



Status of the ecoENERGY for Renewable Power Program

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Presentation Overview



- **Status of Wind Energy in Canada**
- **Current status of the ecoENERGY for Renewable Power (ecoERP) program**
- **Performance of ecoERP projects**
- **Performance of selected Wind projects**
- **Conclusions**



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Kruger Energy Port Alma Wind Farm

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Status of Wind Energy in Canada

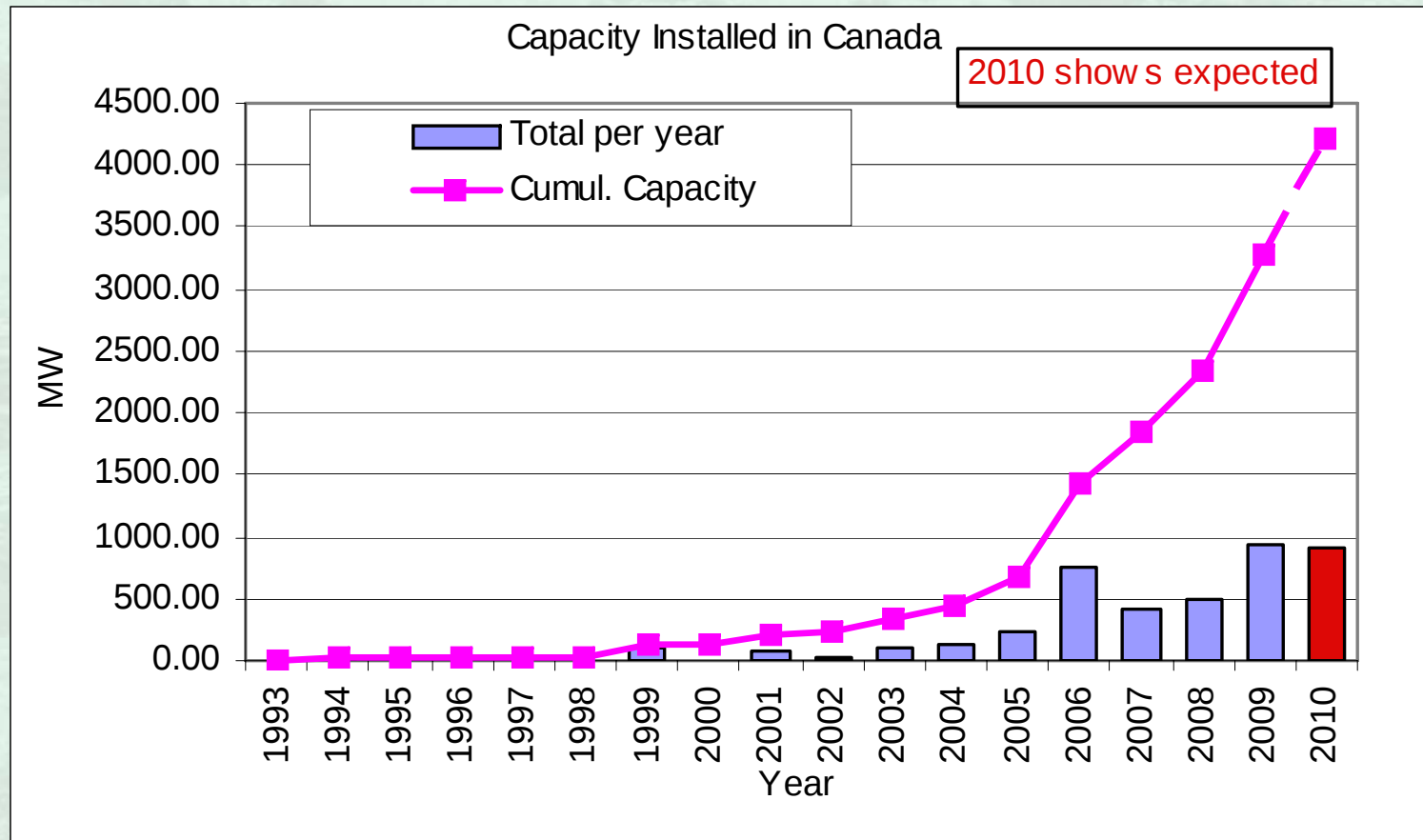


- By end of 2009, installed wind capacity totalled 3 290 MW, representing 1.3% of overall electricity production.
 - 3,547 MW installed as of September 2010
- Federal incentives (with various provincial policies) have contributed to growth
 - Wind Power Production Incentive (WPPI): 924 MW
 - ecoENERGY for Renewable Power: 2308 MW
 - Canadian Renewable and Conservation Expense (CRCE) and Green Power Purchase: 60 MW





Yearly Growth of Canadian Wind Capacity



- By end of September 2010, Canada had 3 547 MW installed wind capacity



Slide 4

j4

there appears to be a space in the word "show s" where there should be none.

jjensen, 10/25/2010



The ecoENERGY for Renewable Power Program





ecoENERGY for Renewable Power



For Reference

- Announced in January 2007 as part of ecoENERGY Initiatives
- Support purchase of 14.3 GWh from **low-impact renewable** energy projects over ten years
 - Provide 1¢ per kilowatt-hour incentive
 - Total of \$1.46 billion in investments and operation
- Represents 6.0 to 6.5 Mt/yr of GHG emission reductions
- Projects must be commissioned before March 31, 2011
- Wind, Low-Impact Hydro, Biomass, PV, Geothermal, Marine Energies





