2012	34.20	n/a
2016	23.83	47.36
2020	13.55	74.79
2025	15.33	83.77
2035	17.35	81.09

Financial Model Results (assuming reference prices)

	2009		2012	
	Municipal Financing	Private Financing	Municipal Financing	Private Financing
Revenue Requirements (LCOE)	\$157.12	\$125.47	\$219.48	\$213.74
Total Revenues	\$129.86	\$125.86	\$170.40	\$170.40
Difference	(\$27.26)	\$0.39	(\$49.08)	(\$43.34)
20 Year NPV (\$000) 3 Turbine	(\$12,451)	\$177	(\$25,931)	(\$22,898)
20 Year NPV (\$000) 5 Turbine	n/a	n/a	(\$42,554)	(\$38,414)

What If The Wind Resource is Better?

- **Wind Data was from 80 MW; 5 MW turbine likely would utilize resources at 100 MW**
- **Potential for Higher Capacity Factor Is Possible**
- **Offshore Wind Capacity Factors Have Increased over time and can be as high as 40-50%+ for some projects; (Cape Wind assumes 39% CF)**
- **Uncertainties over Project Location; Used 2006 Wind Data from comparable location**

Capacity Factor Sensitivity Analysis (assuming 3 Turbines and Muni Financing)

Assumed Capital Costs

Capacity Factor	NPV (\$000)
34.7%	(\$25,931)
38%	(\$17,914)
42%	(\$8,196)
45%	(\$0.91)
48%	\$6,380

2011 Capital Costs

Capacity Factor	NPV (\$000)
34.7%	(\$3,199)
38%	\$4,817
42%	\$14,535
45%	\$21,823
48%	\$29,112

Summary

- **Increase in offshore wind costs coupled with reduced energy market revenues leads to challenging development environment**
- **MA RPS provides valuable revenue support but still not enough to support profitable investment**
- **Capital costs assumptions are key**
- **Lower capital costs coupled with higher wind resources are necessary to justify project development**
- **Other barriers not considered: availability of financing and environmental impacts**

End of Presentation



Thanks!

Contact Information:

Al Pereira

La Capra Associates

One Washington Mall, 9th Floor
Boston, MA 02108



617-778-5515, ext. 125



apereira@lacapra.com