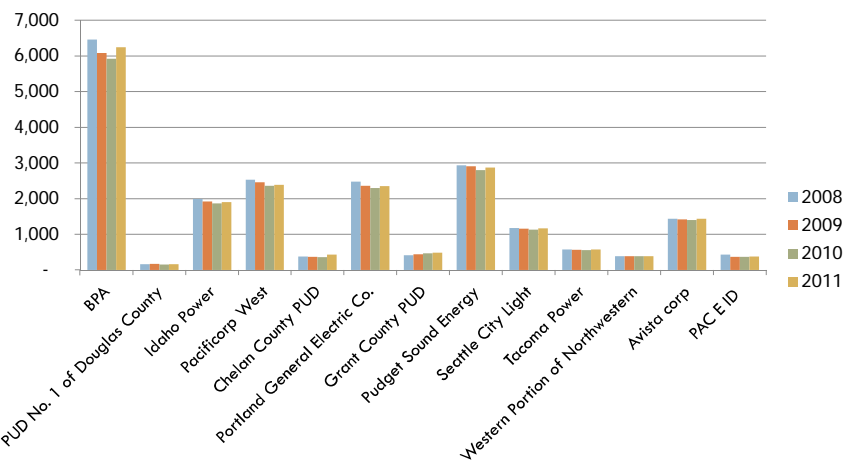


## Review of regional loads: Recovery is evident across all Control Areas

15



## Review of regional loads: Change in loads since the recession

16

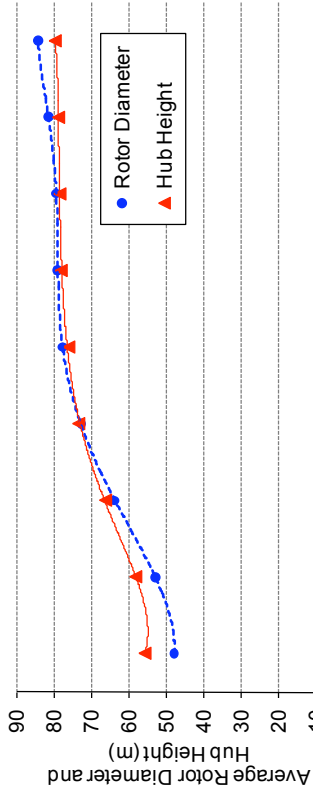
- In 2011 regional loads grew by over 700 MWa ~ 4%
- However Regional loads in 2011 were still below 2008 levels by about 500 MW ~3%

MVA	2008	2009	2010	2011	Change since 2008	Change since 2010
BPA	6,400	6,000	5,900	6,240	-3.2%	3.5%
PUD No. 1 of Douglas County	100	170	150	101	0.0%	0.8%
Idaho Power	1,892	1,918	1,867	1,901	-4.0%	1.8%
PacifiCorp West	2,028	2,458	2,358	2,381	5.7%	1.1%
Chelan County PUD	375	372	360	402	1.0%	20.1%
Portland General Electric Co.	2,477	2,302	2,296	2,358	5.0%	2.6%
Grant County PUD	418	440	404	402	1.0%	0.9%
Pudge Sound Energy	2,938	2,907	2,807	2,670	2.1%	2.8%
Seattle City Light	1,100	1,101	1,100	1,104	-1.3%	0.0%
Tacoma Power	571	588	555	570	0.7%	-1.2%
Western Portion of Northwestern	391	388	384	385	-1.5%	0.2%
Avista corp	1,431	1,421	1,387	1,440	0.1%	3.1%
PAC E ID	430	398	371	382	-11.0%	3.1%
<b>Grand Total</b>	<b>21,360</b>	<b>20,682</b>	<b>20,066</b>	<b>20,704</b>	<b>-2.7%</b>	<b>3.0%</b>

Once adjusted for impact of the weather, loads in 2011 are above 2009 levels.



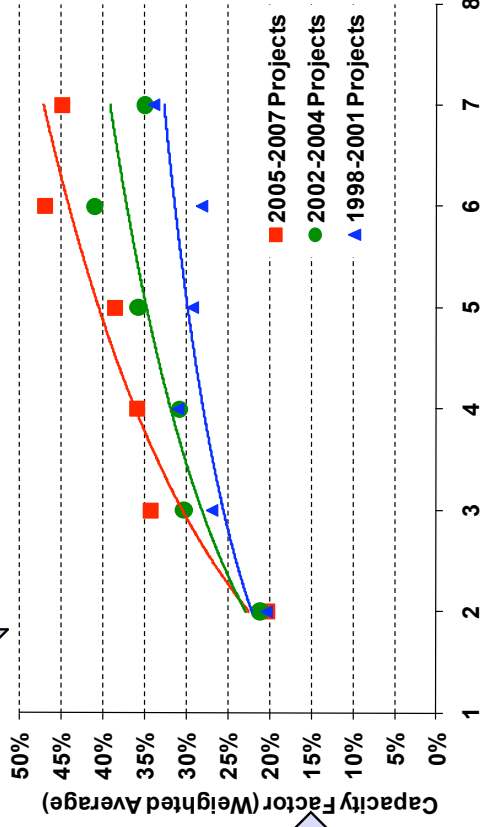
# Move to Lower Wind Speed Sites and Increased Curtailment Hide the Very Real Increases in CFs Witnessed in Individual Wind Resource Classes