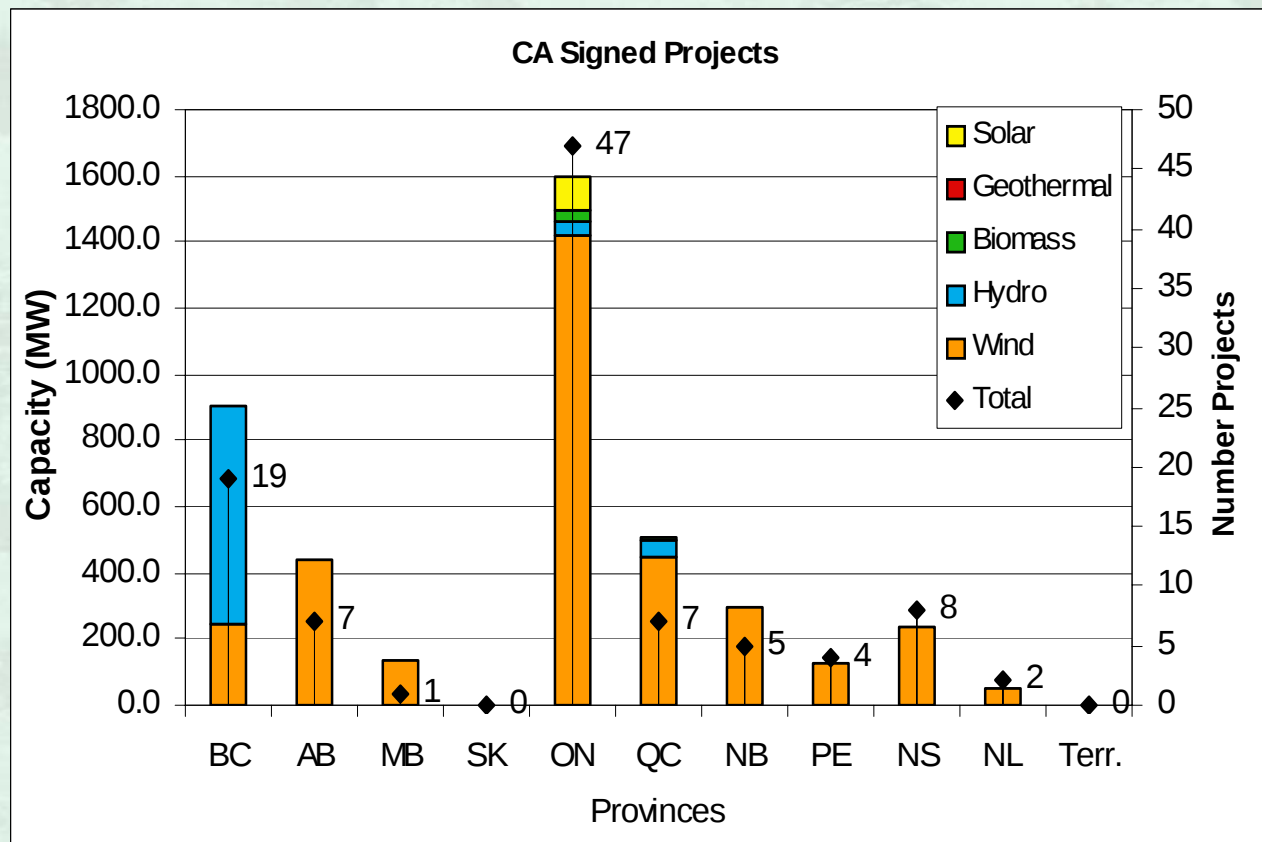
Results to Date

- 332 projects applied to the program:
 - 18 000 MW of renewable power capacity
 - 85 % wind projects
- 100 projects with signed contribution agreements, with 5 more in negotiation totaling:
 - Over 4 500 MW of capacity
 - \$1.4 billion in funding over 10 years
- 67 are wind projects totaling nearly:
 - 3 550 MW of capacity
 - \$1.03 billion in funding over 10 years





ecoERP Projects with Contribution Agreements



- 100 projects signed
- 4 301 MW installed
- Wind benefited the most from the ecoERP program
 - 74.3% of funding
 - 79.1% of total capacity
- Funding for other technologies
 - Hydro: 22.2%
 - Biomass: 2.4%
 - Solar: 1.1%

• As of September 2010

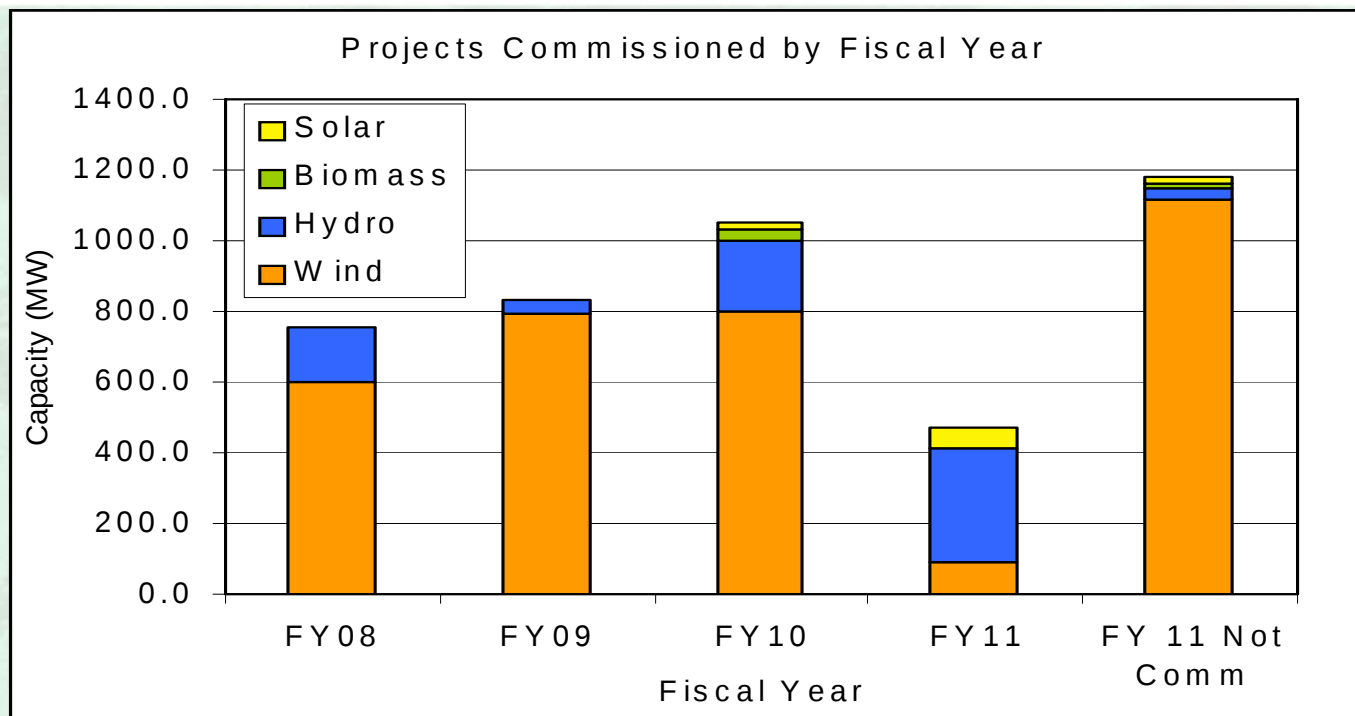


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ecoERP Commissioned Projects



Note:

Q1: April to June

Q2: July to September

Q3: October to December

Q4: January to March

As of September 2010

➤ 72 projects commissioned to date for 3 119 MW

➤ 28 projects (1 182 MW) left to be commissioned by March 31, 2011
(not counting the 5 projects in negotiation: about 200 MW)

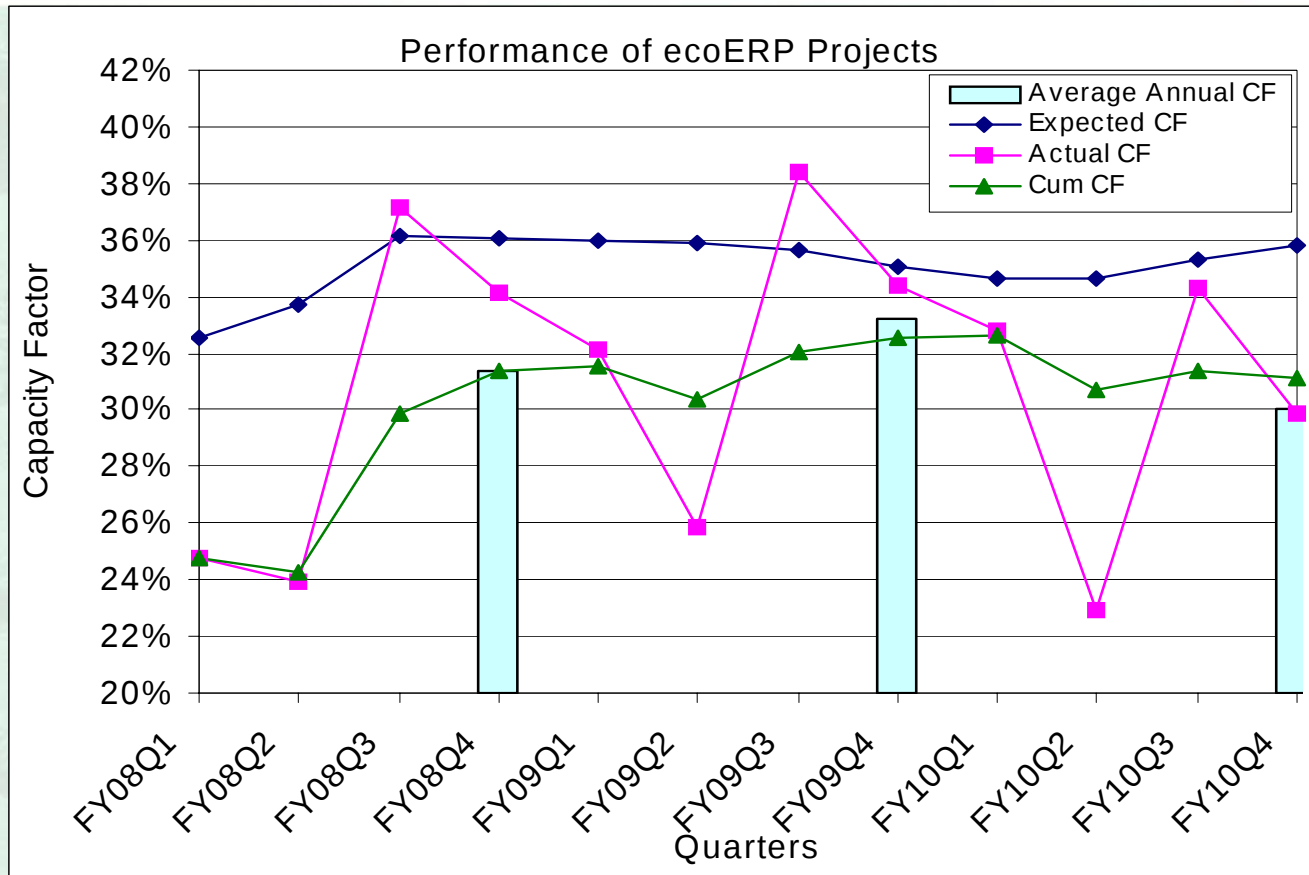
Are we concerned? YES!

However, last year 24 projects (829 MW) were commissioned during Q3 and Q4





Performance of ecoERP Projects



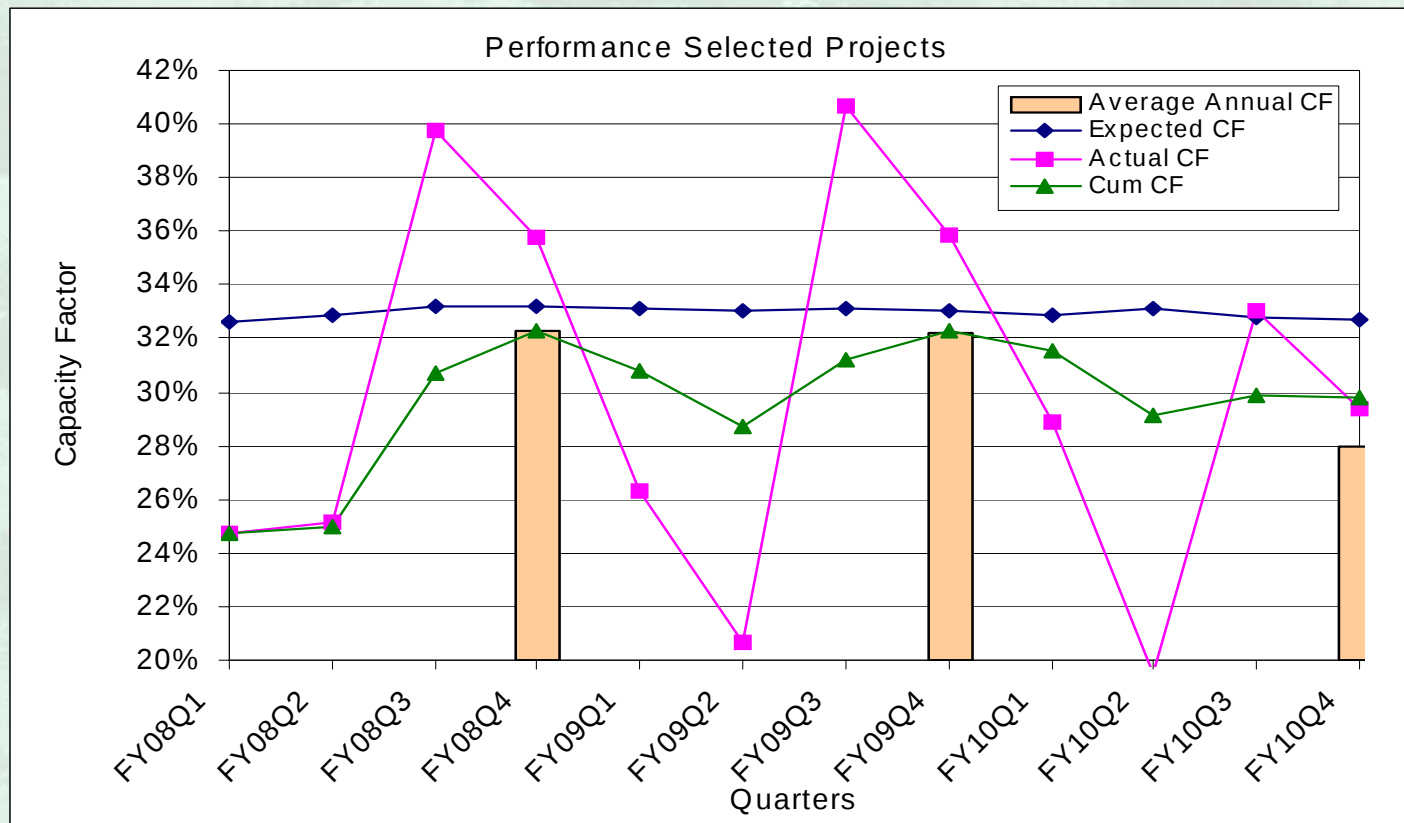
50 projects
commissioned

- Started with 5 projects in first quarter FY08Q1
- Data is weighted by size and numbers of days in operation

- Cumulative performance is 86.9% of expected
- mainly due to FY10 which was only 85% of expected