Year	2000-01	2002-03	2004-05	2006	2007	2008	2009	2010
COD:	1,418	1,686	1,942	1,515	3,190	5,004	5,733	2,855
Turbines:	1,014 MW	2,080 MW	2,779 MW	2,440 MW	5,249 MW	8,348 MW	9,993 MW	5,113 MW

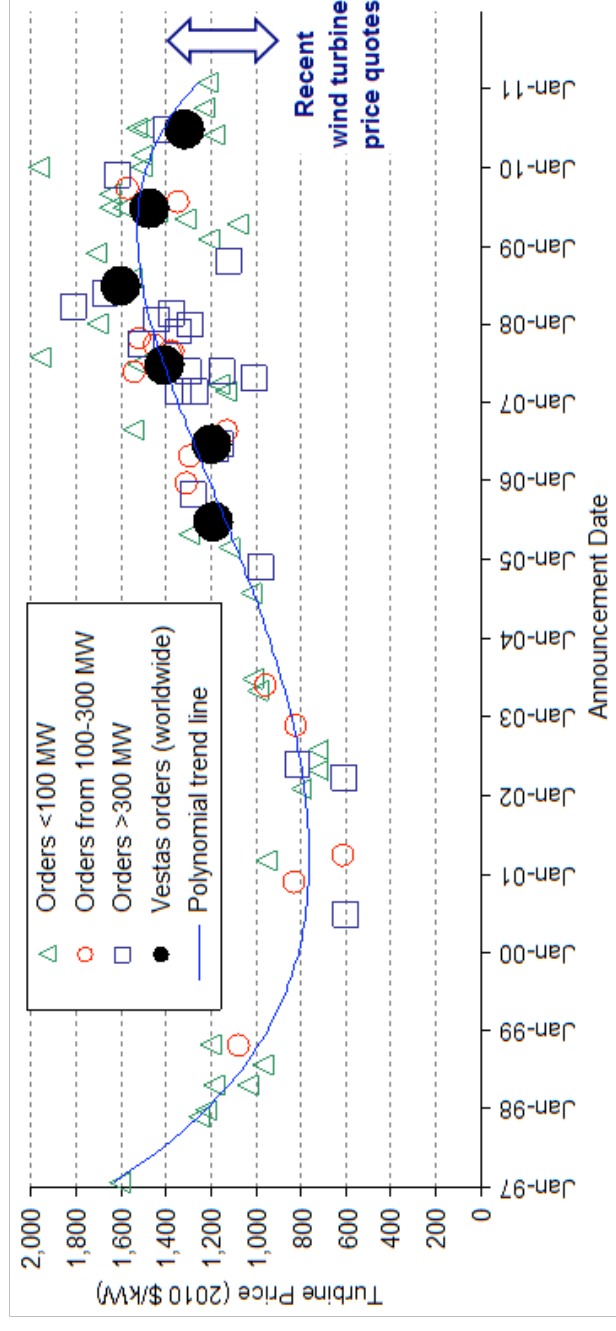
Source: U.S. DOE 2011

**Historical increases in avg. hub height and rotor diameter have been substantial**



**Leading to sizable increases in avg. capacity factors within specific resource classes**

# Wind Turbine Prices Have Softened Since Their Highs in 2008



Source: Bolinger and Wiser 2011

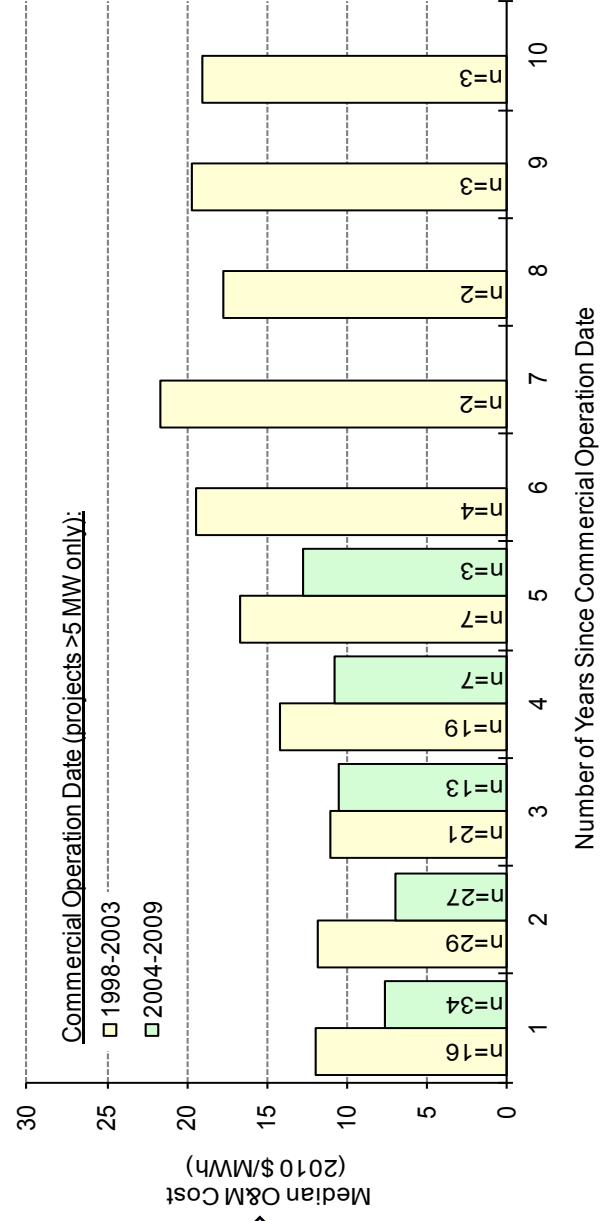
**Lag between turbine prices and project costs should lead to substantial project-level installed capital cost reductions by 2012-2013**

Turbine price quotes in 2011 for “standard” technology are reportedly as low as \$900/kW (Tier 1: ~\$1,100-1,250/kW, with average at ~\$1,100/kW); higher costs typical for smaller orders, larger rotors/towers, etc.

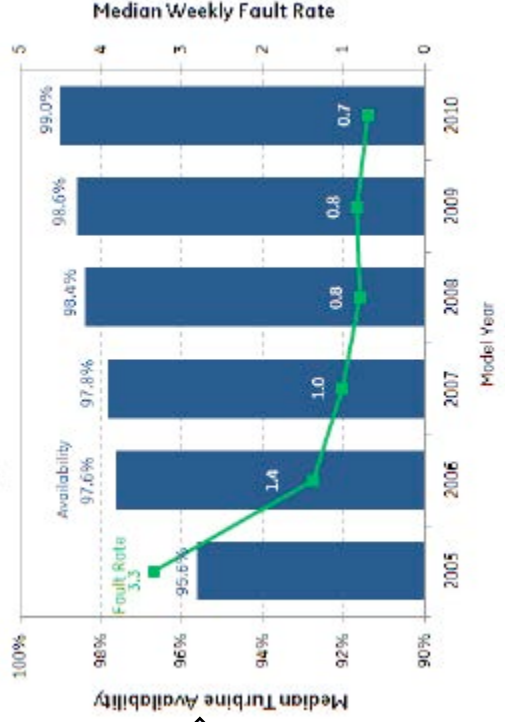
*(also more-favorable terms for buyers and improved technology; balance-of-plant costs also reportedly lower than in recent past)*

# Some Evidence of Lower O&M Costs, Higher Availability, Improved Financing

O&M costs from limited sample of US wind power projects (U.S. DOE 2011)



GE's reported median availability by model year (Mesh et al. 2011, "GE Wind Turbine Availability")



Strength of evidence supporting specific improvements in O&M, availability, and financing somewhat lower than trends in capacity factor and capital cost