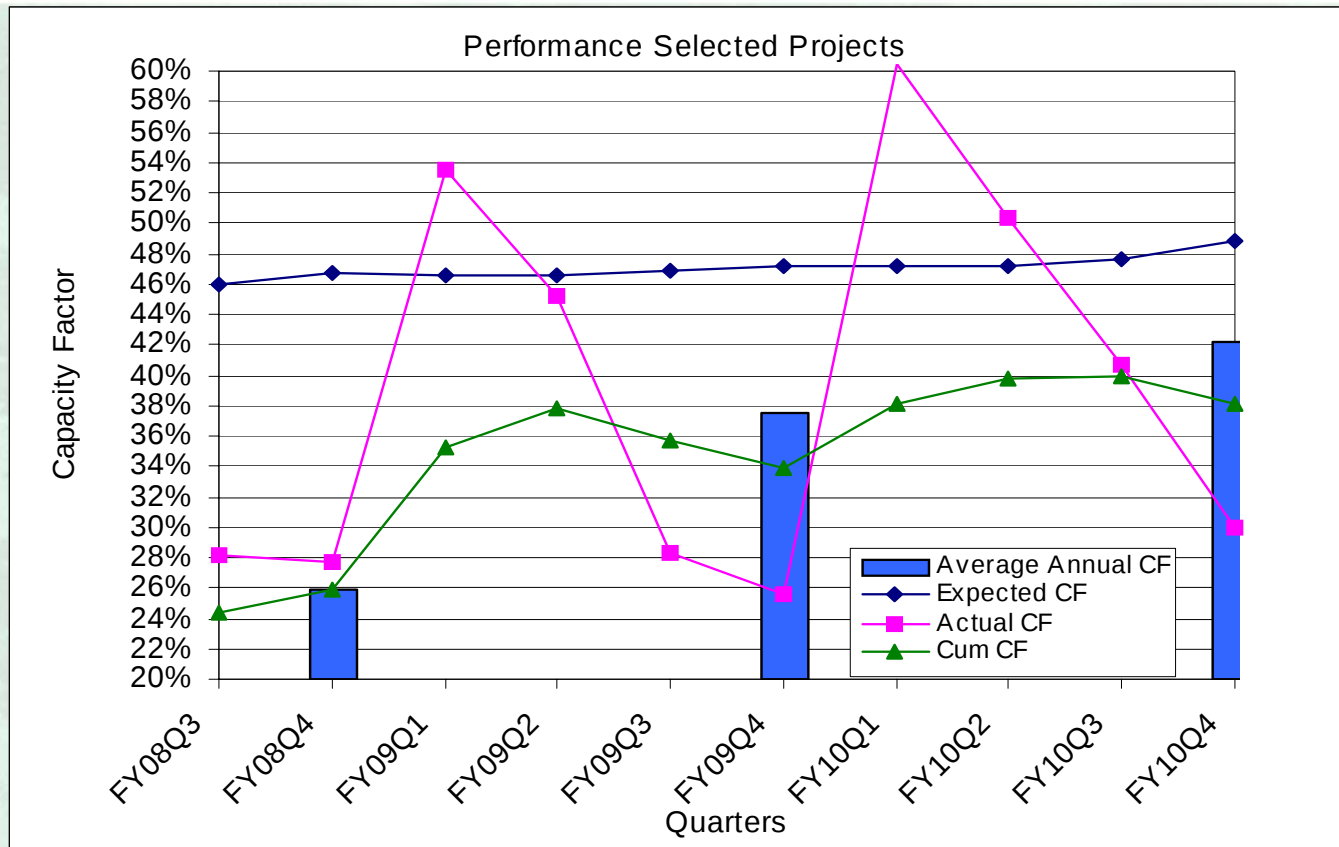
Performance of ecoERP Projects - Wind



- Total of 36 projects (5 in FY08Q1)
- Cumulative performance is 91% of expected
- FY10 was also low, at 85% of expected; but FY09 was 97.4% of expected



Performance of ecoERP Projects - Hydro



- Total of 13 projects (none in FY08Q1)
- Cumulative Performance is 77.9% of expected
- FY10 was the best at 88.2% of expected





ecoENERGY
an ecoACTION initiative

Performance of Wind Projects in Canada



Criteria for Project Selection

- For a project to be included in analysis it had to:
 - Have an agreement in place under WPPI or ecoERP
 - Have been in operation for at least one year



**44 projects
meet these criteria**

Note: Data is weighted by size and numbers of days in operation





Projects Included in Analysis

Prov.	Project Name	# Projects	Capacity (MW)
AB	Chin Chute Wind Farm		30.0
	Kettles Hill Wind Project		54.0
	Magrath Wind Power Project		30.0
	McBride Lake Windfarm		75.2
	Soderghen Wind Power Project		70.5
	Summerview Wind Turbine		1.8
	Summerview Windfarm Phase I		68.4
	Taber Wind Power		81.4
AB Total		8	411.3
MB	St. Leon Wind-Energy Project		80.9
MB Total		1	80.9
SK	Centennial Wind Farm		149.4
	Cypress Wind Power Facility Expansion		4.6
	Cypress Wind Power Project		5.9
SK Total		3	160.0
Prairies Total		12	652.2

NB	Kent Hills Wind Farm		96.0
NB Total		1	96.0
NS	Glance Bay Langan Wind Farm		11.5
	Pubnico Point Wind Farm		27.0
NS Total		2	38.5
PE	Aeolus Wnd PEI Turbine		3.0
	East Point Wind Plant		30.0
	North Cape Wind Farm-Phase II		5.3
	Norway Wind Park		9.0
	West Cape Wind Park (Phase II)		79.2
PE Total		5	126.5
NL	St. Lawrence 27 MW Wind Energy Project		27.0
NL Total		1	27.0
Maritimes Total		9	288.0

Prov.	Project Name	# Projects	Capacity (MW)
ON	Clear Creek Wind Farm		9.9
	Cruikshank Wind Farm		8.3
	Cultus Wind Farm		9.9
	Enbridge Ontario Wind Power Project A & B		181.5
	Erie Shores Wind Farm		99.0
	Ferndale Phase II Wind Farm		3.3
	Frogmore Wind Farm		9.9
	Huron Wind		9.0
	Kingsbridge Wind Power Project-1		39.6
	Kruger Energy Port Alma Wind Power Project		101.2
	Melanchton Grey Wind Project		67.5
	Melancthon II Wind Project		132.0
	Mohawk Point Wind Farm		9.9
	Prince Wind Energy Project		189.0
	Providence Bay Wind Farm		0.8
	Ravenswood Wind Farm		9.9
	Ripley Wind Power Project		76.0
	Toronto Waterfront Wind Turbine Project		0.8
ON Total		18	957.4

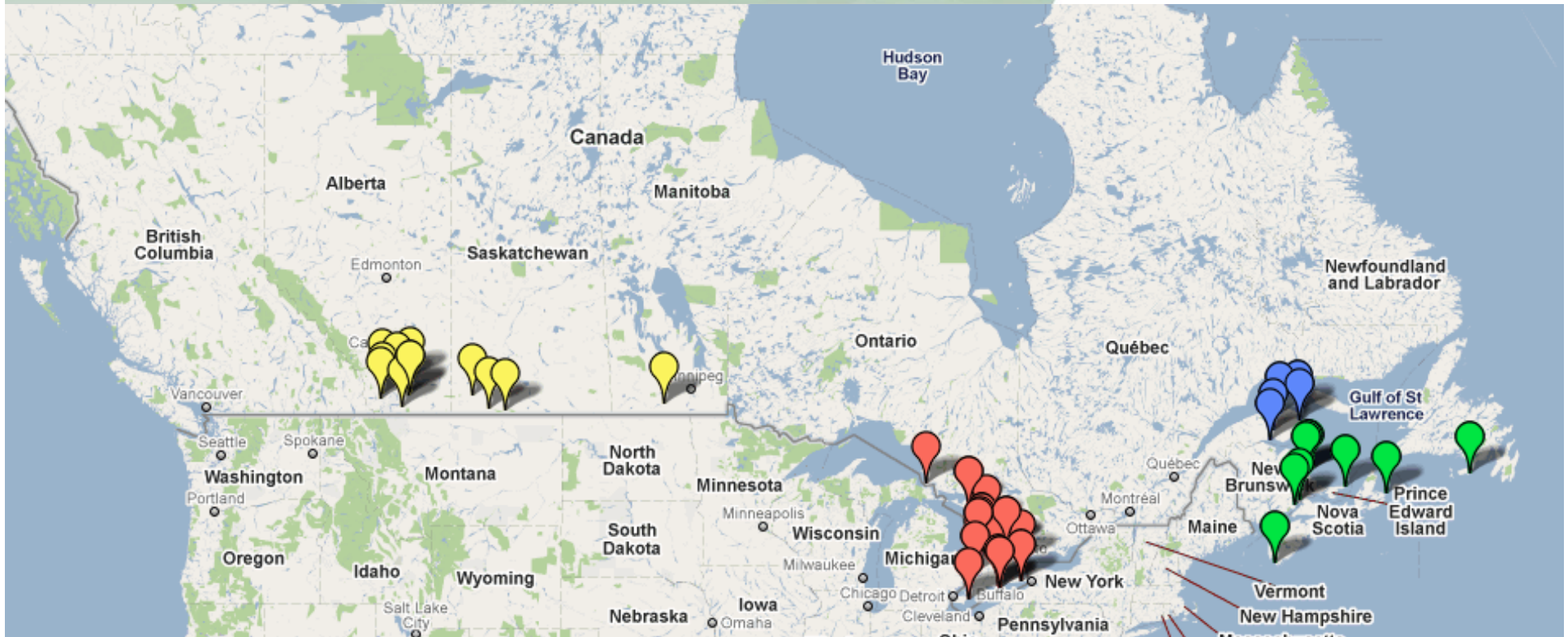
QC	Parc éolien de Baie-des-Sables		109.5
	Parc éolien de Carleton		109.5
	Parc éolien de l'Anse-à-Valleau		100.5
	Parc Éolien du Mont Copper		45.0
	Parc Eolien du Mont Miller		54.0
QC Total		5	418.5

Grand Total		44	2316.1
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Regional Breakdown



Prairies

- 12 projects
- 652 MW

Ontario

- 18 projects
- 957 MW

Quebec

- 5 projects
- 419 MW

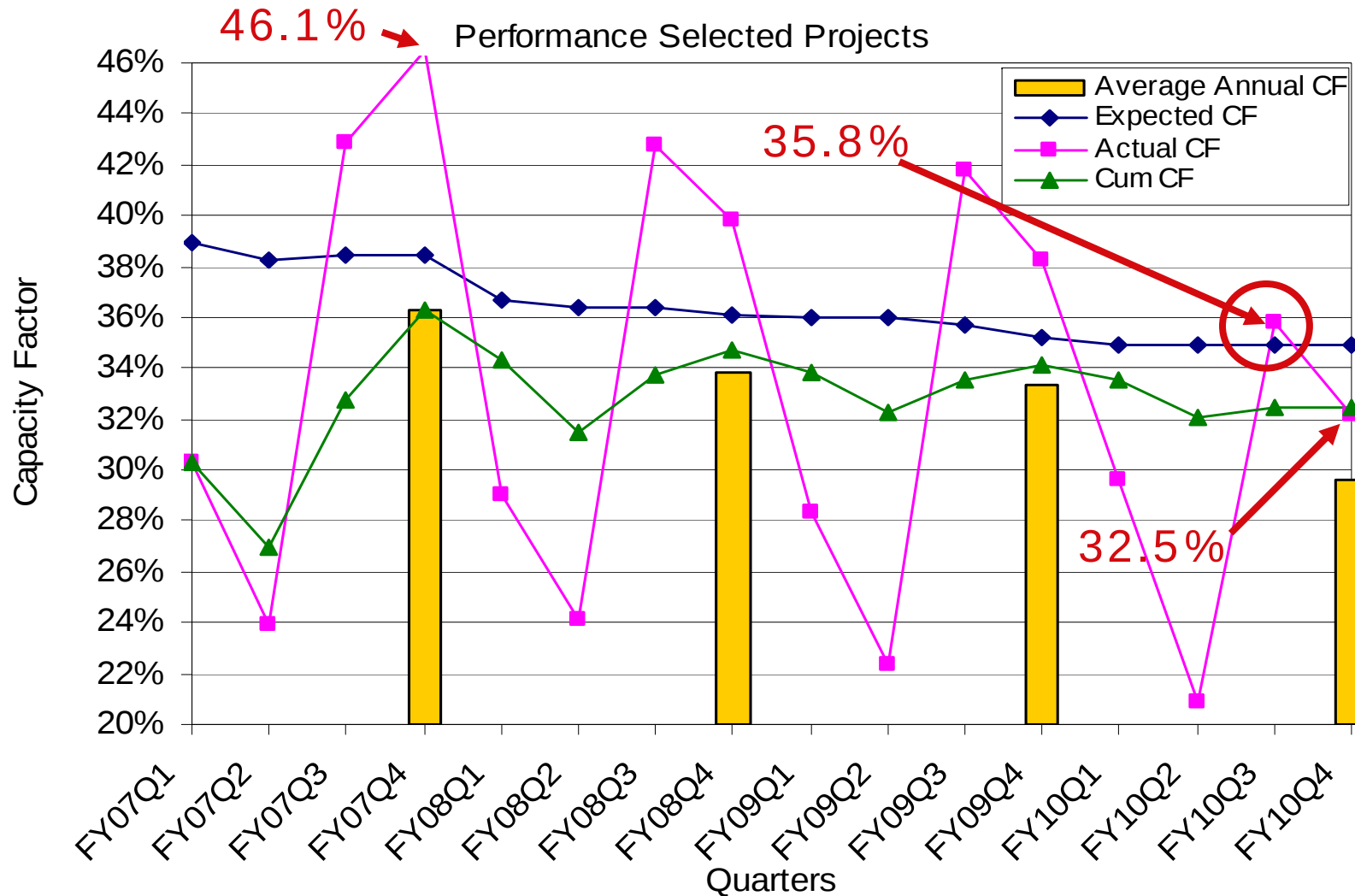
Maritimes

- 9 projects
- 288 MW





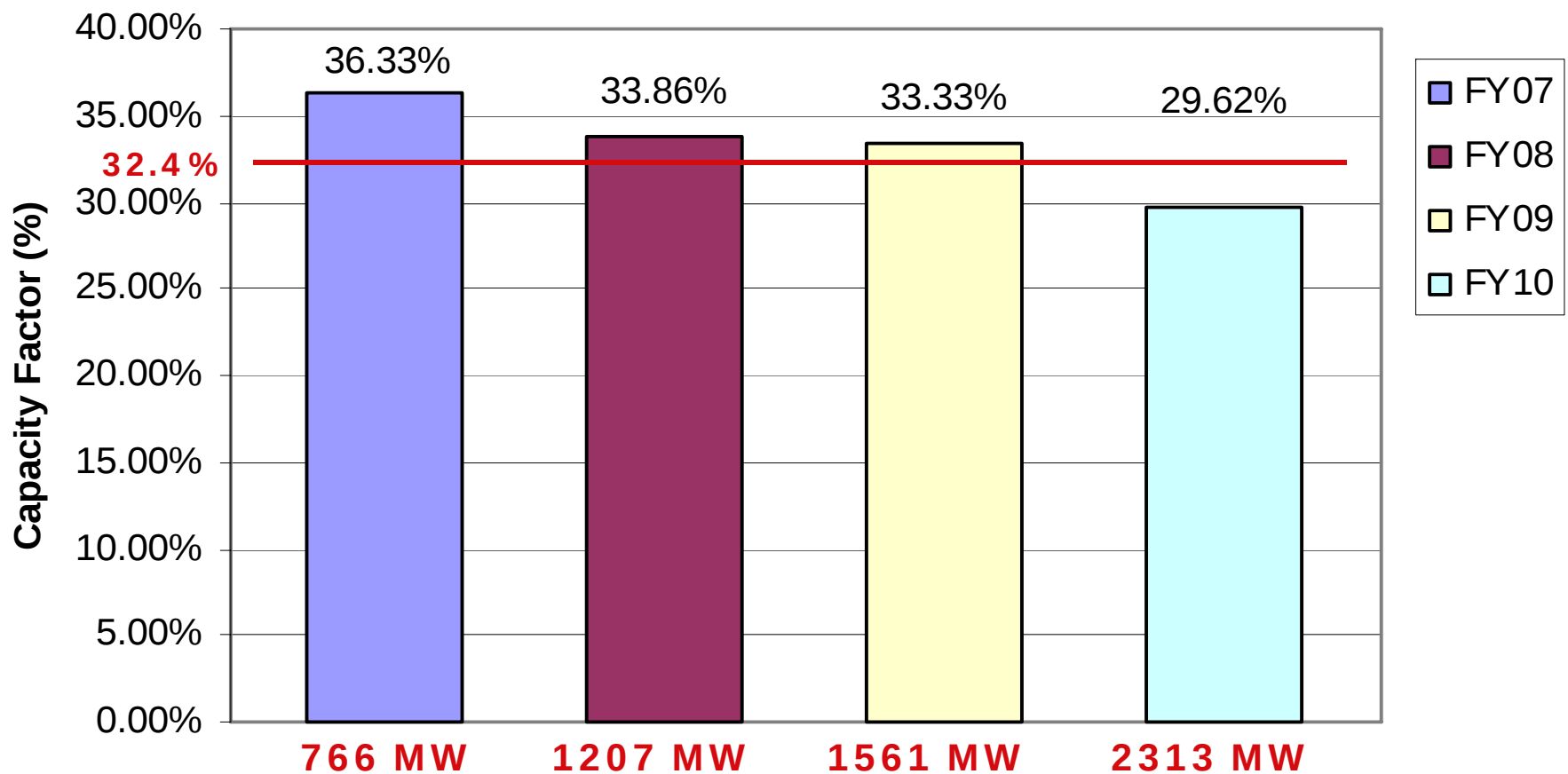
Performance of 44 Wind Projects by Quarter





Annual Capacity Factor 44 Projects (3 216 MW)