Figure 1: Americas 1.5SLE/XLE Model Year: Median Lifetime Availability, excluding first 12 weeks of operation

# Recent “Chatter” Suggests that, As a Result of These Trends, Delivered Wind Energy Costs Have Declined Substantially

BNEF 2011: “The cost of wind generation has been driven to record lows by declines in turbine prices and the cash grant, which eliminates the cost of securing tax equity financing.”

“Austin Energy officials say those wind contracts are among the cheapest deals available, when the cost of building power plants is taken into account, and comparable to what the historically volatile natural gas market has been offering recently.” (*Statesman.com article*)

“Our contract with NextEra Energy Resources is one of the lowest we’ve ever seen and results in a savings of nearly 40 percent for our customers,” said David Eves, president and CEO of Public Service Company of Colorado. “The addition of this 200-megawatt wind farm demonstrates that renewable energy can compete on an economic basis with more traditional forms of generation fuel, like natural gas, and allows us to meet the state’s Renewable Energy Standard at a very reasonable cost to our customers.” (*Reuters article*)

Consumers Energy, Michigan: “Lower wind power costs mean \$54m saving for Consumers Energy.” (*newspaper article*)

Westar, Kansas: Signed more wind contract than needed “...because pricing is so attractive now and to minimize tax risk to our investors” (*Westar Q4 earnings call*)