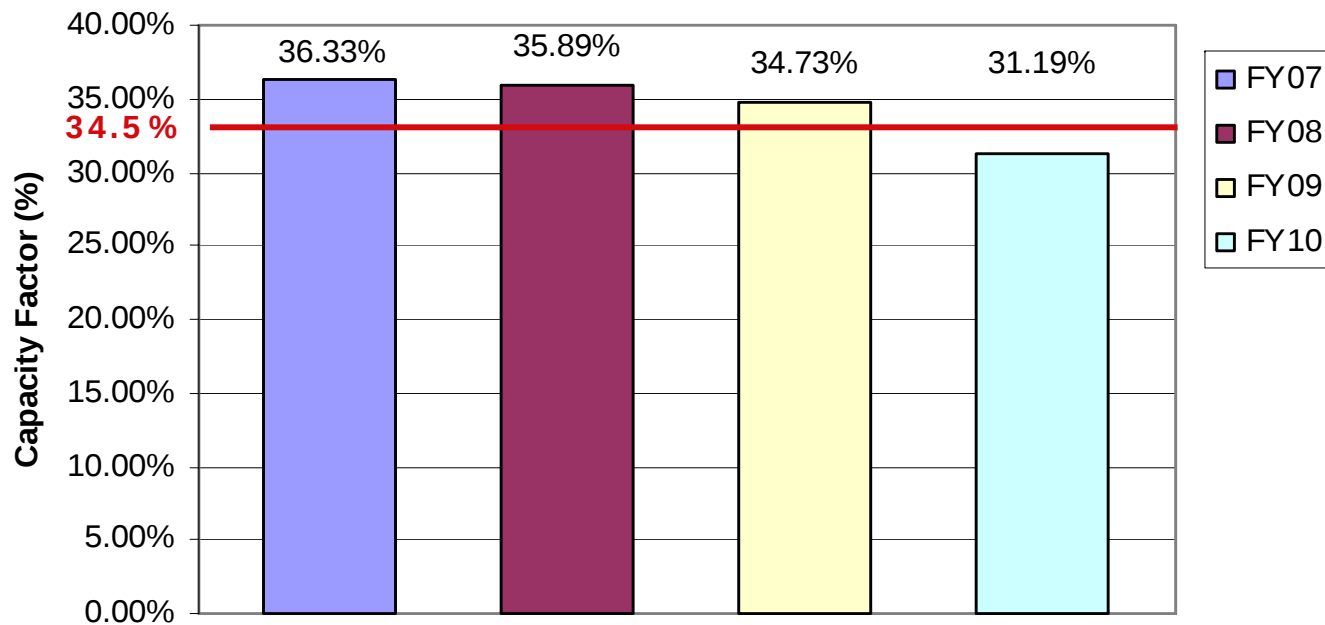
Average Yearly Capacity Factor for Selected Wind Projects





Annual Capacity Factor 20 first Projects (840 MW)

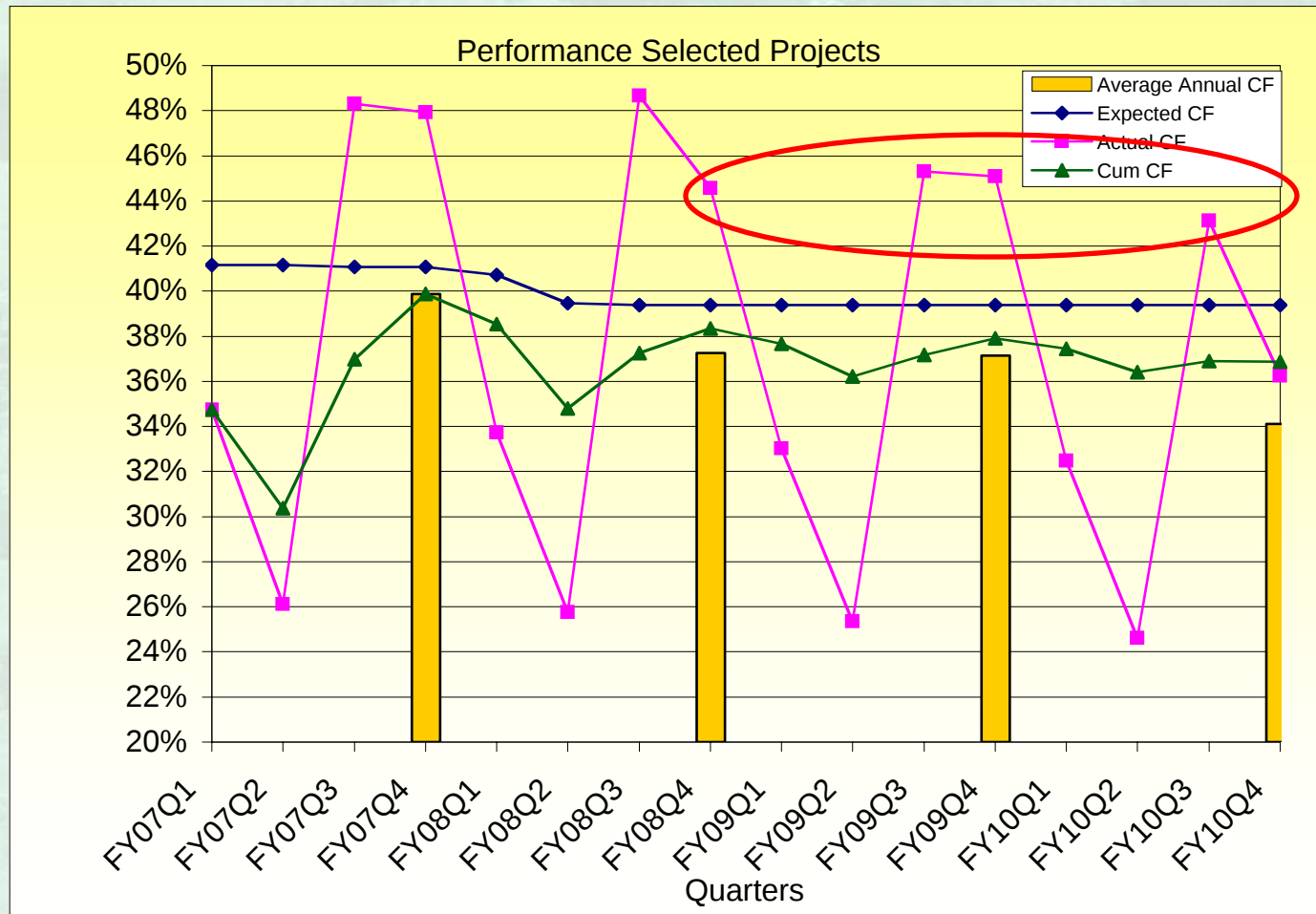
Average Yearly Capacity Factor for Selected Wind Projects



- Note that overall performance is better than with all 44 projects suggesting that later projects perform less than first one
- This is not surprising since many projects built in later years were in Ontario



CF by Quarter - Prairie Provinces



Since winter 2008, the average CF has been less than 45% in fall and winter.

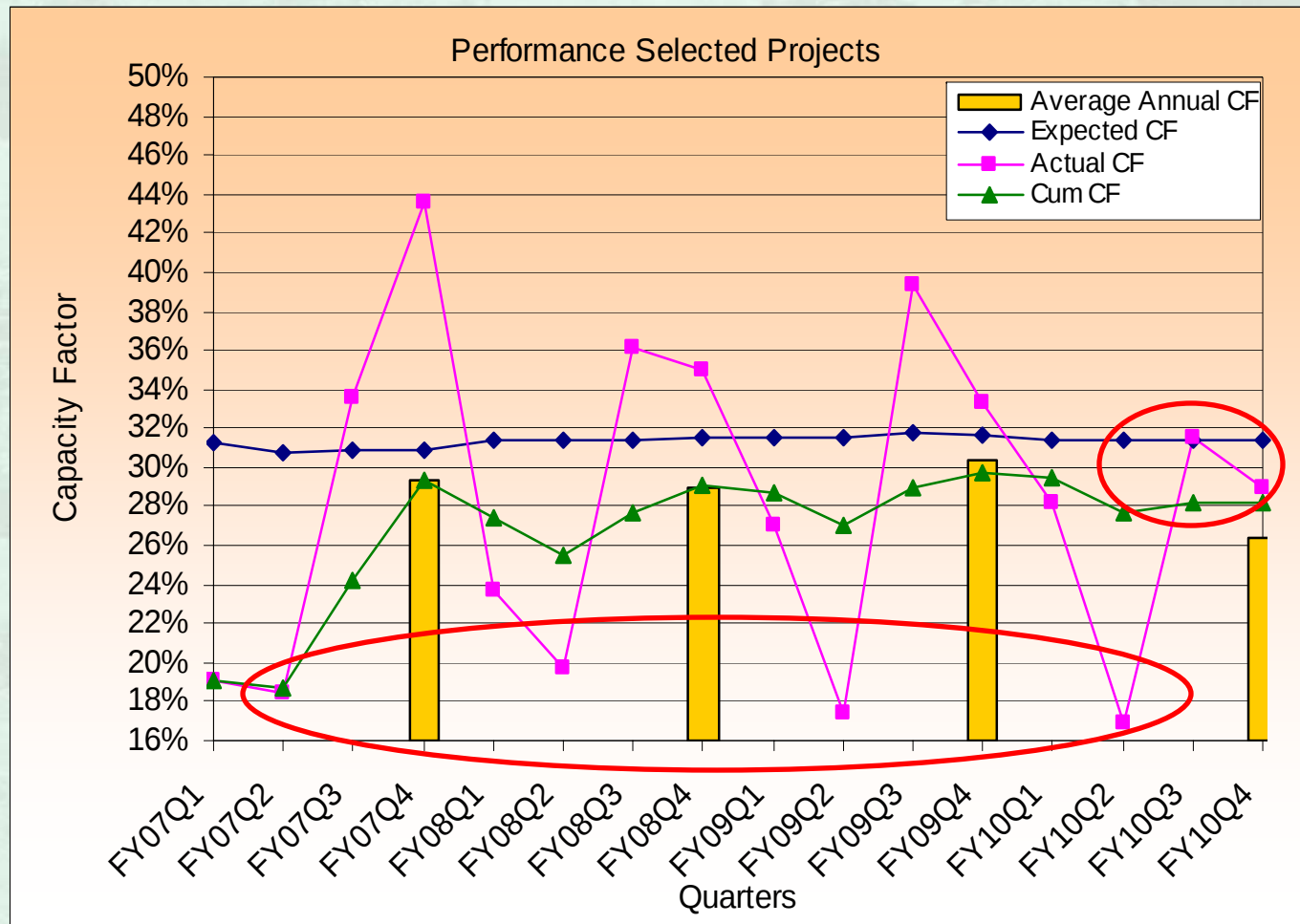
Last winter was the lowest at 36.2%.

12 Projects: 652 MW





CF by Quarter – Ontario



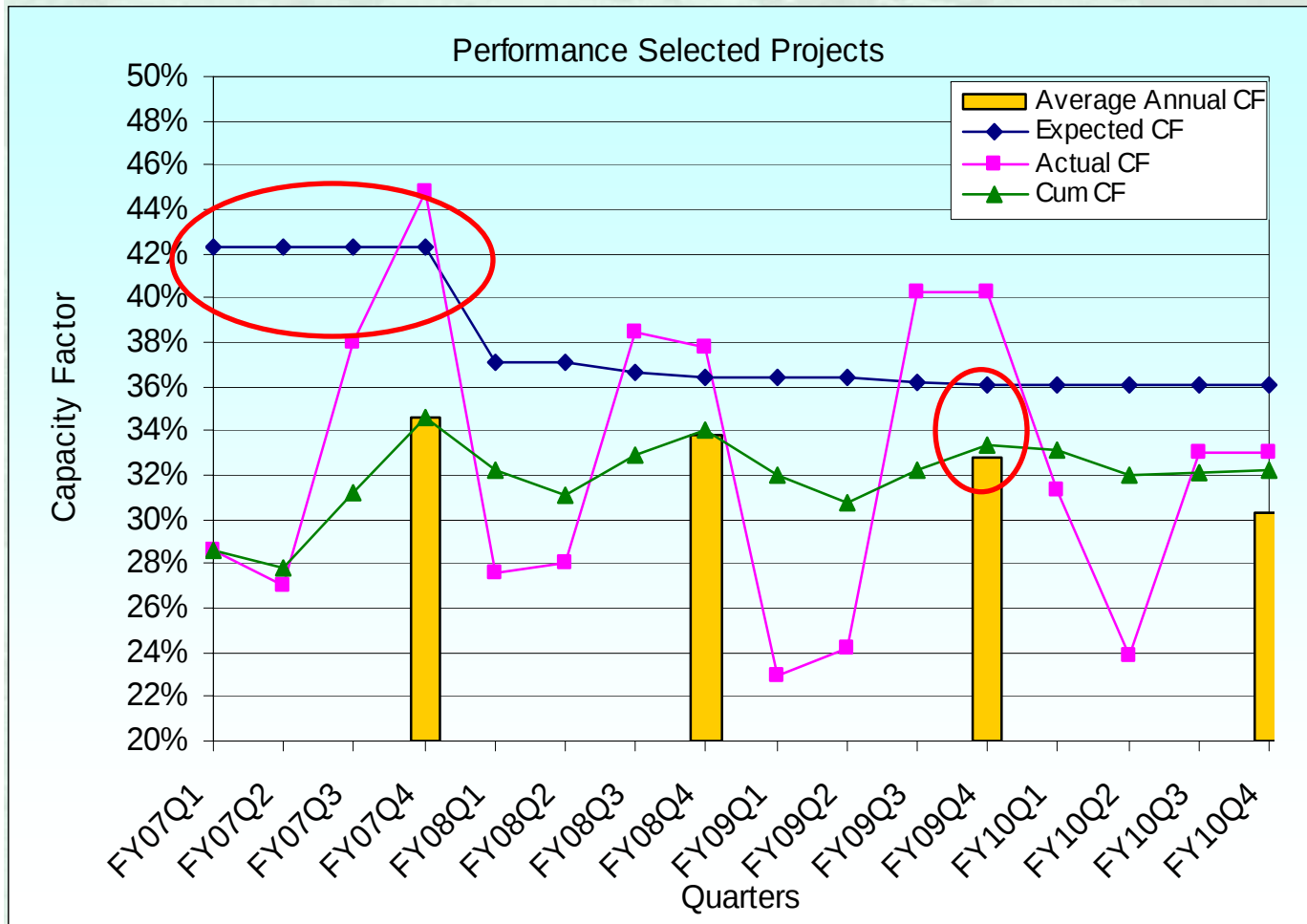
Characterized by low summer CFs but stable average year to year

Fall and winter 2009 were very low at 31.5% and 29.8%

18 Projects: 957 MW



CF by Quarter – Quebec



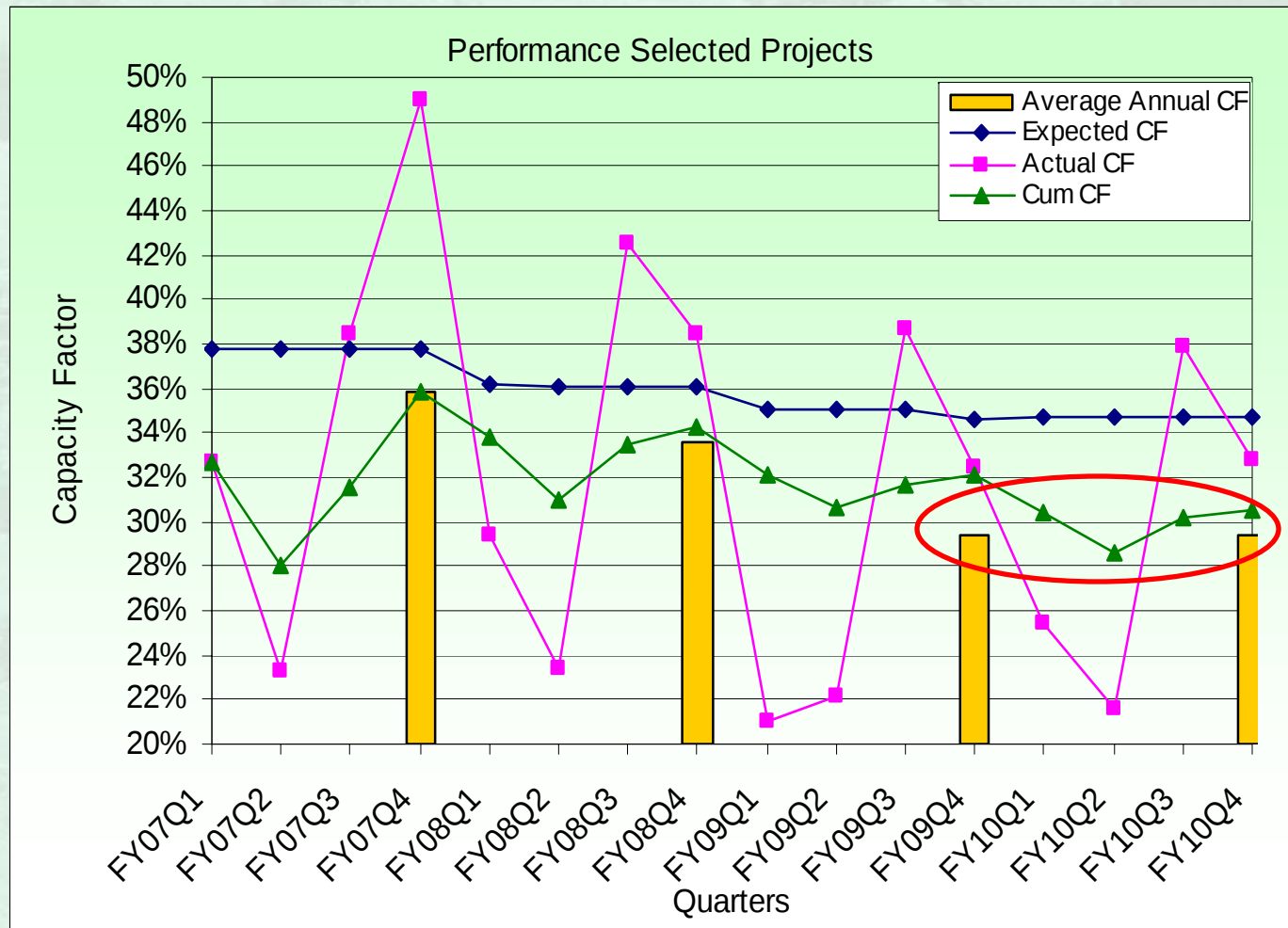
High performance expectations for the first projects – subsequently corrected.

Still about 89% of expected CF

5 projects: 419 MW



CF by Quarter – Maritime Provinces

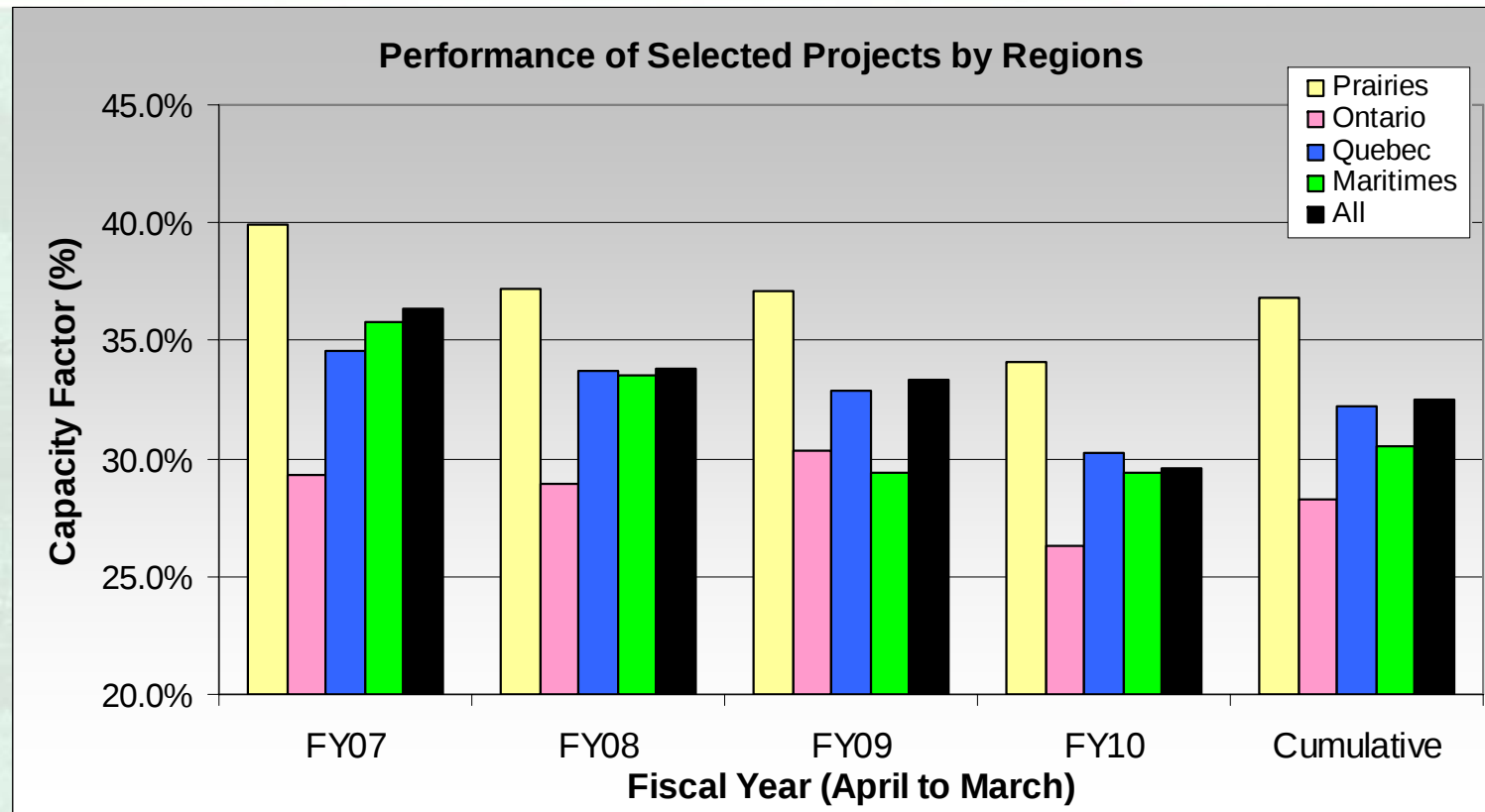


Very variable. Last two years have been poor even if expectations were high.

9 Projects: 288 MW



Performance Summary of Wind Projects by Region



Variation of performance is different from region to region.

This may be caused by fluctuating wind patterns or projects added to a region performing differently than precedent ones.





Conclusions

- Still tricky to arrive at good estimates for wind projects
- Yearly variation is different from region to region. It seems that El Nino, or other large influences, do not affect flow of wind equally between regions
- Hydro projects are helping to minimize variation; wind projects usually have higher production in fall and winter while hydro projects have higher production in spring. Neither perform well in summer.





Thank You!



- Visit our web site at:
 - <http://ecoaction.gc.ca/ecoRP>
- Contact us:
 - Tel.: 613-996-4779
 - Fax: 613-995-8343
 - E-mail: ecoenergyrp@nrcan.gc.ca

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